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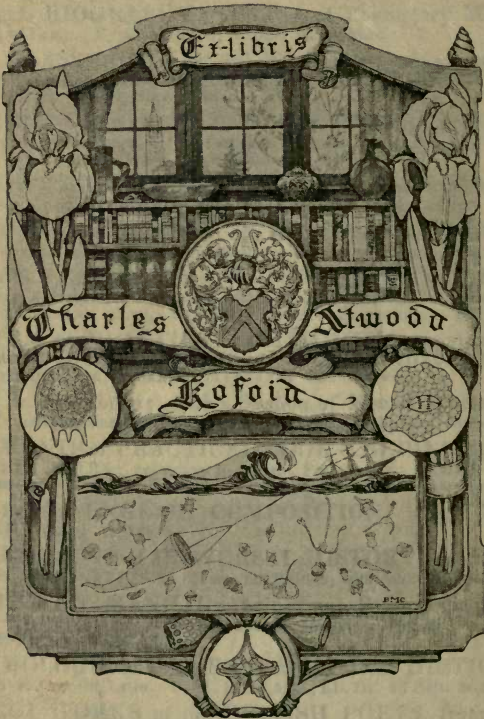
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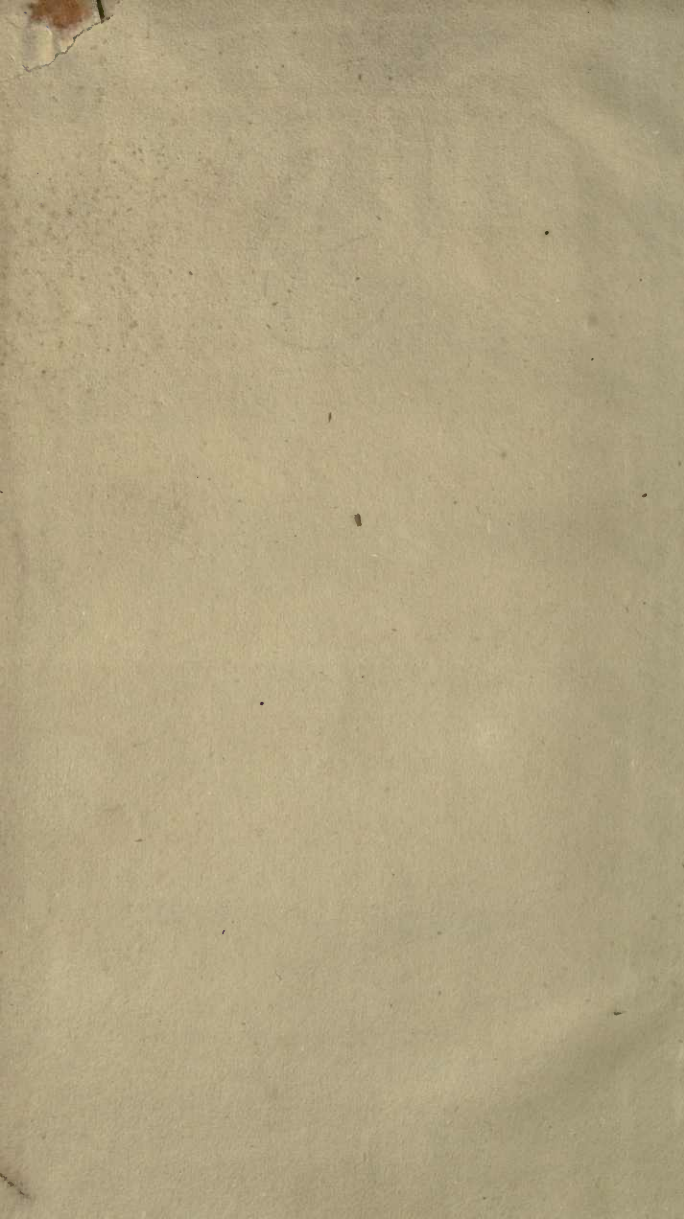


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# *The Varieties in the Human Race.*

*Helen Louisa Lusk*

ELEMENTS  
OF  
NATURAL HISTORY,  
IN  
*THE ANIMAL KINGDOM:*

CHIEFLY INTENDED FOR  
THE USE OF SCHOOLS AND YOUNG PERSONS.

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BY WILLIAM MAVOR, LL.D.

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IN

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BY

THE REV. JOHN H. COOPER, M.A.

OF

ST. JOHN'S COLLEGE, OXFORD.

AND

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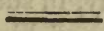
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# DEDICATION.



To WILLIAM JAMES MAVOR,

*Of the Charter-House School.*

MY DEAREST BOY,

As almost all my literary undertakings have been, directly or indirectly, intended to promote either the interest or the improvement of yourself and brothers, it cannot be improper to prefix your name to the present.

This Dedication I wish to remain as a lasting testimony of my regard; and, while it answers this purpose, so near and so dear to my heart, it will also serve as a pledge to affectionate parents who may wish to put the work into the hands of *their* children, that the author does not think it ill-adapted for the instruction of his *own*.

Peculiar, but unfortunate circumstances, give you a legitimate claim to this public address. The volume was written, as you know, during those intervals which your lingering and lamented illness left me disengaged from more pressing and sacred duties, — a constant attention to whatever could contribute to your

comfort or recovery: and I most fervently pray, that the GOD whose works I have endeavoured to display, in such a manner as may excite the adoration of his rational creatures, will vouchsafe to bless my anxious endeavours with success, and restore you to a parent, who loves you, for your amiable disposition and your promising talents, far beyond the bounds that mere natural affection would prescribe.

This is the fifteenth anniversary of your birth-day. \* Oh, may the next find you in the enjoyment of perfect health! and every future one arrive more propitious to the wishes and the views of

Your most affectionate father,

WILLIAM MAVOR.

*September 15. 1799.*

---

\* He departed this life on the 14th of November following; but let his memory live in this dedication, as it ever will in my heart. The lapse of twenty years has not weakened the impression; and in revising and improving the present work, I feel that I have only been performing the melancholy duty, of repairing, strengthening, and perpetuating a monument to a beloved son!

W. M.

RECTORY, WOODSTOCK,

*September 15. 1819.*

# PREFACE

*TO THE FIRST EDITION.*

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IT has been generally supposed that fame or emolument is the only stimulus to authorship ; yet had not motives of a more mixed character actuated the present writer, the following pages would never have appeared to solicit the indulgence, or deprecate the severity of criticism.

After devoting a considerable number of those years which are most valuable in the life of man to practical education ; after ascertaining, by experience, the value of every scheme of improvement, the propriety of which had recommended itself in theory to his understanding ; after combining the knowledge of the school with the suggestions of his own mind in the study ; after verifying different plans of instruction with all the attention in his power ; — he hopes that it will not be deemed presumption in him to hint, that he is sensible of some existing defects in the general modes of education in this country ; nor can it be misbecoming his character or situation to assist in removing them.

With all the enthusiasm for the learned languages which a classical education cannot fail to inspire, he must declare that too much time is spent by the generality of youth in acquiring a knowledge of words only, while the reasoning powers are suffered to lie dormant

till awakened by fortuitous circumstances; and that facts and principles, which alone are valuable in the ordinary concerns of life, are left to be picked up at random, or are adopted according to the exigency of the passing moment. He is far, however, from blaming this mode where the education is intended to be complete, and where the university is employed to supply what the grammar-school necessarily left unfinished. He alludes only to the situation of youth destined to the occupations of common life, the number of whom must be infinitely the greatest in every country; and who, as the years allotted to study are few, ought not to spend the whole in gaining a mere smattering of languages, but, at the same time, should lay in such a stock of useful knowledge as may be beneficial in their future pursuits, and may qualify them to support a respectable rank in their sphere of action, and rescue them from the disgrace of absolute ignorance, though they may not aim at profound attainments in learning.

To accomplish this desirable purpose, he is strongly of opinion that in all seminaries of education, particular regard should be paid to the private studies of the pupils; and, since many hours must be left to their own disposal, that such elementary books should be recommended to their notice as will instruct under the mask of amusement, communicate a knowledge of real life and manners, or lead to the vestibule of science, and point out the means of penetrating to the inner recesses of her temple. Many able writers, whose steps it is his boast to follow, have furnished works on detached parts of knowledge, morals, and science; but the catalogue is still incomplete; and, since no person better qualified has adopted his views, he means, occasionally, to avail himself of that favour which his

previous labours have gained from an indulgent public, at once to display his gratitude for the past, and his zeal to distinguish himself still farther in a very useful, though unassuming, department of literature.

When he recalls to memory the numerous instances in which he has already been a candidate for public patronage, he almost shrinks back from future appeals to its indulgence ; but the reflection that, if he has not been able to increase the fund of knowledge by any large accessions of his own, it has, at least, been his good fortune to render the services of others more popular, and present them to British youth divested of every forbidding incumbrance and every dangerous admixture, encourages him to persevere ; and the reception of his labours persuades him that they have not been wholly in vain.

He earnestly trusts that this apology will be accepted in the spirit by which it was dictated ; and now takes the liberty of adverting to the object of his immediate performance.

Natural history, during the present auspicious reign, has been cultivated with such success in all its branches, that the superficial observer might suppose it to be exhausted. Those, however, who have made the greatest advances in this delightful study will own themselves still comparatively ignorant of the laws of nature, and the links which unite her multifarious productions. The lover of system arranges only, and describes external appearances ; while the philosophic inquirer throws off the trammels of scientific formality, and, looking at qualities alone, envelopes his discoveries in an unformed mass of heterogeneous matter from which common industry cannot extricate them.

All ranks, however, and all ages, show *some* predi-

lection for the history of nature; and for that part, in particular, which has been denominated ANIMAL, in contradistinction to VEGETABLE. Nor can this partiality excite the least astonishment. From some animals we receive the most essential services, and from others we apprehend the greatest danger. They supply our wants, and act in subserviency to our views; they people the most retired recesses; they awaken our admiration, or excite our antipathy, according to their beneficial or noxious qualities, or the estimate which we have formed of them. All is life and activity; and we are certain that every thing was made for the general benefit of the whole, though, in our limited view, we cannot always distinguish qualities, or overcome the prejudices of education.

Linnæus and Buffon, and our illustrious countryman Pennant, through their various labours on natural history, aided by the numerous publications of others in different countries of Europe, have furnished every assistance to the student of maturer years; but it, perhaps, will not be deemed uncandid to affirm, that, exclusively of other important considerations\*, there is no work on this subject which is not either too jejune or too extensive, too scientific or too miscellaneous, for the purposes of schools. We still want a popular explanation of the system devised by the great father of this science, Linnæus; and, though Buffon has been partially divested of his splendid chimeras and

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\* "It is to be regretted that Buffon, with all his excellences, is absolutely inadmissible into the library of a young lady, both on account of his immodesty and his impiety. Goldsmith's History of animated Nature has many references to a divine Author. It is to be wished that some judicious person would publish a new edition of this work, purified from the indelicate and offensive parts." — *Miss More's Strictures on Female Education.*

endless digressions, the want of some systematic arrangement has rendered the abridgement of his works neither useful to the learner nor satisfactory to the proficient.

The author thinks it more generous to say nothing on the very few attempts that have hitherto been made to supply youth with a proper manual on animated nature, than to speak with a censorious disapprobation. When the intention is good, the severity of criticism is misapplied. It is but justice to his predecessors in this walk to allow, that the stores from which they selected were far less complete than at this period; and if he fails, with such an accumulation of knowledge in his reach, he is less entitled to excuse and to pardon.

It is necessary, however, to remark, that the present work aims only to rouse curiosity, by a display of a few striking objects, not to gratify the fulness of its wishes. It does not enter within its plan to give an uninteresting catalogue of animals; but, after exhibiting a general view of their various classes, such an assemblage is subjoined to each as may serve to stimulate farther investigation. To generalize, rather than to enumerate, is the object here proposed. The history of the family or species is often that of the individuals of which it is composed. The orders and genera of Linnæus are indeed tacitly observed, but not brought forward with useless parade and ostentation. Aware that verbal description alone of figure, is at best but dry and uninviting, some of the principal varieties are exhibited on copper-plates; and habits and qualities are more enlarged on than technical and mechanical distinctions.

It has been remarked, by one of our ablest writers, that no combination of words can convey an exact

idea of one of the animals even which are most familiar to us : how idle would it then appear to weary those for whom this volume is intended with dry descriptions of form, when a plate will more effectually accomplish the intention than the most elaborate attempts of language ! To show the economy of animated nature, and, from a display of its beauty or utility, to enforce that benevolence which is due to every thing that has life ; to lead from the contemplation of His works to the Almighty Parent of them ALL, is the principal purpose of the present writer : and, if this grand end be effected in any degree correspondent to his hopes and wishes, these outlines of Natural History will be reviewed by him with a satisfaction which praise indeed may heighten, but which no censure can essentially diminish.

W. M.

1799.



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*Explanation of some Terms used in Natural History, which should be committed to Memory by the young Student.*

<i>ACULEATED.</i>	Sharpened.
<i>Amphibious.</i>	Capable of living by land or water.
<i>Animalcula.</i>	Small animals, generally invisible without the assistance of the microscope.
<i>Annulated.</i>	Marked with rings.
<i>Antlers.</i>	Horns overhanging the brows.
<i>Aquatic.</i>	Living or growing in the water.
<i>Bifid.</i>	Divided into two parts, or cleft.
<i>Bimaculated.</i>	With two spots, or two series of spots.
<i>Bivalve.</i>	With two shells or openings.
<i>Callosity.</i>	A hard lump, an excrescence.
<i>Canine.</i>	Belonging to the dog kind.
<i>Carinated.</i>	In the shape of a keel.
<i>Carnivorous.</i>	Feeding on flesh.
<i>Cartilaginous.</i>	Furnished with cartilages.
<i>Cere.</i>	A skin over the bill of birds; sometimes moveable, as in parrots.
<i>Cetaceous.</i>	Of the whale kind.
<i>Cinereous.</i>	Of the colour of ashes.
<i>Columbine.</i>	Belonging to the dove kind.
<i>Cordiform.</i>	Heart-shaped.
<i>Crustaceous.</i>	Covered with a crust; as lobsters, &c.
<i>Digitated.</i>	Having the feet divided into parts, like toes or fingers, as in dogs.
<i>Dorsal.</i>	Belonging to the back.
<i>Exsanguineous.</i>	Without blood, as worms.
<i>Entomology.</i>	A description of insects.
<i>Feline.</i>	Belonging to the cat kind.
<i>Ferruginous.</i>	Of an iron or rust colour.
<i>Frugivorous.</i>	Feeding on seeds.
<i>Furcated.</i>	Forked.
<i>Gallinaceous.</i>	Belonging to the hen kind.
<i>Gestation.</i>	The time of going with young.
<i>Granivorous.</i>	Feeding on grain.
<i>Gregarious.</i>	Associating together.
<i>Herbivorous.</i>	Feeding on grass.
<i>Ichthyology.</i>	A description of fishes.
<i>Imbricated.</i>	Tiled or plated over each other.
<i>Incubation.</i>	The act of a bird sitting on her eggs.
<i>Insectivorous.</i>	Feeding on insects.
<i>Lateral.</i>	Belonging to the side, placed sideways.
<i>Migratory.</i>	Coming and going at certain seasons.
<i>Multivalve.</i>	With many shells or openings.
<i>Nascent.</i>	Very young, growing.
<i>Nictitating.</i>	Winking: applied to a membrane with which birds cover their eyes at pleasure.
<i>Obfuscated.</i>	Of a darkish colour.

<i>Olfactory.</i>	Relating to smell.
<i>Ornithology</i>	A description of birds.
<i>Oviparous.</i>	Laying eggs.
<i>Parturition.</i>	The act of bringing forth young.
<i>Passerine.</i>	Belonging to the sparrow kind.
<i>Patulous.</i>	Open, wide.
<i>Pectoral.</i>	Belonging to the breast.
<i>Pendulous.</i>	Hanging.
<i>Piscivorous.</i>	Feeding on fishes.
<i>Predaceous.</i>	Formed to pursue prey.
<i>Quadrid.</i>	Divided into four parts.
<i>Ruminating.</i>	Chewing the cud.
<i>Scabrous.</i>	Rough
<i>Scapulars.</i>	Shoulders.
<i>Semilunar.</i>	In the form of a half-moon.
<i>Setaceous.</i>	Hairy.
<i>Subulated.</i>	Formed like an awl.
<i>Testaceous.</i>	Covered with a shell ; as oysters, &c.
<i>Trifurcated.</i>	Three-forked.
<i>Truncated.</i>	Appearing as if cut off.
<i>Umbrageous.</i>	Spreading.
<i>Univalve.</i>	With one shell or opening.
<i>Ventral.</i>	Belonging to the belly.
<i>Viviparous.</i>	Bringing forth the young alive.
<i>Webbed.</i>	Connected with a membrane, as the claws of aquatic birds.
<i>Zoologists.</i>	Writers on animated nature.
<i>Zoology.</i>	The history of animated nature.
<i>Zoophite.</i>	An animal plant, or sensitive vegetable.

*\*\* When the young Student is perfect in the foregoing Terms, he will derive considerable advantage in his study of Natural History, by making himself master of the definitions at the head of each class. These definitions of the Classes and of their Orders ought to be indelibly fixed in the memory.*

ELEMENTS  
OF  
NATURAL HISTORY.

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OF ANIMALS IN GENERAL, COMPARED WITH  
VEGETABLES AND MINERALS.

LINNÆUS, with his usual conciseness, though not perhaps with his usual happy precision, characterises and divides the three kingdoms of nature\* in the following manner: "Stones *grow*; vegetables *grow and live*; animals *grow, live, and feel*." This definition is, indeed, well adapted to exhibit the intended idea in a popular way; but it may be questioned whether it be philosophically just. To grow, live, and feel, are only the *passive* properties of animals; they possess, in general, *active* powers of motion, instinct, and a kind of intellectual energy, which exalt them many degrees above vegetables, and infinitely above minerals; while the different proportions of docility or sagacity with which they are endowed, eminently distinguish their different tribes from each other, as well as from inanimate matter.

Animals, therefore, of all the objects which the terraqueous globe presents to our notice, are most worthy of our regard. Compared with vegetables, which are fixed to one spot, and incapable of seeking nutriment; if torn from their parent soil, they must be allowed to rank high in the scale of created matter. The greater part of them are not only endowed with organs of sensation, and the faculty of spontaneous locomotion, but are also capable of correcting any disadvantages of situation into which they may be thrown, of seeking their food, and of defending themselves from danger; even those humble classes which

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\* The animal, the vegetable, and the mineral.

are confined to a single spot, such as many species of shellfish and the gall insects, are furnished with a covering which protects them from external injury, and with the ready means of receiving aliment agreeable to their taste. In short, all animals, from the highest to the lowest rank, are enabled by some natural means to escape or repel danger, to find security, and investigate their proper food; but vegetables are totally unfurnished with the means of active defence, and must submit to every attack and every accident. An animal may be therefore defined — an organised being, possessed of a certain portion of intellect for its own preservation, combined with the vital principle and power of motion: while a vegetable is fixed to one place, and exposed to injuries without the means of evading or repelling them.

Notwithstanding these distinctive characters, which may be sufficient to discriminate the boundaries between an animal and a plant, they both possess so many corresponding qualities, that it appears difficult in some cases to pronounce where animal life commences, and vegetable terminates. The sensitive plant (*mimosa pudica*), which shrinks from the slightest touch, seems to have as much of perception and of the locomotive faculty, as the polypus and sea-nettle. The moving plant (*hedysarum gyrans*) furnishes a still more extraordinary example of vegetable motion: but both these, to manifest their innate powers, require to be acted upon by some external objects; while every thing animated acts from a principle within itself.

The resemblances, however, between animals and vegetables, are nevertheless very great; and in many respects their economy is the same. They have both their periods of nascency and maturity, of improvement and decay. They reproduce their kind; seem to participate in sensation, or at least in irritability, to a certain degree; and to have their respective antipathies and propensities. The ferocious animals create a desert round them; and some noxious plants resemble them in this respect. The strong prey on the weak in both kingdoms of nature; the lion



and the manchineel-tree cannot endure a near approach; the serpent and the poisonous weed occupy a larger space than the harmless useful animal and the salutary plant. Thus in this point we trace a similitude between the two classes; and if we consider them with regard to the places of their growth, we shall find the affinity still stronger. The vegetables produced in a dry and sunny soil are strong and vigorous, though not prolific and luxuriant; so also are the animals which range in a similar climate. Warmth and moisture, on the contrary, render vegetables luxuriant and tender; and the animals assimilating to the nature of such food are bulky and flaccid. Hence we find in the warm regions of America and Africa, where the sun commonly scorches all the upper grounds, and inundations cover all the lower, that even the insect and reptile tribes acquire an extraordinary size. The earth-worm of the tropical climates in America is often a yard long, and as thick as a walking-stick; the boiguacu, or ox-serpent, reaches to the length of forty feet; the bats are much larger than our domestic fowls; and the spiders may vie in size with the frogs and toads of temperate regions. On the contrary, within the arctic circle, where vegetation is impeded by the rigour of the climate, animal life, through all its various classes, sensibly partakes in the diminution. If again we contemplate the vegetables and animals peculiar to the water, we shall not fail to find new correspondences, and to recognise how well the nature of the one is adapted to the necessities of the other.

Thus it is evident, that animals and vegetables, in almost every instance, have a tendency to approximate towards each other; and, in some cases, the links that unite them are distinctly marked: in general, however, it may be observed, that the more perfect races of animals recede the farthest from vegetable nature; and that, in proportion to the inferiority of the animal, the affinity of the two classes is perceptibly nearer. Thousands of the more humble and minute insect tribes are confined to a single plant, or even to a single leaf, and their whole term

of life is coeval with its duration; they are even incapable of being bred in other regions. The more perfect animals, however, lead a life of less dependence, and are disseminated over various parts of the world. Man, the noblest of them, appears to be least affected by the diversity of climate, or influenced by the aliments on which he subsists. He is essentially the same, amidst the luxuriance of the tropical climates, and the sterility of the frozen. From the polar regions to the burning sands of the equator, he procures with more or less ease the means of subsistence: he is neither circumscribed by zones, nor confined to regions; but exists in every clime, with little material alteration in his nature or his form.

Thus Man, the lord of this lower creation, himself unaffected in any considerable degree, compels the lower orders of animals to follow his wanderings, and in many cases to obey his will. He in a manner changes their natures by his power, and their instincts by the arts of domestication. He reclaims the useful for his pleasure or service; and drives the savage and the noxious to the most sequestered retreats. His dominion is undisputed wherever he wishes to extend it; whether over the other animals of the earth, or the vegetables; not to mention the monsters of the deep, and the whole class of minerals. Thus it appears that the two kingdoms of nature which are most nearly allied, are more immediately subject to the control of a being, not always possessed indeed of superior strength, but of superior intellectual endowment.

To mark the precise boundary between vegetables and minerals is, in a manner, unnecessary. The transition from the animal to the plant, as already observed, is affected by shades so imperceptible, as sometimes to escape observation; but between the plant and the mineral there is a vast chasm. In the latter, not a vestige of organisation can ever be discovered. The fibrous structure of the asbestos has been considered, indeed, by some hasty system-builders, as an approach to organised matter, and as

the connecting link between the mineral and vegetable kingdoms: but a distinction should be here observed; - that in the mineral kingdom, though nature continues to *arrange*, she ceases to *organise*. The most regular configuration of salts, crystals, and precious stones, is carried on by a chemical, not an organic process. They for ever remain in the same state; unless when separated by force, or augmented by fresh agglomerations of matter. They are incapable of multiplying their species, or of reproducing such parts as are forcibly abstracted from them; and hence we must conclude, that between the most regular fossils, and the most imperfect vegetables, the lines of distinction are deeply marked, and the distance is immense.

Of all the departments, however, in the kingdoms of nature, the philosophical history of *Animals* is most interesting to man, and ought to be a principal object of his researches: not only as he belongs to this division himself; but as it is from the inferior orders of them that he is supplied with food, raiment, and occasional assistance. Yet, though upwards of twenty-five thousand animals have been indicated and described by naturalists, it would be difficult to enumerate even one hundred that materially contribute to our use or accommodation. Why, it may be asked, has nature been so prolific to so little purpose? To this the answer is ready: Every thing in creation was certainly formed for some beneficial design or other, though varying in its importance; and one part of nature is unquestionably designed and fitted to support another. Were all animals to subsist on vegetables, thousands of beings would soon become extinct, from a deficiency of provisions: but, as infinite Wisdom has ordained it, one living creature supports another; and thus the countless variety of animated beings which people the earth, the air, and the water, are all supplied according to their respective wants.

The industry of man has been successfully employed to diminish the number of noxious animals, and to render

the others subservient to his use or pleasure. Still, however, a vast variety of creatures present themselves every where to our view ; so that it becomes difficult to determine where we shall commence their history. Not only the three elements\* propitious to life are replete with animals ; but almost every vegetable, every leaf, is peopled with myriads of minute inhabitants, each of which fills up the circle of its allotted duties, and partakes of such enjoyments as its nature craves.

In contemplating this wonderful exuberance of animated nature, ignorance might be tempted to rest in desponding uncertainty, and to pronounce that to be absolutely inscrutable, which cannot be developed without much pains and attention. The active and inquisitive mind of man, however, not intimidated at the contemplation of the immense variety of subjects in this department of natural history, has invented a mode of numbering, grouping, and classing the different animals which fall within its notice ; and thus arbitrary system has become an useful auxiliary to science.

Passing over the arrangement of animals adopted by the ancient Greek and Latin naturalists, and that of the less distinguished moderns, which have only been the fashion of a day, and confined to few admirers, I shall content myself at present with giving a brief analysis of the schemes of Ray, Klein, Brisson, Buffon, Pennant, and Linnæus. Though in the present work I shall follow the arrangement of the last of these authors, as being that which is almost universally received, it may afford some amusement and instruction to the young student in nature, to trace the outline of the systems of the others, as some of them obtained great and deserved celebrity in their time, and probably will never be quite forgotten.

RAY, in imitation of Aristotle, divides the animal kingdom into two great classes, such as have blood and such as have not ; placing all the insect tribes in the latter

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\* Earth, air, and water.

class. The first great order he subdivides into such as respire through the lungs, and such as respire through the gills; which last evidently comprehend the fishes. In those which breathe through the lungs, some have the heart composed of two ventricles, and others of only one: the former include the cetaceous fishes, viviparous quadrupeds, and birds; the latter, the oviparous quadrupeds, and serpents. Animals with two lungs, or ventricles, are either viviparous or oviparous: the viviparous are subdivided into aquatic, as the cetaceous fishes; and terrestrial, as the quadrupeds covered with hair: the oviparous animals with two lungs, comprise the whole class of birds.

The animals without blood he divides into the larger, which are either soft as the cuttle-fish, crustaceous as the lobster, or testaceous as the cockle; and are likewise univalve, bivalve, &c.; and the lesser, which comprise all insects properly so called. My limits will not allow me to follow him in his subdivisions into orders and families; it is but justice, however, to the memory of that eminent naturalist to observe, not only that his arrangement is clear, methodical, and simple, but that his descriptions are comprehensive and accurate. He possessed an elegance of taste, and a philosophic genius, which manifestly pervade his labours, and stamp a great additional value on them.

KLEIN, whose system appeared in 1740, makes the power of changing situation the general characteristic of animals, and deduces his several distinctions from the manner in which this faculty is exerted. Some have this faculty by means of feet, or similar appendages; others are furnished with both wings and feet; some move by fins, and others by an undulatory motion; some can change their situations at pleasure in their shells, and others only periodically. Such as are destitute of all locomotive power are not comprehended within his divisions; his system must therefore, of necessity, be inaccurate and incomplete.

BRISSEAU divides animated nature into nine classes; quadrupeds, cetaceous animals, birds, reptiles, cartilaginous fishes, spinous fishes, testaceous animals, insects, and worms. He then distributes quadrupeds into eighteen orders, and takes his distinctions from the number and conformation of their teeth. His arrangement was an attempt to improve on that of Linnæus; but, though not destitute of ingenuity, it never was generally adopted.

To give any adequate idea of BUFFON'S system, if indeed that can be called a system which affects to soar above and to ridicule all methodical arrangement, would be impossible. This philosophical painter of nature, conscious of his brilliant mental energies, gives to individual descriptions a luminous appearance which must ever delight and instruct; but by disregarding method, his labours as a whole exhibit rather a beautiful chaos than a well-executed structure. His general distribution of quadrupeds into domestic, wild, and foreign, is so vague and inadequate, that we cannot properly rank him among systematic writers; though, in the requisites of elegant composition and elaborate inquiry, he is superior, perhaps, to all other naturalists. The following is the apology which he makes for spurning at what he considers as the trammels of system: "Nature," he says, "proceeds from one species to another by such imperceptible degrees, that we are often tempted to link many of them together as belonging to the same family. We ought not, however, to forget, that these families or genera are created by ourselves, in order to assist the understanding: and that, if we cannot comprehend the real connections of natural objects, it is our own fault, and no defect in nature; which knows nothing of those pretended families, and which, in fact, has only made individuals. An individual is a detached being, which has nothing in common with other beings, except it resembles or rather differs from them. All the similar individuals which exist upon this earth, are considered as composing the species of these individuals. It is not, however, the collective

number of individuals, but their constant succession and renovation, that constitutes their species."

These are the ingenious paradoxes of a man who combined all the sportiveness of an exuberant fancy with a profound and comprehensive understanding; and from whose invaluable works on natural history, a more intimate knowledge of the economy, habits, and propensities, of different animals may be acquired, than from all the systematic writers taken together. Happy would it have been, however, had Buffon been more delicate in his effusions, and grafted his beautiful descriptions and delineations on the correct and regular system of Linnæus. The study of animated nature would, by such an union, have acquired many additional attractions and advantages.

From the long-continued labours of PENNANT in the ample field of natural history, the student, whether British or foreign, will derive much useful information and instruction. Whatever he touched he improved, though his manner is peculiar: and, as he investigated all the classes of animals, and made us acquainted with the zoology of our own country in particular, it would be unpardonable not to present my readers with a synopsis of his scheme. As the present work is designed for the use of English youth alone, I shall retain his trivial names, though not his mode of classification.

This able and diligent naturalist, who has furnished the world with one of the most accurate and satisfactory systems of quadrupeds, perhaps, that ever appeared, divides them into hoofed, digitated, pinnated, and winged. The hoofed quadrupeds he subdivides into whole and cloven-hoofed; the digitated into frugivorous, carnivorous, and insectivorous, (those who feed on grain, flesh, or insects,) regarding at the same time the number of the canine teeth; the pinnated he distinguishes by being piscivorous or herbivorous (feeding on fishes or herbs); and the winged, including the bat tribe, by being insectivorous.

The numerous class of birds he comprehends under two

great natural orders, land and water fowls. The first he subdivides into six families; rapacious birds, pies, gallinaeous, columbine, passerine, struthious: the last into three families; cloven-footed, birds with pinnated feet, and web-footed.

He defines reptiles in the following terms: "body covered either with a shell or strong hide, divided by sutures, four fin-like feet, and a short tail." Under this class he comprehends the tortoise, the frog, the lizard, the viper, and the snake kinds.

Mr. Pennant makes three orders of fishes; those which are cetaceous, cartilaginous, or bony. In the subdivisions of the last order, he follows the arrangement of Linnæus; and, for the sake of science, it might have been wished that his deviations from such a guide had been less frequent. There is often more real glory, and certainly more utility, in beautifying and improving an established system, when generally conformable to nature and to reason, than in inventing a new one. Crustaceous animals form a separate class; comprehending the numerous tribes of crabs, lobsters, &c.

Worms, in his sixth and last class, he divides into the intestine, the soft, and the testaceous. The last include all the numerous variety of shells, in the arrangement of which he follows the generally-received distinctions.

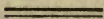
LINNÆUS, the first in celebrity, though the last in this catalogue, (his system alone being universally appealed to by other naturalists as a permanent standard,) appeared as a systematic writer on natural history in 1735; and, having gradually improved and enriched his scheme by indefatigable perseverance and attention, presented the twelfth edition of his work to the public in 1766-7. About 21 years after his death, however, another edition, augmented by all the recent discoveries of inquisitive naturalists and travellers, came out under the care of professor Gmelin; which, without materially altering the original plan and arrangement, has highly contributed to the perfection and utility of the system. Other naturalists



have successively followed up and matured his work, which Dr. Turton has rendered more accessible to the mere English scholar, by a faithful translation.

Linnæus distributes the animal kingdom into six classes  
I. MAMMALIA, or animals which suckle their young; including Man. the quadrupeds, and the whale kind.  
II. BIRDS. III. AMPHIBIOUS ANIMALS. IV. FISHES.  
V. INSECTS. VI. WORMS.\*

In adopting the general arrangement of this illustrious inquirer into nature, yet so as not to fatigue the juvenile reader with his technical subdivisions and minute discriminations of form, I shall present a general description of each class in succession, and then particularise some of the most striking objects in every different order. As our natural pride, however, will not permit us to rank in the same class with apes, monkeys, maucaucoes, and bats, it may be proper to give a brief account of the varieties in the human race, before I enter on the consideration of quadrupeds, and other mammalious animals.



## THE PRINCIPAL VARIETIES IN THE HUMAN RACE.

THOUGH there cannot be a doubt that all mankind, however disseminated over the globe, sprung from one parent stock; yet the influence of climate, civilisation, government, and even of modes of life, have created great diversities in colour, shape, and stature. The boundary of a river, the intervention of a hill, custom, accident, or fashion, may sometimes occasion shades of distinction which the most incurious observer will recognise; and on the other hand, long-continued intercourse will assimilate

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\* The names of these six classes should be committed to memory.

two nations by degrees, till at last the difference between them will be imperceptible. There are, however, some broad lines of distinction in the same species, which it is the business of the naturalist to remark, and of the philosopher to explain.

Linnæus characterises mankind, with his usual brevity, in masses; each of which includes a quarter of the globe. The American is described as of a reddish colour, choleric, and erect; the European as fair, ruddy, and muscular; the Asiatic as tawny, grave, and rigid; the African as black, phlegmatic, and relaxed. This description, however, appears much too general, and is too indefinite for application to all cases.

Another ingenious author\*, with a more discriminating observation, though perhaps too particular to be accurate, has made use of the following remarks, with regard to the variation in colour: "Encircle," says he, "the earth in every zone; and, after making a few allowances, you will see every zone marked by its distinct and characteristic colour. The black prevails under the equator; under the tropics, the dark copper; and, on this side of the tropic of Cancer, to the seventieth degree of north latitude, you successively discern the olive, the brown, the fair, and the sanguine complexion. Of each of these, there are several tints, or shades. Under the arctic circle, you come again to the dark hue. — This general uniformity in the effect, indicates an influence in the climate, that, under the same circumstances, will always operate in the same manner. The apparent deviations from the law of climate, that exist in different regions of the globe, will be found to confirm the general truth."

It cannot be denied that this is in general philosophically just, as far as colour only is concerned; but complexion, though the most marked, is the least essential trait in the varieties of the human species. The lineaments of the face, the general conformation, the stature, and the physical and moral character, are the most interesting features,

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\* Smith.

and constitute the chief discriminations of our kind. Buffon, and after him, Goldsmith, have taken a more luminous survey of mankind ; and have thrown them into families strongly marked, and accurately defined. I shall therefore follow them as the most satisfactory guides in this respect, and present a miniature of their ampler delineation.

In taking an extensive view of our species, there do not appear to be above six varieties sufficiently distinct to constitute families : and even in them the distinctions are more trivial than are frequently seen in the lower classes of animals. In all climates, Man preserves the erect deportment, and the natural superiority of his form. There is nothing in the shape or faculties that designates a different original ; and other causes, connected with the climate, soil, customs, and laws, sufficiently account for the change which has been produced.

The polar regions exhibit the FIRST distinct race of men. The Laplanders, the Esquimaux Indians, the Samoide Tartars, the inhabitants of Nova Zembla, the Borandians, the Greenlanders, and the Kamtschadales, may be considered as forming a race of people, all nearly resembling each other in stature, complexion, habits, and acquirements. Born under a rigorous climate, confined to particular aliments, and subjected to numerous hardships, it seems as if their bodies and their minds have not had scope to expand. The extreme cold has produced nearly the same effect on their complexion, as intense heat has on the natives of tropical regions ; they are generally of a deep brown, inclining to actual black. Diminutive and ill-shaped, their aspect is as forbidding as their manners are gross. Their visage is large and broad ; the nose flat and short ; the eyes brown, suffused with yellow ; the eyelids drawn towards the temples ; the cheek-bones high ; the lips thick ; the voice effeminate ; the head large ; and the hair black and straight. The tallest do not exceed the height of five feet, and many are not more than four. Among these nations, female beauty is almost unknown ;

and but little difference is to be discerned in the external appearance of the sexes.

But it is not only in deformity, dwarfishness, colour, and contour of features, that the inhabitants of these regions resemble each other. There is also a marked conformity in their manners, propensities, and habitual ignorance. They certainly display a degree of activity and resolution in pursuit of their game; but they seem incapable of vigorous exertions either of body or of mind, unless when their ingenuity is stimulated by necessity; or inevitable difficulties prompt the temporary exertion of courage to evade or surmount them.

With regard to their morals, they possess all the virtues of simplicity, and all the vices of ignorance. They seem to entertain few religious ideas, and these are rather superstitious than rational. Providence, however, in denying them so many physical blessings which the nations of more temperate climes enjoy, has given contentment as a counterbalance for these deprivations. They have a very high opinion of themselves; and, according to Krantz, relieve the tedium of their social meetings by ridiculing European manners and pursuits. War is the object of their detestation, because they have nothing worth contending for; and, though attempts have been made to discipline them as soldiers, and to draw them into the field, every measure of this kind has hitherto proved unsuccessful.

In proportion as we approach the north pole, mankind seem to dwindle in energy and importance of character; till we reach those high latitudes that forbid rational, if not all animal life. The gradations, however, vary almost imperceptibly: but on the southern borders we find people of a large stature and more noble form; who, compared with those of the more northern, exhibit a striking contrast, and prove the amazing influence of climate on whatever breathes and lives.

The SECOND great existing variety in the human species, seems to be the Tartar race; from whom it is probable that the natives of the hyperborean regions originally

sprung. The Tartar country, in its common acceptation, comprehends a very considerable part of Asia, and consequently is peopled by natives of very different forms and complexions; yet there are leading traits of distinction between the whole race and the people of any other country. They all have the upper part of the visage very broad and early wrinkled; the lower part narrow, and approaching to a point at the chin: their eyes are small, and wide apart; their noses short and flat; their cheek-bones high; the eyebrows thick; the hair black; and the complexion olive. In general they are of the middle stature, strong, robust, and healthy. Some of the tribes may be comparatively handsome: but according to our ideas of beauty, all of them fall very short of that appellation; and the Calmucs, in particular, are not only ugly, but frightful.

The Tartars, however widely disseminated, are all accustomed to a wandering life, and all dwell in tents. They subsist chiefly on horse-flesh and dried fish; and their usual beverage is mares' milk, fermented with ground millet. They have few religious ideas, and no determinate notions of morality or decency of manners. Their chief wealth consists in horses, in the management and care of which they spend much of their time; and they count it no dishonesty to follow robbing as a vocation, provided it be exercised on a different tribe from their own.

The men have little hair on their chin; and they all shave the head, except a lock of hair on the top, which they suffer to grow to a great length, and form into tresses. The women, though scarcely ever handsome, are yet studious to braid their hair, and decorate it with pieces of copper and similar ornaments.

Different as the Chinese and Japanese are in their manners and customs, they are evidently of Tartar origin. The general contour of features is the same; and the variations in complexion, stature, and customs, may be satisfactorily explained from the principles of climate, food, and political institutions. "I have observed," says Chardin, "that in all the people from the east and the

north of the Caspian sea, to the peninsula of Malacca, the lines of the face and the formation of the countenance are the same." To the class of original Tartars may be referred the Cochin-Chinese, the Siamese, the Tonquinese, and the natives of Aracan, Laos, and Pegu; who all evince a common origin.

The southern Asiatics constitute the THIRD variety in the human species. The native inhabitants of the peninsula of India (whose descendants, according to the most accurate and intelligent modern travellers, appear to have possessed themselves at unknown periods, and by accidental means, of the numerous islands that lie scattered in the Indian ocean) are easily distinguished from their more northern neighbours. In stature and features they bear a strong resemblance to Europeans; they are slender and elegantly formed, have long straight black hair, and not unfrequently aquiline noses. Their colour, however, according to the diversity of climate, varies from pale olive to black; yet *mogul*, in the Oriental acceptation, signifies a white man. The women are very delicate, but have nearly the same complexion as the men: they early arrive at maturity; and their beauty suffers from the encroachments of age, so early as their thirtieth year.

Effeminacy, and the want of military qualities, have long characterised the natives of the East; and in consequence, they have become slaves to every armed despot who has had the resolution to invade them. Their manners partake of the enervating heat of their climate; they are generally indolent, submissive, sensual, and averse to reflection.

Many of the tribes eat nothing that ever possessed life, and show a reluctance to injure even the meanest insect. This arises from their belief in the metempsychosis, or transmigration of souls; which was the favourite doctrine of Pythagoras, and has for many ages been prevalent among the Eastern nations. The usual food of the Gentoos is rice; their drink the unadulterated stream. They are clothed in silks and cottons, and affect a grave deport-

ment ; but this is rather the effect of a deficiency of animation, than any mark of superior wisdom. The Persians and Arabians may be referred to this class ; which, including the inhabitants of the widely-dispersed islands in the Oriental ocean, constitute a very large portion of mankind.

The negroes of Africa form a well-defined and striking variety of our species, which may be called the **FOURTH**. This sable race is extended over all the southern parts of that quarter of the world : and though there are various shades of distinction in point of colour and features, all may be grouped with propriety in the same picture. As among Europeans, we find among them also some handsomer than others ; all, however, have the black colour, the velvet smooth skin, and the soft frizzled hair. Their eyes are generally of a deep hazel, their noses flat and short, their lips thick and prominent, and their teeth of the whiteness of ivory. Weakened by the climate, their flesh is flabby, and their whole frame relaxed ; while their mental powers, in general, participate the imbecility of their bodies. Stupid, indolent, and often mischievous, they possess few qualities that can attract regard : yet religion, reason, and humanity, all conspire to induce us to treat them, when in our power, with mildness and justice ; or rather to leave them unmolested in their native enjoyments, however imperfect ; unless by introducing the arts of civilisation and the principles of Christian duty, we could multiply the number of their blessings, and alleviate their ills. When will the slave trade be annihilated in reality as well as in name !

Among these people are sometimes found individuals of a white milky complexion, called Albinos. These, however, no more constitute a distinct race, than persons affected by the small-pox, or bearing the marks of it, among ourselves.

We shall find the **FIFTH** variety of the human species among the aboriginal Americans : who are as distinct in colour, as in their place of residence, from the remain-

der of the world. These people, except towards the north among the Esquimaux, where they resemble the Laplanders, are of a red or copper colour; with less variation, however, than might be expected in such a diversity of climates. They have all black straight hair, and thin beards (which latter, however, they take care to extirpate, wholly or in part), flat noses, high cheek-bones, and small eyes. Various deformities are created by art among different tribes, under the idea of beauty; and for this purpose they paint the body and face in a manner truly hideous, if judged according to the standard of European taste and manners.

Though frequently of an equal stature with us, they are less muscular and strong; which may possibly be an effect of the climate, or of their food. Certain it is, that a stranger no sooner lands on the continent of America, than he is struck with the flaccid, whitish, wan appearance, even of the descendants of Europeans, among the natives of the New World: and if the productions of the soil, and the temperature of the air, have had such a perceptible influence on the inhabitants, in perhaps but a few years, what may not be expected from the operation of these causes in a series of ages?

The American Indians are not only more feeble than many of the European nations, but also more pusillanimous, or at least more backward in facing danger: but no sooner do they find it inevitable, than their courage (which seems, however, of a passive kind) is excited to the highest possible degree; and they are ready to bear, as well as inflict, the cruellest torture that savage ingenuity can invent. Patient in adversity, and familiar with fatigues and hardships, they manifest a Stoical apathy in circumstances and accidents which would appear very distressing to an European; but all that is rather, perhaps, the effect of custom and education, than of genuine magnanimity. They appear uncommonly grave and serious, though devoid of mental application; and, in proportion as they are barbarous to their conquered ene-



mies, they are benevolent and just to those of their own family or tribe. In all their actions they seem to have adopted this maxim :

A generous friendship no cold medium knows ;  
Burns with one love, with one resentment glows.

In short, the characteristics of savage nations, in a moral point of view, are every where much the same. A wild, independent, and unsocial mode of living, produces a peculiar assemblage of virtues and vices ; whence patience and hospitality, indolence and rapacity, content and sincerity, the warmest attachment to friends, and the bitterest animosity against foes, are as distinguishable among the American savages, as among any other barbarous and uncivilised hordes on earth.

The SIXTH and last grand division of the human race, and the most elevated in the scale of being, comprehends the Europeans, and those of European origin ; among which latter may be classed the Georgians, Circassians, and Mingrelians, the natives of Asia Minor and the northern parts of Africa, as well as of a part of those countries that lie north-west of the Caspian Sea. The inhabitants of regions so extensive and so widely separated, must be expected to vary greatly from each other ; but, in general, there is a striking uniformity in the fairness of their complexions, the beauty and proportion of their limbs, and the extent of their capacity. Arts which are but partially practised or little known in other countries, are among this class brought to the highest perfection ; and it will scarcely be denied, except by the visionary advocates for savage life, that in them alone the highest endowments of the understanding, the best virtues of the heart, and in short whatever can improve or adorn human nature, are to be found in a super-eminent degree.

To some one of the divisions already enumerated, the people of every country may be referred ; and in proportion as nations have been less visited by strangers, or have

maintained less intercourse with the rest of mankind, we find their persons and their manners more strongly impressed with some of the characteristics already mentioned. On the contrary, in those places where trade has long flourished, or which have been exposed to frequent hostile invasions, the races usually appear blended; and probably fall under no one particular variety, but partake, in some respects, of all.

It is easy to perceive, that of the various colours by which mankind are diversified, white is not only the most beautiful, but also the most expressive. The fair complexion becomes like a transparent veil to the soul; through which every shade of passion, every change of health, may be seen, without the necessity of oral utterance: whereas in the African black, and the Asiatic olive complexion, the countenance is found a much less distinct index of the mind, or of the bodily feelings.

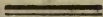
Besides, this colour, which is most permanent and universal, is certainly the most natural to man; and it is a well-known fact, that children every where are born comparatively white. It is likewise no uncommon circumstance to see white children born of black parents; but a black offspring has never been known to be the production of two whites. Whiteness, therefore, appears to be the original colour of man: for, as in some flowers the parent stock is distinguishable among all the artificial varieties blended into it; so in our nature, that colour must necessarily be original, which never alters, and to which all the rest have a tendency to approximate.

With regard to stature, this wholly depends on climate, food, and other local causes. In wild regions, where nourishment is abundant, the human form is developed in its utmost perfection. Under the equator, and towards the poles, it shrinks beneath the due standard, through either the intensity of the heat, or the rigour of the cold. Climate and soil, therefore, have the most powerful effect in expanding or diminishing the size. Even in the same

country, the inhabitants of the valleys are taller than those of the hills.

As to the form of the face, it probably does not depend altogether upon merely physical causes. Our ideas of beauty and deformity are very different ; and, by degrees, mankind are moulded to that shape, or to those features, which according to our habits of reflection, appear handsome and becoming. In this manner casual deformities may in time become natural ; and be perpetuated, or even increased, through successive generations.

From this cursory survey of mankind, it may be inferred, that all the variations in the human figure, as far as they differ from our own, are produced by the climate, the manner of living, or the institutions of the country. The European figure and complexion may therefore be considered as the standards to which all the other varieties must be referred, or with which they may be compared. In proportion as other nations approach nearer to European beauty, the less they may be said to have degenerated ; and, in proportion as they recede, to have further deviated from the original form impressed on them by their Creator.



## CLASS I. — MAMMALIA.

LINNÆUS divides mammalious animals, or *those which suckle their young*, into seven orders ; and these are chiefly regulated by the number and situation of the teeth.

I. PRIMATES, or animals having two canine and four cutting teeth, and furnished with two pectoral teats. To this class he refers Man, the ape, the maucauco, and the bat.

II. BRUTA, or animals which have no cutting teeth in either jaw ; as the elephant, the sloth, the ant-eater, &c.

III. *FERÆ*, or animals whose cutting teeth vary from ten to two. This order includes most of the formidable rapacious quadrupeds ; as the lion, the tiger, the bear, &c.

IV. *GLIRES*, or animals which have only two cutting, and no canine teeth ; as the hare kind, the mouse, the squirrel, &c.

V. *PECORA*, or animals which are hoofed, and have no cutting teeth in the upper jaw : including the camel, the deer, the sheep, the ox-kind, &c.

VI. *BELLUÆ*, or quadrupeds with cutting teeth in each jaw, as the horse, the boar, &c.

VII. *CETÆ*, or animals whose teeth greatly vary in different genera. This order comprehends all the whale tribes ; which, from certain similarities of structure, have been arranged under the class of quadrupeds. All the mammalia are viviparous, and have two ventricles to the heart, with hot red blood. \*

It is evident, that in this as well as in the remaining classes, many dissimilar animals are thrown together on account of some coincidences which constitute the systematic uniformity. Indeed, all arrangements in Natural History, however ingenious, are chiefly useful as helps to the memory : and that classification of animals which is the simplest, and can be most easily remembered and compared, is probably the best ; a due regard, however, being paid to accuracy of description. In ethics, metaphysics, and mathematics, every definition must be precise, because these sciences are founded on definitions only ; but it is otherwise in those where the exhibition of the object itself is capable of correcting the error. Still, however, a minute attention to system is of use with such as are advanced in years, but facts and descriptions are most acceptable and serviceable to youth : for this reason I shall omit all generic distinctions in my selec-

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\* These definitions of the seven orders should be committed to memory by the young student.

tion of subjects ; in order to attract, as far as I am able, and not repel the inquisitive mind of the youthful student.

Before I enter, however, on individual descriptions, it may be requisite to give a general view of quadrupeds : which will show the economy of nature in regard to this interesting class of animals ; and the marked superiority which, as Men, we possess over them all.

A comparative view of the various classes in animated nature, will sufficiently evince that quadrupeds rank next to ourselves. The similitude between their structure and our own, particularly in the ape race ; their instincts, which in some kinds seem to approach to the reasoning faculty ; their ability to render us essential service, and their power to injure us ; all conspire to render them prominent objects of our curiosity and regard.

At first, they were probably rivals to the dominion of Man ; but the generality of them have long become his helpers, or receded from his presence. Yet it must have required great and repeated efforts to break their independent spirit, when taken from their original state of wildness, and to render them domestic and tame.

The conformation of the internal parts of quadrupeds, bears a striking analogy to that of the human race. Like us, they rank above the class of birds, by being viviparous ; like us, they rank above the class of fishes, by respiring through lungs ; like us, they rank above the class of insects, by having red blood ; and, like us, they are different from all the other tribes of animated nature, by being either partially or wholly covered with hair. These circumstances of affinity ought to teach us mildness and humanity to such as are subservient to our interest or our pleasure, and at least to abstain from wanton cruelty to those that are either useless, or even noxious to us.

But though quadrupeds in general are thus strongly marked, yet some admitted into the Linnæan system are of an equivocal character, and appear to be sunk very low in the scale of existence. In every class there seems

to be a regular gradation from the most perfect to the most degraded, which latter approach the highest of the next inferior class. The whale, the seal, and the morse, connect quadrupeds with fishes ; the bat tribe, with birds ; and the armadillo with shells. The further they recede from the human figure, the lower they rank in that class to which they are referred.

However, though in quadrupeds there are upwards of two hundred and twenty species, and of course in such a variety there must be very different degrees of symmetry and adaptation, all are admirably calculated for the stations which they are doomed to fill. Even the sloth and the mole are not without their share of what makes life desirable ; and it is very likely that they enjoy as much happiness as their natures require.

Being formed in general for gathering up their food from the ground, the heads of quadrupeds are perfectly suited to their way of living, while their teeth are accurately framed for the nature of their aliment. This is perceptible in the granivorous and carnivorous kinds ; in the one, the teeth serve as the instruments to comminute their food ; in the other, as instruments of defence or annoyance. But not one or two members only of quadrupeds are thus happily adjusted to their pursuits or wants ; the further we carry our attention to the peculiarities of their structure, the more sensible we shall be of the wisdom that has formed their parts for the respective necessities and enjoyments incident to their nature.

Which ever way we turn our view, we shall find new subjects for our admiration and thankfulness. The larger quadrupeds are formed in general for an inoffensive life, or are subservient to the rule of man ; the smaller, if mischievous, are happily limited in their powers of annoyance, by their want of courage or of strength. Were the elephant and the rhinoceros as noxious as the tiger or the rat, how much would mankind have to apprehend from their magnitude and power ! But, happily for us,

and for the inoffensive order of animals, the most savage are few in number; and the rest are either timid or irresolute, unless when impelled by hunger, trusting in general rather to cunning than to force.

The arts of those that pursue, however, are not more various than the subtle devices of their prey to escape destruction. Indeed, were it otherwise, the feeble race of animals would soon cease to exist; and the more ferocious would be compelled to prey upon each other, till they were utterly exterminated also.

The lion, the tiger, and other predaceous animals, seldom come abroad during the day, but trust to the night for a supply of food. Thus man, who uses the interval of darkness as a season of repose, is not subjected to their attacks; and those creatures which are the object of their pursuit, either find safety by flight, or shelter and protection by sagacity. Some place a sentinel to warn them of approaching danger, and relieve each other in that situation by turns; others form a phalanx for their mutual security, and in the union of numbers find a means to counterbalance the assaults of individual strength.

Wild animals generally seek the most sequestered retreats, and shun the presence of man, who thus reigns undisputed lord of this nether world; the weaker fly to him for protection, and he knows how to tame the most ferocious. He destroys or saves, as suits his convenience or his will: his superior power creates a desert, or peoples a wilderness with passive or obedient slaves.

Animals in a savage state are subject to few alterations; but continue for ages the same in size, shape, and colour. Yet no sooner are they subdued and taken under the care of man, than their figure, and even their very nature, is gradually changed. A domestic animal, in particular, is humble, patient, and resigned; it cheerfully fills up the duties of its station; it is not averse to labour, and is satisfied with subsistence.

In the horse, the dog, and the cow, we perceive a num-

ber of varieties which have all been ingrafted on one parent stock by cultivation. Even the very appetites and habitudes of quadrupeds undergo a change, by the effects of human ingenuity. They may be taught to live on food which in a state of nature they would reject ; and to perform labours that not only evince docility but sagacity, and a desire to please.

On the other hand, some animals altogether lose even their natural instincts in the society of man. In those solitudes, where they are seldom disturbed, beavers possess abundant ingenuity, and live in a state of social order ; but let man intrude, and their ingenuity dies away, or is not exerted ; and their union is partially dissolved.

Next to human control, the climate seems to have the the most powerful influence on quadrupeds, in augmenting or diminishing their size, and in varying their colours or their coverings. Providence, in its wisdom, has furnished the animals of cold countries with long warm hair ; remove them to warm latitudes, and it becomes short and thin : again, transplant the natives of the tropics to the hyperborean regions, and they speedily assume a dress adapted to the rigours of their situation.

The influence of climates is likewise very perceptible on the disposition and character. Under the line and near the pole, quadrupeds are fierce and untractable ; in temperate latitudes they are generally docile and mild. Has not the climate a most potent effect on man also ? Are not the perfection of the human form, the beauty of the human face, the sublimities of genius, and perhaps the best virtues of the heart, more or less affected by situation ? External impressions seem to be sensibly felt throughout all the regions of nature ; and both rational and irrational beings must submit to their influence.

I shall conclude this cursory review of quadrupeds by a general remark, — that animals are more prolific in proportion to their smaller size. Providence has wisely balanced the strength of the great against the fecundity of the little, that no species may be entirely extinguished ;



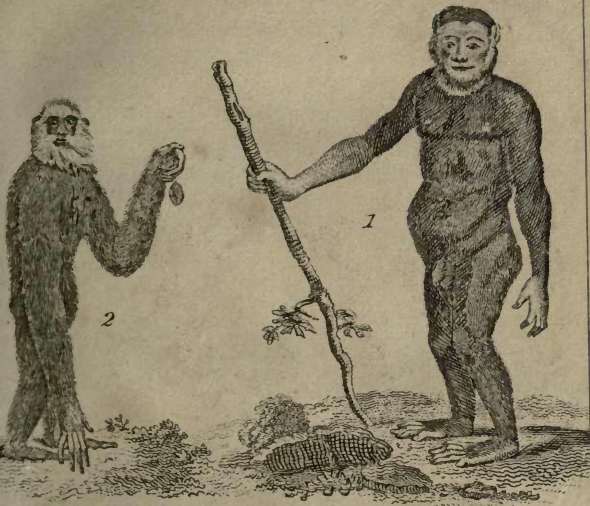


Fig. 1. Orang Outang.  
Fig. 2. Long Armed Ape.

Fig. 3. Barbary Ape.  
Fig. 4. Pigmy Ape.

Cooper sculp.

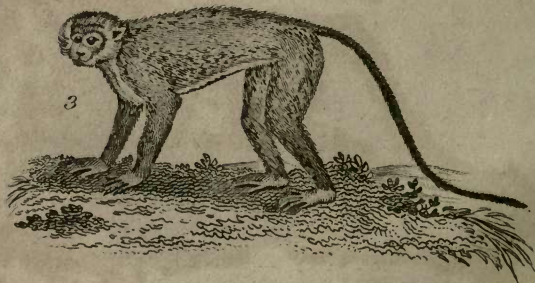
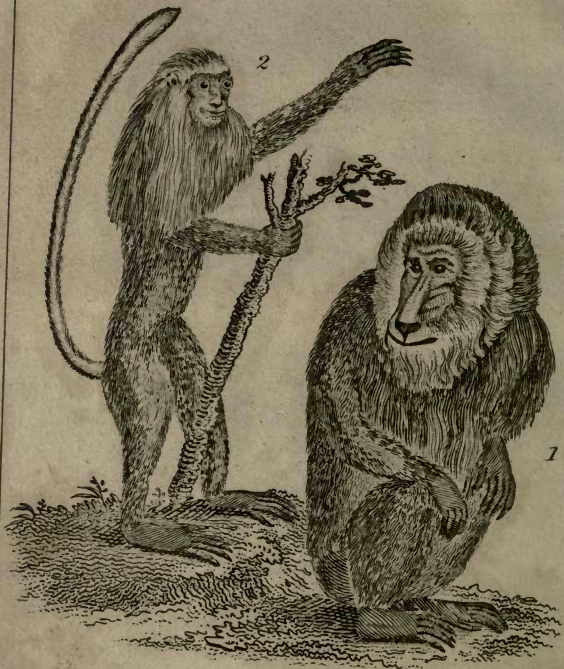


Fig. 1. Large Baboon.  
Fig. 2. Full Bottomed Monkey.  
Fig. 3. Green Monkey.

Cooper sculp.

and that man may enjoy the advantages which can be derived from the useful, without being too much annoyed by the formidable qualities of his terrestrial companions.

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## ORDER I.—PRIMATES.

NEXT to man, the APE tribe are the most remarkable in this order. Indeed they bear such a strong external resemblance to the human form, and possess so many instincts and powers of imitation, that they may serve for a lesson to humble the pride of such as value themselves on their personal beauty only; and furnish useful reflection to the wise and good, when they contemplate those mental faculties, and that immortal principle with which mankind are exclusively endowed.

APES, including BABOONS and MONKEYS, form a large tribe of animals, that enliven the tropical regions by their frolics, or annoy by the ingenuity of their malice. To describe them all would occupy too much space in this work, and occasion unnecessary repetitions. I shall therefore confine myself to a delineation of some of the most prominent, which will at the same time give a competent idea of all the rest.

### LARGE APE, OURANG OUTANG, OR WILD MAN OF THE WOODS.

Apes, properly so called, bear a most striking resemblance to the human figure; they walk erect, are destitute of tails, and are capable of imitating the actions of men with astonishing dexterity. The Ourang Outang, which makes the nearest approaches to man, is described by different travellers as possessing surprising swiftness, address, and ferocity; but they disagree in their account of his stature, some making it

three, others six, and even seven feet high. This diversity, if real, probably arises from climate or age: there is no doubt that the animal is frequently as tall as man, and much stronger. One of them was dissected by Dr. Tyson, who gives an interesting account of its comparative anatomy, but it is too long to be transcribed here.

These animals can seldom be taken alive, and therefore are not often seen in Europe. They inhabit the thickest part of the woods in the Moluccas, in Borneo, and other oriental islands; and are likewise found in the distant parts of India, on the continent of Africa, and in Madagascar. In some of those regions, hunting them is the favourite amusement of the grandees and princes; but the sport is not unattended with danger to its followers.

The Pongo, or Ourang Outang of Africa, according to Battel, resembles a man in all respects except in its superior size. Its face is almost entirely human; but its eyes are deep sunk in the head, and on each side of the visage are long hairs, which give it a ghastly appearance. The body is lightly covered with hair, and it walks erect and undaunted. It sleeps under shady trees, constructs a hut to shelter it from the heat and rain, and wholly subsists on fruits. Its instincts are remarkably acute; and it is so little subject to timidity, that when the negroes make fires in its vicinity, it approaches them to warm itself. It is a gregarious animal; and, whenever it meets a man alone and unarmed, it seldom shows him any mercy. It even attacks the elephants with clubs; and is thus the only creature, except man, that makes use of weapons. It is at once cunning, strong, and cruel; and is said sometimes to carry off the negro women.

An ape of this kind which fell under the notice of the illustrious Buffon, evinced unusual sagacity and powers of imitation. It walked on two legs even when it carried a burden; its air was always tinged with melancholy, and its whole deportment was grave. Unlike the baboon or monkey, whose motions are violent and appetites capricious, who are prone to mischief, and submissive only through

fear, this animal was circumspect and deliberate; and a look was sufficient to awe it into obedience. "I have seen it," says Buffon, "give its hand to show the company to the door. I have observed it sit at table, unfold its napkin, wipe its lips, make use of the spoon and fork to carry its victuals to its mouth, pour out its drink into a glass, join glasses when invited, take a cup and saucer and place them on the table, put in sugar, pour out tea, and leave it to cool before drinking; and all this without the slightest intimation from its master, and frequently without being required." It was extremely docile and inoffensive, approached strangers with respect, and seemed rather to expect caresses than to be disposed to offer injuries. It was particularly fond of sugared comfits, which every one readily gave it; but this kind of food contributed to shorten its existence. It continued in Paris one summer; and was then brought to London, where it died. It fed indiscriminately on whatever was presented, but showed a partiality for dry and ripe fruits. Wine in small quantities it did not absolutely reject; but gladly exchanged it for milk, tea, or any sugared beverage.

Many of these habits and propensities were, no doubt, the effect of education; for in a state of nature, the ape is unquestionably a very different animal. It is evident, however, from several trials, that, unlike the human race, it soon arrives at all the imitative perfection which it is capable of reaching, and in none of its actions evinces any thing like MIND.

#### PIGMY APE.

Though the face of this animal strongly resembles the human species, the body is not larger than that of a cat. It lives in societies; and is a native of Africa, particularly Ethiopia. It seems to have given rise to the ridiculous tales of Pigmies; who are described as a nation residing near the fountains of the Nile, and annually waging war against the cranes to steal their eggs. Vulgar prejudices long sustained the stories which poets and fanciful philo-

sophers invented; and the Indians, taking advantage of the credulity of the ignorant, sometimes embalmed this species of ape, and sold them as real pigmies.

#### LONG-ARMED APE.

To this extraordinary creature, Buffon gives the appellation of the *gibbon*. In its general conformation and attitudes, it bears a striking resemblance to the Ourang Outang, but the extreme length of its arms distinguishes it from all others of its tribe. There are several varieties of this species, found on the coast of Coromandel, in Malacca, China, the Moluccas, and other Oriental islands. In that curious and valuable collection of natural curiosities, the Leverian Museum, now unfortunately dispersed, was a specimen of this animal, in excellent preservation, three feet high, covered with a long soft hair, and having hands that reach entirely to the ground.

#### BARBARY APE.

Buffon distinguishes this species by the name of the *magot*. It seems to connect the ape family with the baboons: having a small protuberance on its rump resembling the rudiments of a tail; while the face is peculiarly prominent, and resembles that of a quadruped rather than of a man. The body is covered with a dull greenish hair, inclining to brown; the belly with a pale yellow. It has, however, flat nails, ears like the human, and bare posteriors. It commonly grows to the height of four feet; and is a native of India, Arabia, and the whole continent of Africa, except Egypt.

In proportion as apes recede from the human figure, they become more dull, vicious, and untractable. This species is frequently exhibited in Europe; where it is taught to perform a number of tricks, and acquires, from the impulse of fear, a degree of docility: but in its native haunts it is unamiable in all its manners; frequently assembling in troops, and robbing the women going to market of their baskets of provisions.

Among some savage nations, apes are considered as the principal divinities, and temples are erected to their honour. When the Portuguese plundered an edifice of this kind in Ceylon, they found the tooth of an ape in a small golden casket, which the natives held in such veneration that they offered seven hundred thousand ducats for its redemption; but the viceroy rejected this offer as savouring of idolatry, and ordered the precious relic to be burnt!

## BABOONS.

THESE constitute the second division of the ape kind; and form a large, fierce, and formidable race. They approach more nearly to the configuration of the brute than of the man, having all the wild impetuous motions of the former; they are moreover furnished with a tail, a prominent face, and sharp claws, which latter serve them as instruments of annoyance or defence.

The baboon, properly so called, grows to the height of from three to four feet: generally walks on all the four feet, though capable of preserving the erect posture; and is extremely libidinous and vindictive, — though some species, when detached from their fellows, may be trained to habits of comparative mildness and docility. They are all, however, naturally mischievous; and inspire terror from their ferocious aspect. They are the most numerous in Africa; particularly in the vicinity of the Cape of Good Hope, where they are sometimes trained to guard the houses like dogs.

### LARGE BABOON, OR PAPIO.

This animal has a very canine aspect; and is in some parts of a bright vermilion colour, and truncated at the extremity like a hog. The hair on the forehead is extremely

long and black, and forms a kind of pointed crest : the arms, legs, and head, are covered with short black and yellow hair intermixed ; the breast, with whitish hair of a yellow tinge ; the posteriors are naked, and the whole appearance is disgusting.

It grows sometimes to the height of five feet. Its strength is very formidable, and all its propensities are savage. It lives chiefly on succulent fruits and nuts ; and rejects all kinds of flesh, unless previously drest : but in a state of captivity it will drink immoderate quantities of wine or brandy.

This is a large, ugly, disgusting animal ; with a long muzzle of a bluish colour, strongly marked with wrinkles, which give it a very hideous aspect. It more frequently walks erect than on all-fours ; and, when displeased, mutters a kind of infantine whine. One of this species was formerly exhibited in England ; which, though pretty tame, appeared stupid, and had contracted a habit of blowing on those who approached it. There are several varieties. It is a native of the Gold-coast.

#### FIG-TAIL BABOON.

Buffon gives this animal the appellation of the *maimon*. It seems to connect the baboon with the monkey family : having a curled tail six inches long, from which it receives its name ; and a prominent visage of a swarthy red colour. It is about the size of a cat, and is a native of Sumatra and Japan.

This creature is extremely docile, and may be taught numerous tricks. Mr. Edwards kept one of them a whole year in London ; and, discovering another of the same species at a show of wild beasts, he brought the two foreigners together, when they gave evident indications of their mutual satisfaction at the unexpected interview.



## MONKEYS.

THE discriminating characteristic of this last division of the ape kind, is the length of the tail; an appendage which in the former two divisions is either very short, or entirely wanting. A great many species of monkeys have been discovered and described by naturalists; indeed, the tropical countries swarm with them, and every forest is inhabited by a different kind. Being generally of a diminutive size, they rather amuse by their tricks than alarm by their numbers or their power. They are easily restrained by correction; and, when brought into a state of captivity, soon begin to exercise their sportive tricks of mimicry. In their native haunts, however, where men seldom intrude, whenever they find an unprotected individual, they immediately commence their petty hostilities, chatter round him, and throw withered branches of trees, and even their own filth at his head. The hunting of them affords no little diversion to sportsmen, who destroy numbers of them, not for any purpose of utility, but from wanton cruelty: a barbarous pastime, which can only furnish pleasure to vacant and uncultivated minds, and is wholly indefensible. A very few species alone can be here particularised.

## HARE-LIPPED MONKEY.

The nostrils of this animal, which is about the size of a small greyhound, are divided like those of the hare; the head is large, the eyes are small, and the body is of a clumsy form; the colour varies from brown to olive; the tail, which is rather shorter than the body, is always carried archways. This species inhabits Guinea and Angola, and is full of frolic and ridiculous grimaces.

## GREEN MONKEY.

Buffon calls this species the *callitriche*, and Edwards the *St. Jago monkey*. It has a black nose, and a red flattish face, bounded by long yellow hair falling back-

wards like a mustachio, and almost covering the ears. The body is principally covered with soft yellow-greenish hairs, but the belly is of a silver hue. This elegant monkey is about the size of a cat, and is extremely agile and inoffensive: it inhabits various parts of Africa, the Cape de Verd islands, and the East Indies.

#### NEGRO MONKEY.

This species is about the size of a large cat, and is very common in Guinea. It is lively, entertaining, and good-natured; qualities which render it a favourite with the admirers of this tribe. The face is of a tawny flesh-colour; sprinkled with a few black hairs; the breast and belly are nearly of the same hue, while the hair on the rest of the body is long and black.

#### CHINESE MONKEY.

Buffon calls this species the *bonnet Chinois*. It is a native of Ceylon; has a long nose, of a whitish colour; the hair on the crown of the head is long, and divides in the middle; the body is of a pale brown. These animals assemble in troops to plunder orchards, corn-fields, &c.; and are so little intimidated at the presence of man, that, when driven from one extremity of an inclosure, they enter at the other, carrying off as much booty as their mouth and arms will contain.

#### FULL-BOTTOMED MONKEY.

The natives of Sierra Leone honour this species with the title of *bey* or *king of the monkeys*: they hunt it, however, for its skin, which they apply to several useful purposes. It has a short, black, naked face, and a small head. Its shoulders are bespread with long, coarse, flowing hair, of a dirty yellow colour mixed with black, resembling a full-bottomed wig; while the greater part of its body is covered with black glossy hair: this last colour makes a singular contrast with the former. The tail is very long, and of a snowy whiteness, with a tuft at its extremity.

## THE PREACHER MONKEY.

Buffon calls this species the *ouraine*. It is about the size of a fox; has long black hair, black shining eyes, and a round beard under the chin and throat; the tail is of considerable length, and twisted at the end. This species inhabits the woods of Brazil and Guinea. It is common for one of these creatures to ascend a tree, while the rest of its kind remain silent spectators below: it then sets up a loud and shrill howl, which may be heard at some distance; and after having (as it were) harangued its brethren for some time, it makes a signal with its hand, when the whole assembly join in chorus, which they continue till a second signal commands silence. The noise on such occasions is more hideous than can well be imagined. These creatures are very fierce and intractable.

## FAIR MONKEY.

This is the *mico* of Buffon, and is a very beautiful and elegant species. The head is small and round, and the face and ears are of a lively vermilion colour; its body is about eight inches long, and its tail twelve. These animals inhabit the sequestered banks of the river of the Amazons. Condamine, to whom one of them was presented by the governor of Para, informs us that the hair of the body was more venerably white than any human hair, while the tail was of a deep brown, inclining to blackness.

## MAUCAUCOES.

THIS genus of animals has still some faint resemblance to the monkey tribe; and may be considered as the last link in the chain of animals that have something of the human conformation. However, in maucaucoes we trace no more of this than in the shape of their fore-feet, which they use as hands: in all other respects they are wholly different, and bear a stronger likeness to the fox, than to the monkey.

As they are bred in the depths of unfrequented forests, we know little of their habits and way of living; but from analogy, it is probable, that in these respects they somewhat resemble the monkey. There are several species.

#### RING-TAIL MAUCAUCO.

This beautiful little creature is about the size of a cat; but its limbs are more elegantly formed, and the hind legs are longer than the fore. The tail is twice the length of the body, and is covered with fur alternately marked with broad rings of black and white: the eyes are very large, and surrounded with a broad black space; the body is covered with a reddish-coloured hair, soft, glossy, and erect, like the pile of velvet. This animal is extremely gentle, cleanly, and easily tamed; and possesses none of the malicious ingenuity of the monkey. It is a native of Madagascar.

#### TAIL-LESS MAUCAUCO.

This animal inhabits the woods of Ceylon and Bengal; where it feeds on fruits, eggs, and probably small birds. In its indolence and inactivity it resembles the sloth; creeping slowly along the ground, while it utters a plaintive cry. It has a small head, a sharp-pointed nose, and its eyes are surrounded with a black circle; the fur is short, soft, and of a silky ash-colour and red.

#### BLACK (OR RUFFED) MAUCAUCO.

Buffon calls this species the *vari*. It is considerably larger than either of the former; and may easily be distinguished by the hair round its neck, which projects like a ruff. The colour in general is black; but there are some varieties spotted with white. In its disposition it is fierce and savage, and in the loudness of its voice resembles the roaring of a lion: it is, however, capable of being domesticated; in which state it soon loses its native ferocity.

## BATS.

THIS genus seems to fill up the chasm between quadrupeds and birds; and some naturalists are unable to determine in which class it should be arranged. However, it has every characteristic of quadrupeds, and in some respects even approximates to the human race; on which latter account Linnæus places it among the *primates*.

## COMMON BAT.

This species is very common and well known in England; and flits about in fine summer evenings in quest of nocturnal insects, with a rapid but irregular motion. At other times it continues in its retreat; which is usually some interstice of a ruined building, or a hollow tree. Thus, even in summer, it dozes away the greater part of its time, never venturing abroad by day-light or in rainy weather; and when the winter approaches, it composes itself for that torpid state in which it lies during the cold season. For this purpose it seeks some subterranean retreat; where it generally hooks itself by the claws to some substance, and remains suspended, regardless of damps and every change of the atmosphere. Sometimes, however, when the bat has not been careful to remove far enough from the influence of the external air, the casual gleams of the sun revive it prematurely; and then it is in danger of starving for want of food, or of becoming the prey of owls or other rapacious animals.

This creature is about the size of the mouse. The membranes, commonly called wings, are merely the four interior toes of the fore-feet extended to an enormous length, and connected by a thin membrane which reaches also to the hind-legs, and from them to the tail. The female brings forth from two to five young at a time; and suckles them like quadrupeds.

All the species of bats found in Europe are harmless, inoffensive creatures; but in tropical climates they are very formidable, particularly when united in flocks. In

these regions a flight of bats is sufficient to obscure the setting sun; and in the morning they are seen sticking and fluttering on the tops of trees, like a swarm of bees.

#### GREAT BAT OF MADAGASCAR.

Buffon gives the appellation of the *rousette* to this formidable animal; which is nearly four feet broad when its wings are expanded, and about one foot long. It is a native of Guinea, Madagascar, and (according to captain Cook) of most of the newly-discovered islands in the South Sea.

These bats assemble in prodigious numbers; sometimes by day (when they darken the air) as well as by night; and indiscriminately devour the fruits of the earth, animal flesh, or whatever they can seize. Scarcely any thing is secure from their depredations: and it is very probable, as Buffon remarks, that the ancients borrowed their ideas of harpies from these fierce and voracious creatures; for, like those fabled beings, they are deformed, greedy, uncleanly, and cruel. They make a frightful noise in the forests during the night; but at the approach of day generally seek for quiet and concealment.

They are believed to be extremely fond of human blood, which they suck from persons when asleep. It is not unlikely, indeed, that all bats have a partiality for this kind of nourishment; but the following species seems to be the most dexterous and terrible in this respect.

#### VAMPIRE, OR SPECTRE BAT.

Though this animal is less formidable in its appearance, it is much more mischievous than the preceding. It is a native of South America, where it lives in the palm-trees; and, according to Ulloa, leaves its retreat towards the close of the day, and covers the towns and cities in countless multitudes, like a lofty and extensive canopy. It is then the common pest of men and animals; destroying every thing that has life, which it finds asleep and exposed to the air,

Persons attacked by this blood-thirsty creature have sometimes passed from a sound sleep to a state of death. It dexterously insinuates its sharp-pointed tongue unperceived into a vein, and sucks the blood till it is satiated: at the same time fanning and agitating the air with its wings; the effect of which motion, in hot climates, lulls the sufferer into a more profound sleep. It is therefore highly dangerous for the traveller to sleep abroad; or even, if under shelter, to leave any entrance unsecured by which the vampire can be admitted. It does not, however, confine its attacks to the human race: for M. de Condamine assures us, that in certain parts of South America, these bats have destroyed all the cattle that were introduced thither by the missionaries, for the purpose of forming a settlement.

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## ORDER II.—BRUTA.

ANIMALS of this order are armed with strong hoofs, masticate their food, and are not formed for swift or elegant motion. There are six genera, and about seventeen species.

### ELEPHANT.

Of this noble animal, the largest of all quadrupeds, there are several varieties, but all agreeing in their generic and specific distinctions. Among the inferior orders of animals, we frequently find a genus consisting of several species, all sufficiently distinct: but the nobler kinds vary only in size or colour; as they are influenced by climate, food, or other external causes.

Concerning the elephant much has been written in all ages, yet we are still ignorant with regard to some peculiarities belonging to it. Lately, however, much new light has been thrown on the subject by some of our scientific countrymen in the East-Indies; from which at length we learn that it copulates like the horse and the mare,

and that the period of female gestation lasts about two years; facts which had been long disputed, and which for ages lay hidden in obscurity. Too proud to propagate its kind in a state of captivity, and to rear a race of slaves, or perhaps too modest, its natural propensities were in a great measure extinguished as soon as it became the servant of man; and it is only from accidental observation that several of its habitudes have been discovered.

All historians agree, that next to Man the elephant is the most sagacious of all animals; yet were we to judge from its external appearance only, we should form no very high opinion of its faculties. Its large body, covered with a callous hide destitute of hair; its vast unshapen legs, which scarcely seem formed for the least degree of motion; its small eyes, its large pendulous ears, and its long trunk; all conspire to give it an air of more than common stupidity: but, when we advert to its well-known qualities, our misconceptions are rectified; and when we contemplate the various disadvantages arising from its awkward conformation, which it is able to surmount, our surprise and admiration increase.

As no verbal description, however elaborate, can give an adequate idea of its figure, I shall pass over this part of its history, and endeavour to display the leading points of its character.

Though not only the largest but the strongest of all quadrupeds, in a state of nature it is neither fierce nor mischievous. Pacific, mild, and brave, it only exerts its powers in its own defence, or in that of the community to which it belongs. It is social and friendly with its kind: the oldest of the troop always appearing as the leader, and the next in seniority bringing up the rear. As they march, the forest seems to sink beneath them: in their passage they bear down the branches of trees, on which they feed; and if they enter cultivated fields, the labours of agriculture soon vanish. Nor can such terrible invasions be repelled; for a whole army of men would scarcely be equal to the attack of their united numbers. Some-



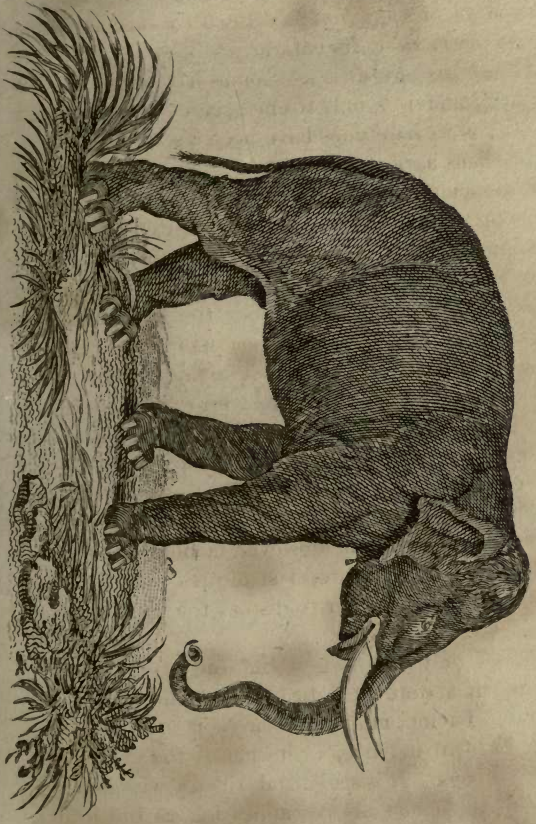


Plate 4.

Cooper's study

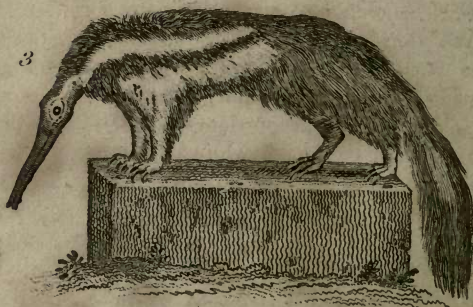
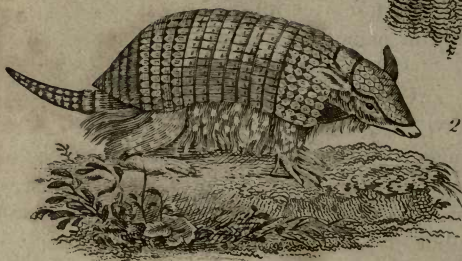
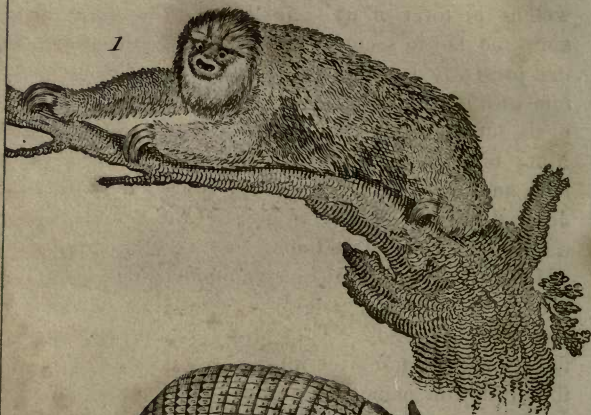


Fig. 1. Sloath .  
Fig. 2. Armadillo  
Fig. 3. Great Ant-eater .

Cooper sculp.

times, however, a straggler is assailed by the hunters: and even in this case, it is necessary to employ stratagem as well as the force of arms; for, should the hunter miss his aim, and fail to secure a timely retreat, the enraged animal presently discovers its assailant, rushes on him, strikes him with its tusks, seizes him with its trunk, tosses him in the air, and, watching his fall, tramples him to death. Many fatal instances of this kind are recorded by travellers; and a very striking one may be found in Van Reenen's Journal of an expedition in quest of the unfortunate crew of the Grosvenor East-Indiaman.

In their natural state, elephants delight in frequenting the banks of rivers, and moist situations, environed with the thickest woods. They always disturb the water before drinking; and often fill their trunks with it, spouting it out in the manner of a fountain, for amusement or revenge.

In the city of Delhi, as an elephant was passing along the streets, it put its trunk into a tailor's shop, where one of the men at work pricked it with a needle, to please himself and his comrades with the frolic. The animal disguised its resentment at the time: but, proceeding to a dirty puddle, filled his trunk, and, returning to the spot, spouted the contents on the offending tailors; thus amply revenging the insult it had received.

In Africa elephants are perhaps the most numerous, but in Asia they are the largest and most useful to man. In India particularly, they are inured, by regular and persevering labour, to the purposes of peace and war; and are sold at prices proportioned to their size, and sometimes to their colour: a white one is held in the highest estimation, and in some places is adored by the native Indians as a divinity.

When the elephant is once tamed, it is the most gentle and obedient of all animals. Its attachment to its keeper is remarkable; and it seems to live but to serve and obey him. It is quickly taught to kneel in order to receive its rider; caresses those with whom it is acquainted; and

uses its trunk as an arm and hand, to assist in taking up a part of its load.

The conductor of the elephant, who is usually mounted on its neck, impels it with an iron rod: but in general a word is sufficient to put it into motion, when once acquainted with its leader; and indeed it will seldom obey a stranger. There are instances, however, of its having in a sudden frenzy, from supposed ill-treatment, killed its keeper; when its compunction has afterwards appeared to be extreme.

An elephant which had been trained to draw the cannon of the French forces in India, being taught to expect a certain reward from its conductor for the performance of an arduous piece of service which it executed, and being afterwards disappointed, was so enraged, that it slew him. His wife, who had been a spectator of the horrid scene, instigated by madness or despair, immediately threw her two infant sons at the creature's feet; crying out, that since it had killed her husband, it might destroy them also. The generous animal, recovering from its transport of passion, made a sudden pause; and, lifting the eldest with its trunk, placed him on its back, and ever after obeyed him with the most scrupulous punctuality.

Before the destructive use of fire-arms was known, the princes of the East placed their chief dependence in war on the number and discipline of their elephants; but now they chiefly use them for parade, or as beasts of burden. No animal in nature can be better adapted for the latter purpose; for it is capable of drawing with facility what six horses could scarcely move; it can support three or four thousand pounds weight on its back, and one thousand on its trunk alone; and when urged, it can travel nearly a hundred miles a day, and without violent effort, fifty or sixty.

In India, elephants are also taught to execute criminals; whom they either crush with their trunks, or impale on their tusks. But in these barbarous offices, they

are not voluntary assistants: they only act by command; and do violence to their natural disposition, when they are cruel without provocation.

It is scarcely necessary to mention, that the teeth of this animal are of great value, and that they furnish the article of ivory. For the sake of these alone, elephants are frequently killed; and the hunter who is fortunate enough to obtain such a prize, thinks himself amply recompensed for his danger and trouble in the chase.

The elephant is said to live upwards of a hundred years. To his longevity and other prominent qualities, THOMSON alludes in the following animated lines:

Peaceful, beneath primeval trees, that cast  
 Their ample shade o'er Niger's yellow stream,  
 And where the Ganges rolls his sacred wave;  
 Or mid the central depth of black'ning woods,  
 High raised in solemn theatre around;  
 Leans the huge ELEPHANT, wisest of brutes.  
 O truly wise! with gentle might endow'd;  
 Though powerful, not destructive. Here he sees  
 Revolving ages sweep the changeful earth,  
 And empires rise and fall; regardless he  
 Of what the never-resting race of men  
 Project: thrice happy could he 'scape their guile!  
 Who mine, from cruel avarice, his steps;  
 Or with his tow'ry grandeur swell their state,  
 The pride of kings; or else his strength pervert,  
 And bid him rage amid the mortal fray,  
 Astonish'd at the madness of mankind.

#### DUCK-BILLED PLATYPUS.

This singular animal is a native of New Holland; but is scarce, and little known. A projection over the mouth resembles the beak of a duck, from which it derives its name, though it has teeth like other quadrupeds. Its length, from the tip of the beak to the extremity of the tail, is little more than a foot, and the whole form and appearance have some resemblance to the otter. The fur is soft, of a darkish brown colour, and whitish beneath. The feet are short, and terminate in a broad web: from

this circumstance, it appears adapted to watery situations; and, accordingly, we are told that it burrows in the banks of rivers, and feeds on aquatic plants and animals. With its general habits we are unacquainted.

#### SEA-COW, OR MANATUS.

This animal in many respects resembles the whale; bringing forth its young in the water, and suckling them in that element. Indeed what are called its feet are little more than fins calculated for swimming; for though it subsists on vegetables, it never wholly leaves the water, and therefore can scarcely be called amphibious.

It grows to an enormous size; according to Dampier, some have measured twenty-eight feet in length, and weighed eight thousand pounds. The skin is of a blackish colour, very tough and hard; the eyes are small, and it has only orifices for ears. The female produces but one at a time; which she grasps in her paws, and hugs to her breast, in all her motions.

The sea-cow frequents the edges of the shores of Kamtschatka, and the banks of some of the large rivers of South America, as well as several of the Indian bays. It associates in small groups, and shows uncommon affection for its mate and its young. The flesh is eaten, and is thought to resemble beef; but the oil is the most valuable part of its carcass.

#### THE MORSE, OR ARCTIC WALRUS.

This animal is another species of the same genus. Its length from the nose to the tail is from twelve to eighteen feet, and it generally measures twelve feet round in the thickest part. The teeth are commonly from two to three feet long, and are more esteemed even than those of the elephant: they weigh about twenty pounds each.

The morse inhabits the coasts of Spitzbergen, Nova Zembla, Hudson's Bay, the Gulf of St. Lawrence, and the Icy Sea. In some places a hundred of them may be seen together. They are extremely timid; but, when at-

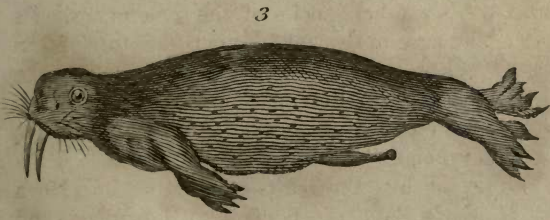
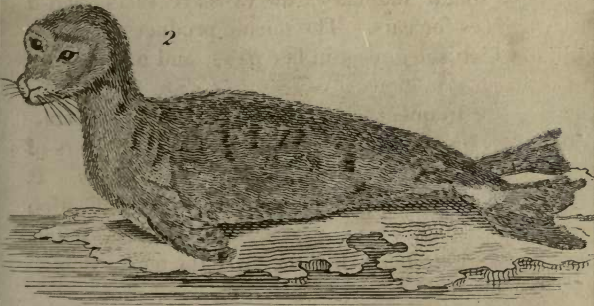


Fig. 1. Morse .  
Fig. 2. Seal .  
Fig. 3. Fied Seal

Cooper sculp.



Fig. 1. The Shepards Dog  
Fig. 2. Hound.

Fig. 3. Mastiff.  
Fig. 4. Pug Dog.

Cooper sculp.



tacked, fight with great animosity, and frequently upset the boats that are in pursuit of them.

These animals never venture ashore till the coast is clear from ice. The hunters, who watch their landing, destroy numbers of them for the sake of their oil and teeth. They feed on marine herbs and fish; and appear to be a match for any enemies that dare contend with them, except man and white bears.

#### THE SLOTH.

This is one of the most disgusting animals in nature: its hideous and awkward conformation, the slowness of its motion, and the pain with which all its efforts are attended, are calculated to excite aversion rather than pity. There are two varieties; one distinguished by having two claws to each foot, the other three: they resemble each other, however, so nearly, that one description will suffice for both.

The sloth is about the size of a badger. Its fur is coarse and irregularly set; its tail a mere stump; and its mouth extends from ear to ear. The nose is blunt, the eyes are black and heavy, and the ears small; the legs are thick, and awkwardly placed; so that it can move only one of them at a time, and it requires an hour to advance three yards.

It inhabits the eastern coasts of South America, and is likewise found in Ceylon and India. It subsists wholly on vegetable food, particularly the leaves and bark of trees. Having by the most laborious exertions ascended a tree, it remains there, till it has stripped it of every thing that can be eaten; it then rolls itself into a ball; and, to save the trouble of a gradual descent, falls on the ground with a horrid scream. Here it lies for an hour, apparently in a state of insensibility. On recovering, it prepares to climb some other tree; at every motion uttering a plaintive and melancholy cry, which seems to be ordained by Providence as a principal means of its protection, beasts of prey always flying from the sound of its voice.

Were we to judge of the happiness of this animal from our own sensations, we should be tempted to pronounce it most unfortunate; but it has probably enjoyments peculiar to itself. Its indolence may be bliss, and its deformity is certainly a source of security. A single tree will furnish it with subsistence for a fortnight; and therefore it has plenty without much labour in searching for it. At the same time that it is very little delicate in the choice of food, it is capable of supporting great abstinence; and has been known to subsist forty days successively without any nourishment whatever. As it would be impossible for a creature of such imperfect conformation to find water, nature has indulgently taken care that it shall experience no inconvenience from the want of it. Thus, balancing its advantages and disadvantages, though one of the most unsightly of animals, it is perhaps not wholly miserable.

#### ANT-EATER, OR ANT-BEAR.

There are several species of this animal; all of which agree in having a small mouth, and a long cylindrical tongue calculated to supply the want of teeth. They prey on ants with destructive ingenuity; and among the many enemies with which this laborious race has to contend, none are so formidable or so insidious.

In reviewing this genus of animals, to which Buffon gives the name of *tamandua*, it is observable that the snout measures nearly a fourth part of the length of the body, and is very little thicker at the extremity than between the eyes. The tongue is generally doubled in the mouth, and is the only instrument by which these creatures can procure their subsistence. Unable to defend themselves by strength or artifice against animals of superior force and agility, they retire for security to the darkest forests, or the most deserted mountains. — They are principally found in the New Continent; where some of the most helpless, the most deformed and monstrous productions of nature, have been discovered. They conceal them-

selves under withered leaves, and seldom venture from their retreat till impelled by the calls of hunger. The industry of an hour will suffice to procure them a supply of food for several days; as ants are not only large, but immensely numerous in those climates where the animal now under consideration is a native.

When they discover an ant-hill, they approach it slowly and silently; and having taken a favourable position, stretch out their long viscid tongue across the path of the ants. As soon as a sufficient number have overspread the tongue, they draw it into their mouth; repeating the process till their hunger is satiated, when they again retire to their lurking-places.

Though the ant-eater avoids all its enemies with diligent care, and never provokes a combat with other quadrupeds, yet, when closely attacked, it will defend itself against the dog, and even the jaguar, by means of its claws, with the most resolute animosity. In short, wherever it fixes, it never relinquishes its hold while it has life.

#### GREAT ANT-EATER.

A particular description of this species may serve to give a competent idea of all the rest. In the Leverian Museum was a specimen upwards of seven feet long, and about two feet high. The tongue is thirty inches long; the nose, or snout, is long and slender; and the eyes are small and black. On each of the fore feet are four toes, and five on the hind feet: the two middle claws are very strong, large, and hooked. The hair on the upper part of the body is black, mixed with grey; and generally about six inches long. A black line, bounded with white, extends from the neck across the shoulders to the sides; and the tail is covered with long, coarse, black hair.

This animal is a native of Brazil and Guiana. The female brings forth but a single young one at a time, and on these occasions proves extremely fierce when provoked. The flesh of the ant-eater, though rank and unpalatable to Europeans, is highly prized by the Indians.

## THE MANIS.

There are two species of this genus, one with five and the other with four toes on the feet. The latter has likewise a long tail: in other essential characters there is no difference.

## THE SHORT-TAILED MANIS.

This is the *pangolin* of Buffon. It is a native of the hottest climates of the Old Continent; and appears to be better protected by nature from external injury than any other animal whatever. The body, which is about three feet long, is defended by a scaly covering in every part that is exposed: the scales lie over each other like the leaves of an artichoke; and are of a horny substance, and externally convex. In the interstices, hairs are perceptible; yellowish towards the roots, and bristly at the extremities. Like the lizard, it has a small head, without any teeth; a long nose, short legs, and a tail of nearly equal length with the body.

It is said that the scales of a full-grown manis are able to resist a musket bullet. On the approach of danger, it rolls itself up like the hedge-hog; twisting its tail round it, and presenting the acute edges of its scales to the assailant. In vain do the tiger, the leopard, and the hyena attempt to force it; in vain they tread it under foot, and roll it about with their paws: the manis remains perfectly inviolable under its coat of mail; while its assailants suffer, more or less, for their temerity. The negroes, however, who esteem its flesh a great delicacy, beat it to death with large clubs:—against the power of Man, to whom all nature submits, its arms are unavailing!

Though thus formidable in appearance, the manis is naturally a very inoffensive animal; subsisting chiefly on insects, which it catches on its long slimy tongue, like the ant-eater. It chiefly inhabits the inaccessible parts of the forest; and forms for itself a retreat in the cleft of some rock, where it brings forth its young. It is a soli-

tary animal, and the species seems to be very limited. It has no particular cry, but sometimes utters a sort of snorting noise.

## THE ARMADILLO.

Nature presents us with several species of this singular genus: distinguished, however, by the number of bands of which its covering is composed, rather than by any peculiarity in form and manners; for which reason I shall confine myself to the general description of the kind.

The armadillo is an inhabitant of South America: and is perfectly harmless and inoffensive; presenting only its covering by way of repelling external injuries, and never seeking to molest other animals.

Like the tortoise, it is covered with a shell, or rather a number of shells, which at first view prevents its true proportions from being accurately discerned. It appears a round mis-shapen mass, with a long head and a very large tail: the size varies from one to three feet in length; but the body is universally covered with a shell, divided into several pieces folding over each other, not unlike the tail of a lobster. This shell is of a bony substance; and leaves no vulnerable part except the throat, the breast, and the belly: even these two are projected by a white skin more or less ossified. The bands of this coat of mail, sliding over each other by means of a connecting membrane, give the animal every necessary power of inflection and motion. Still, on the approach of danger, it does not confide solely in its external covering; but withdrawing its head into its armour, it presents the appearance of a ball somewhat flattened on each side, which may be tossed about without injury. The Indians, however, who are particularly fond of its flesh, lay it close to the fire; when the poor animal is thus compelled to expand itself, and submit to its fate.

Not a single species of the armadillo has ever been discovered in the Old World; yet this animal can bear the severity of our cold climates without any apparent inconve-

nience. It subsists chiefly on vegetables and roots; and burrows in the earth with as much facility and expedition as a mole; being furnished with remarkably strong and crooked claws, generally four on each foot. If seized by the tail while in the act of grubbing up the earth, it will sometimes leave that part in the hand of the person, rather than suffer itself to be pulled back. However, it is frequently dislodged by digging; and sometimes hunted by a sort of small dog bred to that kind of chace, which at once enters its burrows and seizes upon it. It is likewise caught in snares; but, as if sensible of the various dangers to which it is exposed, it seldom ventures far from its retreat.

Between this animal and the rattlesnake, the closest friendship is said to subsist. They are frequently the tenants of the same subterraneous apartment: it is probable, however, that the rattlesnake is in this case an intruder; and that the armadillo merely indures, rather than solicits, the connection. Each, secure in its own powers, preserves a kind of neutrality; neither of them offering hostility to the other.

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### ORDER III. — FERÆ.

THIS comprehensive order contains at once some of the most formidable and some of the most contemptible animals. We find in it, among various other creatures, the lion, the tiger, the hedgehog, and the mole; all of which have teeth similarly constructed, and from that circumstance arises their association in the system.

#### THE SEAL, OR SEA-CALF.

There are several distinct species of this genus; but I shall confine my observations principally to the common seal, which is a native of the European seas

This animal resembles a quadruped in some respects, and a fish in others. The head is round, and the nose

broad ; with large sparkling black eyes and oblong nostrils : it has no external ears, but there are two holes which answer the same purpose. The body is the thickest at the junction of the neck, and thence goes tapering towards the tail ; and is covered with thick, bristly, shining hair, of various shades. The feet are of a singular conformation ; and, were it not for the claws with which they are armed, might well be taken for fins : they do indeed assist the animal in swimming, by means of their connecting webs.

The ordinary length of the seal is from about five to six feet. It is found in every quarter of the globe, but chiefly in the southern and northern regions. It swarms near the arctic circle ; and in the lower parts of South America, in both oceans. It generally lives in the water, where it subsists on fish : sometimes, however, it ventures ashore, and basks on the rocks ; but the instant it is disturbed, it plunges to the bottom.

On the shores of the North and Icy seas, where the inhabitants are few, seals may be seen by thousands on the rocks, suckling their young. Like all gregarious animals in a wild state, they keep one of their number on the watch ; and on the first signal of danger, instantly disappear.

It is remarkable that seals generally forsake the sea during storms and tempests, and repair to the shore ; along which they sport, enjoying the conflict of the wind and waves. They also migrate from one part of the world to another in immense droves, accompanied by their young ; either from an instinct to plant new colonies, or driven away by the older inhabitants of their native depths.

The female generally produces two or three at a time. The young seals are remarkably docile ; they at once distinguish and obey the voice of their dam, amid the numerous clamours of the herd ; which sometimes resembles the bleatings of sheep, and sometimes the shriller outcries of a cat. The males frequently have violent conflicts in

defence of their mates, and watch over the conduct of the latter with a jealous eye.

The flesh of the seal is accounted wholesome, but these animals are killed chiefly for the sake of their skin and oil. To the Greenlanders they furnish almost every necessary of life, and are indeed a principal article of their wealth. Formerly the flesh of the seal was esteemed delicate eating at the tables of the great and opulent, even in our own country; but, though met with in abundance on several parts of the British coasts, we never find them entering into a modern bill of fare.

#### URSINE SEAL.

This animal, which also has the appellation of *the sea-bear*, usually associates with the manatus and the sea-lion, on the coasts where they are found; which is chiefly in the high latitudes, between America and Asia. From June to September it inhabits the islands off Kamtschatka; where it brings forth its young in perfect security, and during this period leads a very indolent life.

The ursine seals live in families, each male having several females under his superintendance. Such as are grown old, or are destitute of mates, live apart from the rest, and appear melancholy, peevish, and turbulent. There are frequent combats among the males; for a female is never won or lost by them without a contest, and she always follows the victor.

The male is very affectionate to his offspring: but, though sufficiently attentive to his favourite females, he keeps up a distant kind of superiority, and seems to exact their obedience, which they manifest by the most prompt submission to his will. The male is considerably larger than the female; a full grown one is about eight feet long, and weighs not less than eight hundred pounds. The fore legs, which are about two feet long, are furnished with toes covered with a naked skin: the hind legs are somewhat shorter, and are placed far back: yet they are capa-



ble of being brought forward, and used on occasion. All the toes are connected by webs.

The hair of these animals is rough and long, and generally black in the males; that of the females is cinereous. The flesh, when young, is reckoned very good eating. These creatures are extremely fierce, and will defend themselves with wonderful resolution and strength.

#### THE LEONINE SEAL.

Cook, Forster, and others, have given this appellation to an animal which differs considerably from the sea-lion of Linnæus. It is a very formidable creature; the largest of them measuring frequently from ten to fourteen feet in length, and weighing from twelve to fifteen hundred pounds. It is found in great numbers in the sea of Kamtschatka, and on the coast of Patagonia. It has a large head, long thick whiskers, and the neck and shoulders of the male are covered with long waving hair. The colour is commonly a deep brown.

These animals are gregarious, each male retaining from twenty to thirty females. They have all a fierce aspect, and make a terrible roaring; but, on the approach of men, commonly seek for security in the deep.

#### THE DOG KIND.

This is an extensive genus. They are furnished with six cutting and two canine teeth in each jaw, five toes before and four behind, and have the tail bent towards the left; which last property is the usual characteristic of the whole kind.

Of this tribe, the dog indisputably claims the pre-eminence; being at once the most intelligent and the most friendly to man, of all quadrupeds. Independently of the beauty of his form, his vivacity, force, docility, and swiftness, he is possessed of all those complacent qualities which are most likely to conciliate the affection of men. Having been long domesticated, and thus become familiar with human society, he scarcely retains a symptom of his

savage state, and seems to have no higher ambition than that of pleasing and being serviceable. He is not only faithful and attached to his master beyond example in other animals, but is even his friend, and enters into all his predilections and animosities. He is the companion of his vacant hour, the promoter of his pastime, the defender of his property, and his unalterable adherent, both in prosperous and adverse fortune.

The original wild dog is now utterly unknown in the Old Continent : but in America there are numbers which, though first introduced by Europeans, have now become savage ; and these show what the creature would be, were it not reclaimed by man. They hunt in packs, attack every animal they are likely to master ; and thus give a loose to their natural appetite of rapine and cruelty. They are easily tamed, however, and by kindness soon become sensible of attachment and submission : a proof that the dog was originally designed to be a friend, not an enemy, to man ; to assist, not to injure or contend.

This susceptibility of education and improvement is evinced not only in his disposition, but in his form. Hence the varieties of the dog are become too numerous to particularize, and they are every day increasing. Food, climate, and the habits of domestication, all make sensible impressions on him. Nothing seems to remain immutable with him, except his internal conformation, and his attachment to the human race. All the breeds propagate together, by which union a kind, different from either the sire or the dam, is frequently produced. It is generally observed, however, that the males bear the strongest resemblance to the dog, and the females to the bitch.

From these causes, the most accurate naturalists have found it impossible to discriminate all the canine varieties ; but they have generally agreed in considering the shepherd's dog as the parent stock from which the rest are derived ; as all these have a tendency to assume the form of that animal, and he is found more widely disseminated than any other kind.

The period of gestation in the bitch is commonly nine weeks: the young are produced with their eyes closed, and in other respects imperfectly formed. They are very little, delicate in regard to food; and though voracious, are capable of supporting a long abstinence. But this animal, however useful and engaging in other respects, is unfortunately subject to madness; and thus frequently gives rise to one of the most dreadful maladies that can afflict human nature, and for which no infallible cure has been hitherto discovered.

#### THE SHEPHERD'S DOG.

I have already mentioned this variety, as the parent stock of the canine kind. It is found in almost every country of the world, with very little alteration in its appearance; and is so generally well known as to preclude the necessity of a particular description.

#### THE HOUND.

There are three varieties of this dog, all of which are produced by the same dam; the hound, the harrier, and the beagle. They are each adapted for hunting. They have long pendulous ears, an obtuse nose, a large mouth, and a loud note.

#### THE SPANIEL.

The name seems to indicate that this variety was originally introduced from Spain, but Britain has long been famous for producing excellent dogs of this kind. The varieties, however, are too complex to be either described or enumerated. The pointer was entirely unknown to our ancestors; and it appears that some kinds, mentioned by our early naturalists, are now totally extinct.

#### THE GREYHOUND.

This is by far the swiftest of all dogs; and pursues its game by the sight, not by the scent. Formerly it was penal by the law of the land, for any person below the

degree of a gentleman to keep a dog of this kind. There are several varieties; as the Italian greyhound, the Oriental greyhound, &c.

#### THE IRISH WOLF-DOG.

This beautiful and majestic animal is now nearly, if not wholly, extinct in the only country that ever produced it; being reduced, many years since, to a male and two females, in the possession of the Earl of Aldborough. As wolves are no longer to be found in Ireland, we need wonder the less that the breed has been so much neglected. According to Buffon, this variety was the true Molossian dog of antiquity.

#### THE DANISH DOG.

This dog bears a strong resemblance to the mastiff; except that its head is larger, and its body more slender. It carries its tail turned up, and has a prominent forehead. Of this kind, perhaps, were the dogs of Epirus, mentioned by Aristotle, and those of Albania, described by Pliny.

#### THE MASTIFF.

Britain was formerly so famous for this noble breed of dogs, that the Roman emperors maintained certain officers in this island, whose sole employment it was to train these animals for the combats of the amphitheatre.

Dr. Caius, who wrote in the reign of queen Elizabeth, affirms that three English mastiffs are a match for a bear, and four for a lion. From an experiment, however, made in the Tower by king James the First, it was found that a lion was an unequal match for only three of them; for, though two of the dogs were disabled in the conflict, the third made the lion turn his back.

#### THE BULL-DOG.

This is a very fierce, strong, and savage creature, frequently seizing or biting without giving any notice of his approach. He is peculiar to this island; but, since the

savage sport of bull-baiting has given way to more refined pastimes, the breed has grown scarce. Humanity is almost prompted to indulge a wish that it may become utterly extinct. As long as even one of the species remains, it will recall the remembrance of vulgar barbarism, and perpetuate the stigma of our former tasteless amusements and cruel manners, of which pugilism is now the prominent disgrace.

#### THE TERRIER.

This is a faithful sagacious creature; of material use to sportsmen, and much esteemed as a vigilant domestic guard. As the caprices of mankind fluctuate, some varieties of dogs become fashionable, while others fall into decay. The terrier has been, for some time past, of great estimation in this island; and, from a wish to improve the old breed, considerable pains have been taken to raise a spotted variety, which is now a favourite (and deservedly so) for its beauty and its numerous agreeable qualities.

The pug, the gaze-hound, the blood-hound, the leymmer, the lap-dog, the harlequin, the cur, the shock-dog, the fox-dog, the turnspit, and the lion-dog, are all mentioned and described by zoologists; but, in general, they are too well known to require a description in this place. The three following varieties, however, are entitled to particular notice.

#### NEWFOUNDLAND DOG.

This very valuable species was originally brought from the country whose name they bear, but is now generally diffused over the British islands; and for strength, sagacity, docility, and an instinctive aptitude to save persons, who have accidentally fallen into the water, from drowning, are highly and justly esteemed. They are web-footed; and delight in swimming and diving. Many interesting anecdotes are recorded of their fidelity and attachment.

## NEW-ZEALAND DOG.

This species, which seems originally to have been brought from New Guinea, is likewise found in the Society islands, and pretty much resembles the shepherd's cur. In those islands they constitute the common food of the inhabitants, who previously take great pains to fatten them with vegetables. Europeans, who have so far overcome their prejudices as to taste the flesh, have found it sweet and palatable. However, the custom of eating dog's flesh has not been confined to those islanders alone; for history informs us, that both the Greeks and Romans fed on this viand, and the latter deemed young puppies a proper offering to the gods.

## KAMTSCHADALE DOG.

According to captain King, who gives a very interesting account of this variety in Cook's third voyage, it strongly resembles the Pomeranian or wolf-dog, except that it is larger, and covered with a coarser hair. It varies in colour; but the prevailing one is a light dun, or a dirty cream.

These very useful animals are employed in drawing sledges over the snow, and are trained to this business when puppies. Five of them (in pairs, with a leader) are generally yoked to a sledge of peculiar construction, capable of carrying a passenger besides the driver, who is provided with a crooked stick, which answers the double purpose of whip and reins.

Of the fleetness of these dogs we have unquestionable evidence, as well as of their extraordinary patience under the combined hardships of hunger and fatigue. "We were ourselves witnesses," says captain King, "of the great expedition with which the messenger who had been dispatched to Balcheretsk with the news of our arrival, returned to the harbour of St. Peter and St. Paul, though the snow was at that time exceedingly soft: and I was informed by the commander of Kamtschatka, that this journey was generally performed in two days and a half;

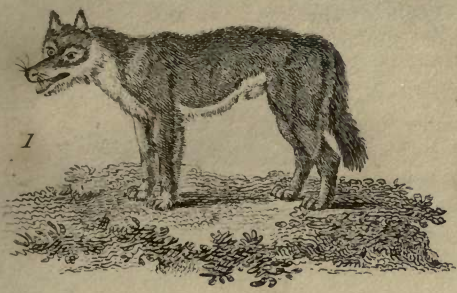


Fig. 1. Wolf .  
Fig. 2. Hyena .  
Fig. 3. Lynx .

Cooper sculp.

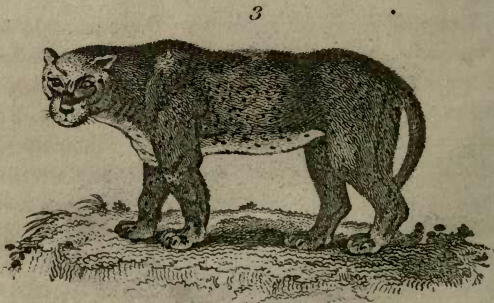
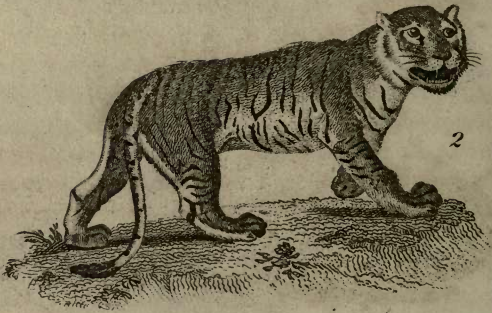
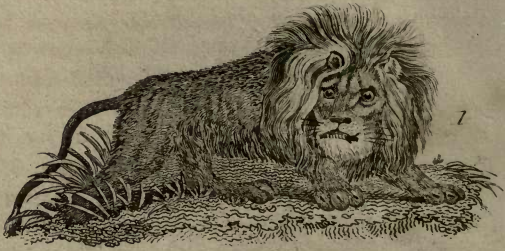


Fig. 1. Lion.  
Fig. 2. Tiger.  
Fig. 3. Panther.

Cooper sculp.



and that he had once received an express from that place in twenty-three hours, though the distance is not less than a hundred and thirty-five English miles."

Towards the end of May, these animals are all turned loose to provide for themselves during the summer ; but they return to their masters when the cold weather sets in. Their food in winter consists entirely of the head, entrails, and bones of salmon, which are saved for that purpose : and with even this poor diet they are but sparingly fed. In a word, they are the most patient and useful animals to be found in this peninsula ; and seem destined by Providence as a compensation for the numerous privations which its inhabitants experience.

#### THE WOLF.

This animal is nearly allied to the canine family ; and indeed, in a few instances, has been known to intermix with it, and thus produce a spurious breed. The wolf has a long head, a pointed nose, sharp erect ears, a long bushy tail, long legs, and rather long hair. It has large formidable teeth, and is taller than any greyhound. Its colour is generally a pale brown, tinged with yellow ; though it is sometimes found white, and in Canada black. The eyes slant upwards, and are of a fiery green ; and the whole visage is ferocious, forming a just indication of its disposition.

The wolf is, in reality, one of those animals whose carnivorous appetite is the most vehement, and whose means of satisfying it are the most various. Nature has furnished it with strength, cunning, agility, and all the other requisites for pursuit or conquest ; yet, even with these advantages, it frequently dies of hunger. Proscribed by man, it is compelled to seek the most sequestered retreats ; and only when impelled by the most pressing hunger ventures to make incursions near the villages and towns. Its depredations, however, are terrible, whenever its raging appetites get the better of its fear : on these occasions

it tears and destroys with wanton barbarity ; and neither men nor animals are secure from its attacks.

By wintry famine rous'd, from all the tract  
 Of horrid mountains, which the shining Alps,  
 And wavy Apennine, and Pyrenees,  
 Branch out stupendous into distant lands ;  
 Cruel as death, and hungry as the grave ;  
 Burning for blood ; bony, and gaunt, and grim ;  
 Assembling WOLVES in raging troops descend,  
 And, pouring o'er the country, bear along,  
 Keen as the north-wind sweeps the glossy snow.  
 All is their prize. They fasten on the steed,  
 Press him to earth, and pierce his mighty heart.  
 Nor can the bull his awful front defend,  
 Or shake the murdering savages away.  
 Rapacious, at the mother's throat they fly,  
 And tear the screaming infant from her breast.  
 The godlike face of man avails him nought.  
 Even beauty (force divine ! at whose bright glance  
 The gen'rous lion stands in soften'd gaze)  
 Here bleeds, a hapless undistinguish'd prey.  
 But if, appriz'd of the severe attack,  
 The country be shut up — lur'd by the scent,  
 On church-yards drear (inhuman to relate !)  
 The disappointed prowlers fall, and dig  
 The shrouded body from the grave ; o'er which,  
 Mix'd with foul shades, and frighted ghosts, they howl.

THOMSON.

Wolves have sometimes been seen following armies ; and repairing in numbers to the field of battle when quitted by the combatants, where they devour all the bodies which they find exposed or negligently buried. When once accustomed to human flesh, they ever afterwards show a particular predilection for it ; and thus they have been known to prefer the shepherd to his flock.

Hunting the wolf is a favourite diversion among the great in some countries ; and it is a species of the chace at which reason need not blush, nor humanity drop a tear. To rid the world of a common pest is meritorious,

whether by force or stratagem ; and indeed both are practised to effect the purpose in this case. It is sometimes caught in traps, trepanned by poisoned meat, or lured into pitfalls. Gesner mentions a friar, a woman, and a wolf, being caught in one of these last on the same night ; when the event was, that the woman lost her senses by the fright, the monk his reputation, and the wolf his life. All these disasters, however, and all the arts of annoyance practised by men, do not prevent the wolf from multiplying. The female goes about fourteen or fifteen weeks with young, and produces from five to seven or eight cubs at a litter. France, Spain, and Italy, are much infested by these animals, which indeed are diffused over many parts of the world ; but Great Britain and Ireland are happily delivered from their presence.

The Anglo-Saxon king Edgar was the first who endeavoured, with effect, to extirpate these animals. He commuted the punishment of certain crimes for the payment of a specified number of wolves' tongues ; and converted the customary tax of the Welsh into an annual tribute of three hundred wolves' heads. Edward the First took particular pains to accomplish their destruction in the counties adjoining to Wales, and in his reign they gradually began to disappear in England. The last wolf was killed in Scotland in 1680, by Sir Evan Cameron ; and in Ireland one is mentioned to have been destroyed so lately as 1710.

The wolf breathes a most fetid vapour from his jaws, and is in every respect offensive and disgusting : a savage aspect, a frightful howl, an insupportable odour, fierce habits, and a malignant disposition, are the leading qualities in its nature ; which render it dangerous and detested while living, and useless when dead.

#### THE HYENA.

“ The keen hyena, fellest of the fell,” as it is characterized by the author of the Seasons, is about the size of the wolf, and bears a general resemblance to the con-

formation of that animal. The body, however, is covered with a long, coarse, ash-coloured hair, marked with black stripes from the neck downwards; and the neck is furnished with an upright mane.

This animal is the most untractable of any among the savage race; it seems insensible to kindness, and is early incapable of being in any degree reclaimed. It growls almost incessantly, and sometimes howls in a note resembling the voice of a human creature in distress; hence the ancients invented the fable of its counterfeiting those accents, to lure the unwary traveller into its power. Various other legends are preserved concerning this creature, all founded on the terrors which its aspect and manners inspire.

In proportion to its magnitude, the hyena is certainly the fiercest of quadrupeds; nor does its courage fall short of its ferocity. It will defend itself against the lion, is a match for the panther, and frequently vanquishes the ounce. It preys on every thing that has life, and frequently violates the repositories of the dead: when it can no longer find means to satisfy its carnivorous appetites, it makes a meal on the roots of plants, or the tender shoots of the palm-trees.

This species is not very widely diffused: it is found in Asiatic Turkey, Syria, Persia, and Barbary; and is every where a solitary animal, frequenting caverns and clefts of rocks, from which it occasionally issues to seek for prey, and retires thither again. A spotted variety is common about the Cape of Good Hope, which, according to Sparrman, nightly enters Cape-town, and preys on offals, without doing any kind of injury. It has been known, however, even in the day-time, to snatch up an infant in the street, and hasten with its prey to its retreat in the mountains.

#### THE JACKALL.

This animal has obtained the appellation of the lion's *provider*, merely because when it pursues its game, the

lion avails himself of the scent, and joins in the chace. It is about the size of the fox, and seems an intermediate line of separation between the dog and the wolf kinds. Its colour is a bright yellow, whence Linnæus has called it *canis aureus* (or the golden dog).

The jackall is common in Asia; and in Barbary, and other countries of Africa, as far south as the Cape of Good Hope. Packs of forty or fifty will proceed to the chace, uttering a loud noise; and thus united they are a match for the boldest inhabitants of the forest: they will face the strongest, and yet satisfy their appetite on the meanest animals. They seem to have no great apprehensions even of man himself, and will pursue their game to his very dwellings.

These animals, being gregarious, always assist each other on their predacious excursions, whether of the chace or of disinterment; for the dead and the living are equally liable to their attacks. By day they lurk in separate holes; but at the approach of night they collect in numbers, and thus rush out to kill and to destroy.

Between the jackall and the dog there is an irreconcilable animosity, and they never meet without a combat. The natives of the countries where they abound, hunt them as the Europeans hunt foxes. Dallon tells us that this animal is capable of being tamed; and there is little doubt that it would breed with the dog kind in a domestic state.

#### THE FOX.

This animal is so well known, that to describe its figure might appear superfluous; I shall therefore confine myself to some of its most striking habits and manners. It is a crafty, lively, and salacious creature; and will breed with the dog, which it exactly resembles in its internal conformation. It differs, however, in emitting a strong peculiar smell, and in many of its leading propensities.

The artifices of the fox have in all ages been proverbial. An immoderate regard to self-preservation seems to be its

actuating principle; and it seeks for subsistence rather by fraud and address, than by intrepidity and force. It digs itself an asylum in the earth: and sallies out at the most favourable opportunities, whether to plunder a hen-house, or to seize unawares any unprotected bird or quadruped that falls in its way; nothing, in short, comes amiss to it. When at a loss for other food, it will attack a nest of wasps, or wild bees; and, in spite of their stings, usually succeeds in carrying off the combs.

As the fox is inimical to all other animals, so the various tribes of nature seem leagued against him. The dog hunts him with peculiar acrimony; and even birds seem to take a pleasure in betraying his steps, in exposing him to the hostility of the pack, or announcing his approach to the object of his pursuit.

Among the various tribes of wild quadrupeds, none is more subject to the influence of climate than the fox; and the varieties are almost as numerous as in any of the domestic animals. Zoologists have enumerated several distinct species, as well as varieties; there seems, however, to be a general conformity between them all; equally fond of petty robbery, and equally useless, their chace affords pastime to the hunters, who only obtain carrion at last. The skin, however, is valuable, and in some species produces considerable sums.

#### THE ARCTIC FOX, OR ISATIS.

The fur of this species is softer than that of the common fox, and the tail is shorter and more bushy. Some of these animals are blue, and others vary their colour according to the season. The hair is uniformly longer in winter than in summer, as is common with respect to all animals that inhabit cold climates.

The arctic fox abounds in Norway, Siberia, Lapland, Greenland, and Spitzbergen; and has mostly the habits of the common kind. It preys on eggs, aquatic fowls, and even fish; but, when it gets scent of the lemmings making one of their migrations, then it deserts it

usual haunts, and, pursuing the course of those singular little animals, preys on them to the last.

## THE CAT KIND.

In this genus are included some of the most formidable animals in our lower creation. The lion, the tiger, the leopard, the ounce, and the lynx, belong to this fierce and rapacious family. They are all remarkable for the sharpness and strength of their claws, which they can contract or protrude at pleasure. They are likewise distinguished for the roundness of their heads, the shortness of their snouts, and the whiskers which grow on their upper lips. They lead a ravenous and solitary life: and are neither susceptible of friendship with each other, nor of attachment to man. Even the common cat has very little sense of obligation; and unlike the dog, is neither patient under injuries nor mindful of favours.

## THE COMMON CAT.

This animal is too well known to require any elaborate description. It is the only one of its genus that has been taken under the protection of man, or made him the least return for his trouble by its services. The female goes with young fifty-six days, and brings forth five or six kittens at a time. They live till about the age of ten years: though I am acquainted with an instance of a castrated male having reached the thirty-second year of his age; and which, indeed, till within the last twelve months, was active and industrious in pursuit of its prey.

The kitten is the most sportive of all animals, but as it grows up it loses every amiable feature of character, and all the innate treachery of its kind becomes visible. Though taught by education to disguise its propensities, it only waits for a favourable moment to throw off the mask, and to indulge its native rapacity. The cat has only the semblance of attachment; and the assiduity which it shows is rather to gain favour than a desire to afford pleasure. It hunts for birds, and many of the smaller

kinds of animals; but is chiefly useful for clearing our houses of mice and rats. The mouse, indeed, seems to be its favourite meal; and its patient perseverance till the victim comes within its reach, is the object of just admiration. It seizes its prey with a bound; and, as it can see better in the night than in the day, it is seldom in danger of perishing by famine, where its activity is equal to its powers.

The effect of cold water, and of particular smells, is strikingly seen in cats. They love to bask in the sun, to sit near the fire, and to rub against odorous substances. Valerian, marum, and cat-mint, seem to intoxicate them as it were with delight.

This animal was the object of extraordinary veneration among the ancient Egyptians. "When the cat dies a natural death," says Herodotus, "all the people of the house shave their eye-brows, in testimony of sorrow; the animal is also embalmed, and nobly interred." Among the Mahometans, cats are particular favourites, on account of their cleanliness; while dogs are the objects of their marked aversion.

The cat is a native both of the Old and the New World, for Columbus, in one of his voyages to America, was presented by a hunter with one caught in the woods. There are several species; such as the cat of Angora, the Persian cat, and the tiger-cat. The wild cat is very seldom found in England, but is not uncommon in other countries of Europe. It seems likely, however, that this last animal is only the domestic cat run wild again, and neglected. Its colour is a yellowish white, mixed with a deep grey; and its fur is very soft and fine.

#### THE MOUNTAIN-CAT.

This animal is upwards of three feet long from the tip of the nose to the extremity of the tail, and about eighteen inches high. In shape and appearance it has a strong resemblance to the common cat, except that the tail is shorter in proportion to the length of the body.



The fur is of a reddish colour on the back and sides, and whitish on the throat and belly. The whole skin, however, is diversified with black spots of different figures, and on the ears are several transverse black stripes. This creature exhibits all the characteristic propensities of its kind.

#### THE LION.

This noble animal justly stands at the head of the feline race; being at once the most dignified, the strongest, and the most generous, of the kind. The lion has a large head, short round ears, a shaggy mane, strong limbs, and a long tail tufted at the extremity. Its general colour is tawny, which on the belly inclines to white. From the nose to the insertion of the tail, a full-grown lion will measure eight feet. The lioness is somewhat smaller, and destitute of a mane.

Like other animals, the lion is affected by the influence of climate in a very sensible degree. Under the scorching sun of Africa, where its courage is in a manner sublimed by the heat, it is the most terrible and undaunted of all quadrupeds. On the other hand, the lions of mount Atlas, whose top is covered with perpetual snows, have neither the strength nor the courage of those in Bildulgerid and Zaara. Fortunately the species is not very numerous: and it must certainly have been much diminished since the times of the ancient Romans; when, according to Dr. Shaw, fifty times more lions were drawn from Lybia for their public spectacles than are now to be found in that whole country. The same remark will apply to Turkey, Persia, and the East Indies, where lions daily grow less frequent. As countries become better peopled, and particularly wherever the use of fire-arms had been introduced, it is reasonable to suppose, that the propagation of savage animals has been proportionally checked, by their inroads being circumscribed.

It is in the deserts of Zaara, and the internal parts of Africa, that the lions are most numerous; for here they range without control. In these wide-extended regions,

little habituated to the power, and unconscious of the superiority of man, they attack him without hesitation, and set him at defiance. A single lion of the desert will often rush upon a whole caravan; and face his enemies, insensible of fear, to the last gasp. On the contrary, such as have acquired some knowledge of the superior powers of human beings are frightened away by a shout, and confine their depredations to the defenceless flocks and herds.

The lion is capable of receiving some impressions, and possesses a docility which allows him to be tamed, in a certain degree. History informs us, that they have been yoked in triumphal cars, and conducted to the battle or the chace; and that, faithful to their master, they have exerted their strength only in his service or defence. The lion appears to possess no small degree of attachment to his keeper; and, though his passions are strong and his appetites vehement, he has been found noble in his resentment, magnanimous in his courage, and grateful in his disposition. He disdains to revenge himself on petty enemies; and sometimes protects those that have been wantonly exposed to his power.

When pressed with hunger, however, the lion attacks every animal that comes in his way; but as his presence is universally dreaded by other quadrupeds, he is frequently obliged to have recourse to artifice, in order to secure his victim. For this purpose, he takes his station near some track or trodden path, crouches on his belly, and makes a spring (sometimes of twenty feet) on the object which he means to seize. His roaring is so loud, that it pierces the ear like distant thunder; and such terror does it inspire, that animals in a state of security have been known to tremble and to sweat with fear, as soon as it was heard.

The lion is terrible at all times; but particularly when incited by desire, or when the female has brought forth young. The period of gestation is supposed to be about six months. The duration of its life reaches perhaps to nearly a hundred years; for the one named Pompey,

which died in the Tower in 1760, had been a prisoner there for upwards of seventy years; and another that died there since, was known to have lived in confinement about sixty-three.

The Arabians entertain a notion that the lion spares the tender sex; but Dr. Shaw discountenances this opinion. It is certain, however, that he has sometimes shown mercy to human beings who have been wholly in his power; and that he has even parted with a share of his food to preserve that life which his generosity had spared.

#### THE TIGER.

As the lion approximates to some amiable qualities of the dog, so the tiger possesses all the noxious propensities of the cat; to which it bears a strong resemblance in external figure, notwithstanding the disproportion in point of size.

Though the most terrible, the tiger is certainly one of the most beautiful of quadrupeds. The glossy smoothness of its hair, and the distinctness of the black streaks with which it is marked on a ground of a bright yellow, strike the beholder with a kind of pleasing admiration, when it can be surveyed under the idea of security. Providence, however, in bestowing such elegance of form on the most noxious of quadrupeds, seems as if it designed to teach us, that beauty without intrinsic worth is of little estimation. This animal is peculiar to Asia, and is most common in the East Indies. Neither force nor caresses have the least influence on its stubborn nature; with equal malignity it will snap at the hand by which it is either fed, or chastised. Though of a countenance indicating neither ferocity nor anger, it is savage beyond measure; and is one of the most terrible scourges experienced by the human race in the countries where it is found. It lurks among the bushes on the sides of rivers; and bounds from its ambuscade on whatever animal comes within its reach, with an agility not to be conceived, and at a distance almost incredible. If it misses its object, it in-

stantly retires abashed; but, when successful, carries off the largest animal, with almost as much apparent facility as a cat would carry off a mouse.

A species of cruelty has been remarked in the character of the tiger unknown to the generous lion; as well as a kind of cowardice, when under the impulse of surprise, or when frustrated in its aim. It is related, on good authority, that, about the beginning of the last century, a party of ladies and gentlemen, on the banks of a river in Bengal, observed, under the shade of some trees, a tiger, in the act of preparing for its fatal spring. In this very critical dilemma, one of the ladies, with astonishing presence of mind, seized an umbrella, and unfurled it full in the animal's face; upon which he instantly retreated, and thus gave the company an opportunity of withdrawing from the presence of such a dreadful and unexpected neighbour.

I am sorry to have a melancholy catastrophe to record relating to some of our too-venturous countrymen, in which the tiger unhappily proved successful in his aim. On the 22d of December, 1792, Mr. Munro (only son of Sir Hector Munro, K. B.) and three other gentlemen, went on shore on Saugur-island, in the East Indies, to shoot deer. They saw several tracks of tigers, but nevertheless incautiously continued their sport for several hours; after which they sat down on the edge of a jungle to refresh themselves; first taking the usual precaution to light a large fire round them, and to discharge several pieces in the air, to disturb any savage beast that might be lurking near. They had but just commenced their repast, when some of their attendants brought word that a fine deer had approached within six yards of them. The gentlemen instantly seized their guns; when a roar was heard like thunder, and an immense royal tiger sprang on the unfortunate Munro, and bore him through bushes and every obstacle, without any apparent effort, every thing yielding to its prodigious strength. In this horrid situation, his companions fired at the savage, and (as it appeared) not

without effect; for in a few minutes Mr. Munro joined them, all over blood; and, after staggering some paces, fell. They immediately procured medical assistance; but the unhappy victim had his skull so fractured by the teeth of the monster, and his neck and shoulders were so torn by its claws, that he survived only a short time. The human mind can scarcely picture to itself a more frightful scene. This tiger was about four feet and a half high, and nine feet long; his head appeared as large as that of an ox; his eyes darted fire; and his roar, when he made the fatal spring, was tremendous beyond description.

Fierce and powerful as this animal is, hunting him is a favourite diversion with some of the eastern princes. His skin is reckoned of great value; and all over the East, and particularly in China, it is usual for the seats of justice to be covered with it. The cougar, or red tiger of America, is a diminutive animal when compared with the tiger of the East.

#### THE JAGUAR.

Many different authors, who have written on the subject of the New World, make mention of this animal in their descriptions; by some it is called a tiger, by others a leopard, while in South America it is commonly known by the appellation of the puma. It is certainly the most formidable animal that has yet been found in the western hemisphere, and lives solely on prey; but, when compared with the tiger for strength and resolution, its powers appear very much inferior.

The jaguar is of a bright tawny colour. The top of the back is marked with long black stripes; and the sides are impressed with irregular oblong spots, open in the middle, which is of the ground colour of the hair. The thighs and legs are marked with full black spots, and the belly and breast are whitish.

## THE PANTHER.

From the near resemblance which the panther, the leopard, the ounce, and the jaguar, bear to each other, zoologists have been at a loss to discriminate these animals with precision. The distinctions have sometimes been taken from their size, and sometimes from their colour and spots. I am inclined to lay the greatest stress on the latter, as the former appears to be rather an uncertain criterion. The panther, properly so called, approaches to the tiger in size, beauty, and ferocity. It is covered with short smooth hair, of a bright tawny colour: the back, sides, and flanks, are elegantly marked with black spots, disposed in circles of four or five in each; the chest and belly are white; the former being marked with transverse dusky stripes, and the belly and tail with large irregular black spots. This animal inhabits Africa, in the countries stretching from Barbary to the remote parts of Guinea. Like the tiger, it seizes its prey by surprise; but prefers the flesh of other animals to that of men, whom it seldom devours, unless when pressed by the extremity of hunger.

## THE LEOPARD.

The principal differences between the leopard and the panther, which have frequently been confounded by naturalists, are the following: The large panther is sometimes six feet long; the leopard seldom more than four. The former is marked in different places with five or six spots, forming a kind of circle with a large one in the centre; the latter has a more beautiful coat; and the spots are smaller, and disposed in clusters on a brilliant yellow ground.

The leopard, in the chase of its prey, spares neither man nor beast. When it cannot obtain a sufficient supply in its native solitudes, it descends from the internal parts of Africa, and makes terrible devastation among the numerous herds that cover the rich meadows of Lower Guinea. It is also a native of several parts of India, China, and Arabia where it is hunted for its flesh, as well as its skin.

## THE OUNCE.

Though the ounce is frequently confounded with the panther, it seldom exceeds three feet and a half in length; but its hair is longer, and its tail still more so in proportion. In colour it inclines to a cream, but is rather whiter on the belly than towards the back. Its spots, however, are disposed in a manner not unlike those of the panther, except that they seem to run in stripes on the haunches.

This animal is a native of Barbary, Persia, and China; where it is sometimes trained to hunting, but it has by no means so acute a scent as the dog. According to Tavernier, some of them are brought to such a degree of gentleness as to suffer themselves to be handled and caressed. The ounce seems to be much more generally diffused than the panther.

## THE LYNX.

This is the last animal of the feline race that I purpose to notice here. The common lynx (for there are several species) has a short tail black at the end, and long full hair under the chin. The fur on the body is long and soft, of a cinereous colour, tinged with red, and marked with dusky spots, more or less distinct in different individuals. The belly is whitish; and the ears are erect, and tufted with long black hairs: this last character is common to all the varieties. The length of the body is upwards of four feet; the tail measures only six inches.

This animal is found in Germany, in all the northern regions of both continents, and in several of the warm climates. It appears, however, to prefer cold to temperate countries, and generally varies in each.

The ancients invented a variety of fables respecting the lynx: particularly that its sight could penetrate the most opaque bodies, and that its urine would petrify into a precious stone. The eye indeed of the lynx is very brilliant; its aspect is agreeable, and its air sprightly. It hunts for

its prey, which it sometimes pursues to the tops of the highest trees. The blood and brains of its victim are alone valued by this savage epicure; when it has imbibed these, it proceeds in quest of fresh game.

#### THE ICHNEUMON.

This animal, which has obtained the appellation of *the rat of Pharaoh*, is among the boldest and most beneficial of the weasel kind. In Egypt, where it is chiefly bred, it answers every purpose of the European cat. It is usually about the size of a marten, and resembles that creature in most respects, except that its hair is rougher, and not so downy; the tail is also less bushy, and every single hair possesses three or four different colours, according to the disposition of its body.

To all the strength of the cat, the ichneumon unites a superior share of instinct and agility, a more universal appetite for carnivorous food, and a greater variety of powers for its acquisition. Rats, mice, serpents, lizards, and even the young of the crocodile, are alike the objects of its pursuit. Divine honours were paid it by the ancient Egyptians, for its services in destroying the eggs of the crocodile, together with the nascent animal; and therefore it was considered, with other beneficial animals, as an emanation of the Deity.

In a state of nature, the ichneumon generally haunts the banks of rivers, where its prey is most abundant; in Egypt it has been long domesticated, but in the colder climates of Europe it is bred and supported with extreme difficulty. The species is found in all the southern regions of Asia, and most parts of Africa.

#### THE COATI MONDI.

This is a Brazilian animal, of a reddish colour, having its tail annulated with white. It is distinguished from all other quadrupeds by its snout; which is moveable in every division, and reverts at the extremity. It sometimes eats its own tail, which is longer than the body. In all respects



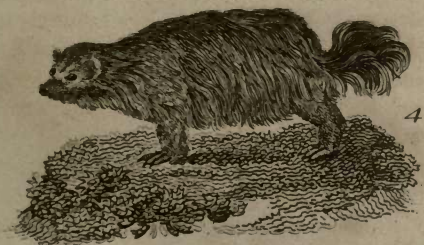
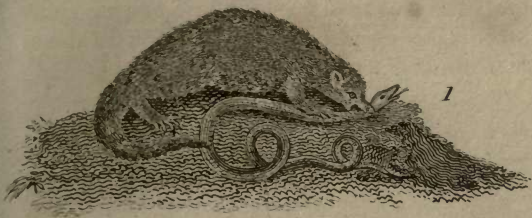


Fig. 1. Ichneumon.

Fig. 2. Civit.

Fig. 3. Otter.

Fig. 4. Glutton.

Cooper del.



Fig. 1. Opossum.  
Fig. 2. Kangaroo.  
Fig. 3. Porcupine.

W. G. S. 1821

it is an animal of prey; destroying small quadrupeds and poultry, the nests of birds, and even the birds themselves.

#### THE AMERICAN POLE-CAT, OR STINKARD.

There are several varieties of this creature; chiefly distinguished by size and colour, but all agreeing in the general characteristics of the kind. The hair is long and beautiful, and five white stripes, on a black ground, run longitudinally from the head to the tail. It is about the size of the European pole-cat, but incomparably more fetid and loathsome. Near the tail are some glands, from which exudes a matter intolerably offensive.

These animals prey on poultry and other small game. If pursued by dogs or men, they need only to emit their peculiar stench, and the chase must be immediately given up. The dogs instantly run back, and no human being can possibly support the nauseous effluvia.

“In the year 1749,” says Kalm, “one of these animals came near the farm where I lived; it was in winter time, during the night; and the dogs that were upon the watch pursued it for some time, till it discharged against them. Although I was in my bed a good way off, I thought I should have been suffocated; and the cows and oxen showed by their lowings, how much they were affected by the stench. About the end of the same year, another of them crept into our cellar; but did not exhale the smallest scent, because it was not disturbed. A foolish woman, however, who perceived it at night by the shining of its eyes, killed it; and at that moment its stench began to spread. The whole cellar was filled with it to such a degree, that the woman kept her bed for several days after; and all the bread, meat, and other provisions, that were stored there, became so infected, that they were obliged to be thrown out of doors.” It appears, however, that this creature is sometimes domesticated: but then it must be deprived of the offensive glands.

## THE CIVET, OR CIVET-CAT.

There are two varieties of this odoriferous animal, which Buffon considers as a distinct species, under the names of the civet and zibet. The latter differs principally from the former, in having a longer and more slender body, in being destitute of the mane or long hair running down the back, and in having the tail longer and more annulated. These variations, however, are not sufficient to constitute a specific difference; and therefore I shall consider them as the effect of food or climate.

The civet is a light active creature: and, like the rest of the weasel kind, preys on birds and other small animals; or, in case of a deficiency of more agreeable food, on fruits and roots. In a state of nature it is very fierce and wild; and though sometimes reclaimed, it never becomes perfectly familiar.

The colour of this creature varies considerably: however, it is commonly cinereous, spotted with black; but the female is whiter, and her spots are larger. On account of the odorous matter which it exudes from its posterior glands, it is frequently taken under the care of man, when the perfume is collected twice or thrice a week with the most diligent attention. This substance accumulates in a kind of open pouch, situated under the tail; and is scraped out with a wooden spoon, and put into a close vessel.

When the civet is irritated, the scent becomes much more violent than at other times; but it is always so strong, that a person unaccustomed to it, could not endure to be shut up with one of these creatures, even for a few minutes. Yet disgusting as all animal perfumes must be, there has been a time when the produce of the civet was in the highest estimation with the ladies and with effeminate men. It is, no doubt, more grateful than musk; but the very idea of borrowing from such a source is not a little offensive to a delicate mind. The traffic in this perfume, however, is still very considerable, and was long monopolized by the Dutch; but, to the credit and taste of elegance, it is now greatly on the decline.

The civet, though a native of warm latitudes, thrives very well in the temperate; and is frequently bred in Holland.

#### THE GENET.

This animal is about the size of the marten. It is long, slender, and covered with a soft, beautiful fur, spotted with black, on a ground mixed with red and gray. Its spots are distinct and separate on the sides; but unite towards the back, and there form longitudinal stripes. Along the back runs a kind of mane, and the tail is annulated with black and white.

Like the rest of its genus, it is furnished with odiferous glands, which exude a weak kind of civet; but its perfume speedily evaporates. It is easily domesticated; and, according to Bellonius, is capable of performing all the offices of the common cat.

This species does not appear to be much diffused. It is not found in any part of Europe, except Turkey and Spain; and though it requires a warm climate for its subsistence and propagation, it has never been discovered in the warm regions of India or of Africa.

#### THE COMMON OTTER.

This is an amphibious quadruped; and is furnished with membranes or webs between the toes, to assist it in swimming. Indeed it makes its way faster in water than on land; and can overtake the fish on which it preys, in their own element. It has long whiskers, small eyes, erect ears, short legs, a long body, and long hair of a brown colour, inclining to silvery. Its usual length is about two feet, and its tail half as much.

The otter inhabits the banks of lakes and rivers; and is extremely destructive to the fishes, killing more than it can eat. In summer it enjoys a life of ease and plenty; but, when the rivers are frozen, it is frequently driven to the necessity of feeding on such terrestrial animals or vegetables as it can procure. Nature, however, has furnished

it with the power of continuing a considerable time without food, in a kind of half-torpid state.

Otters are frequently hunted with dogs for amusement; and various other arts are used to destroy them on account of their skins, and of the depredations which they commit on the aquatic tribes. They are also sometimes tamed, and taught to catch fish for their masters; an art in which nature has made them very expert. They are found in all parts of Europe, and also in the cold latitudes of Asia and America.

There is a species about one-third as large as the common otter, a native of Poland, and other northern countries of Europe; the fur of which is highly esteemed, only yielding in beauty to the sable.

#### THE SEA-OTTER.

This species is very numerous on the coasts of Kamtschatka, on the opposite shores of America, and among the intervening islands. Its fur is so highly valued, that it has become a most lucrative branch of commerce, since the period of Captain Cook's last voyage. The flesh of the young is reckoned very delicate food; and equal, if not superior, to lamb.

The sea-otter is about four feet long from the nose to the insertion of the tail, which last is only about two inches in length. The hind-feet resemble those of a seal; and the teeth are broad, and adapted to breaking crustaceous animals and shell-fish. The hair is thick, long, black, and glossy: under it is a soft down.

#### THE GLUTTON.

Linnæus ranks this animal among the weasels, from the length of its body, the shortness of its legs, the softness of its fur, and its insatiable appetite; from which last quality it has received its name. The legs are extremely short in proportion to its size. The fur, which is held in the highest estimation, on account of its softness and beautiful gloss, is black along the back, and of a reddish brown

on the sides. Its conformation enables it to climb trees with greater facility than to proceed along the ground, and consequently it catches its prey rather by surprise than pursuit.

In North America, this voracious creature is frequently seen lurking among the thick branches of trees, on purpose to seize deer and other animals. Endued with perseverance equal to its rapacity, it will watch in silent expectation for several days successively; but no sooner does its prey come within its reach, than it drops with unerring aim upon it, fastens its claws between the shoulders, and obstinately retains its hold till it has eaten through the neck, and opened the large blood-vessels. It is astonishing to consider how much flesh one of these animals is capable of devouring at a time. Klein mentions one which, though in captivity, and labouring under ill health, daily devoured thirteen pounds, and yet remained unsatisfied. Indeed, the glutton will eat such immoderate quantities, that its belly becomes distended, and its whole form in a great measure altered; but, like all epicures, it is seized with lassitude after its meal, and will sometimes lie in a state of torpidity close to the animal which it has killed, for two or three days together. When thus reduced to a state both loathsome and helpless, it derives its chief security from the horrid stench which it exhales, and which few animals can bear to approach.

The glutton, like all the rest of its kind, is a solitary animal, and is never seen in company, except with the female, which produces two or three young at a time. They burrow in holes, and are very resolute in defence of their offspring; fighting against dogs with the greatest obstinacy, and biting with the most tenacious grasp. The hunters, however, pursue them with much eagerness for the sake of their furs, which possess the most beautiful lustre imaginable, and are preferred for some uses to all others, except those of the Siberian fox and the sable.

## THE MARTEN.

There are two varieties of this animal; the one called the beech or common marten; and the other the pine or yellow-breasted marten; but the distinctions between them are not so considerable as to require illustration.

The marten is about eighteen inches long from the nose to the tail. Its colours are much more elegant than those of the pole-cat, to which it is nearly allied; and its scent is rather agreeable than offensive. In short, the marten is the most beautiful of the British beasts of prey; it displays grace and agility in all its motions, and its courage enhances its other attractions. The hare, the sheep, and even the wild cat, are none of them a match for this animal; but it preys chiefly on poultry, rabbits, and other defenceless creatures, which it can master without a contest.

Whenever the marten finds itself pursued by dogs, it makes towards its retreat; which is generally the hollow trunk of a tree, the original tenement perhaps of a squirrel. There it remains in security, and brings forth its young, gradually habituating them to that carnage in which itself delights.

These animals are much more numerous in the northern parts of Europe and America than in Britain or France. In every country they are hunted for their skins, many thousands of which are annually imported into England, from Canada and Hudson's-Bay.

Gesner mentions a marten which he domesticated, and which became extremely playful and tractable. Buffon likewise kept one for some time, confined by a chain; but it never could be divested of its ferocity, and continued insensible to attachment; till, watching its opportunity, it made its final escape when about eighteen months old.

## POLE-CAT.

This animal is nearly a foot and a half long; exclusive of the tail, which is about six inches. The colour is a deep chocolate, with a space of white round the mouth, and the ears are likewise tipped with white. It is long, slender, and active; and is very destructive to poultry,



pigeons, and rabbits. A single pole-cat is sufficient to ravage a whole warren; for it has such an insatiable thirst for blood, that it kills as well from wantonness as from necessity. The female brings forth five or six young at a time; but the species is not very numerous, and seems confined to latitudes equally remote from heat and cold.

When alive, the smell of the pole-cat is rank and disagreeable even to a proverb; however, its skin is dressed with the hair on, and used for various purposes, although its offensive smell can never be altogether removed or suppressed.

#### THE FERRET.

The ferret has been naturalized in Europe, but it originally came from Africa; and was first imported into Spain, in order to free that country from the multitude of rabbits with which it was overrun; and thence the breed has spread over other parts of the continent. It is about a foot long; with red fiery eyes, and round ears. The usual colour is a pale yellow; but it is frequently varied with black, white, and brown. It is a lively active animal; and seems to have a predilection for rabbits, but is satisfied with sucking their blood.

The ferret is generally domesticated, and trained up to the purposes of catching rabbits and rats. From the slenderness of its body, it is able to enter the holes of the latter, and seldom suffers them to escape. The female is less than the male, and breeds twice a year. They require to be kept warm in our climate, and are generally fed with bread and milk.

This is a useful animal, but offensive from its disagreeable scent. It is voracious in its nature; and, though tame, is without attachment. Such is its appetite for blood, that it has been known to attack and kill children in the cradle. It is very irritable; and, when provoked, emits a most nauseous smell. The wound of its bite is not cured without great difficulty.

## THE SABLE.

This animal resembles the marten in shape and size, and the weasel in the number of its teeth. It has long whiskers, rounded ears, large feet, white claws, and a long bushy tail. The fur is held in the highest estimation; it is of a brownish-black hue; and some of the darkest, which are reckoned most valuable, are worth from ten to fifteen pounds. A few varieties of the sable, however, are parti-coloured; and some have been found of a snowy whiteness.

The sable resembles the rest of the weasel kind in vivacity and agility; in sleeping by day, and hunting its prey by night; and in emitting a peculiarly offensive smell. It inhabits Siberia and Kamtschatka, and generally burrows in the earth. The female brings forth from three to five at a time, and suckles them for about a month.

During the winter, these animals are hunted with an assiduity proportionate to the value that is set on their skins. The Russian exiles in Siberia are sometimes condemned to furnish a certain number of furs annually, or to suffer a punishment for the deficiency; and it is thus that the luxuries and ornaments of the opulent are frequently obtained through the miseries of the wretched. Sables, however, are now more frequently killed by Russian soldiers sent into Siberia for that purpose, who are taxed to provide a certain number; and, by way of encouragement, are allowed to participate in the surplus.

The sable hunters form themselves into troops of from five to forty each, which subdivide into lesser parties, and each chooses a leader: one person, however, directs the whole party. A small covered boat is prepared for each division, laden with provisions, a dog, and a net for every two men, and suitable vessels to bake their provisions. Being arrived on the hunting-ground, before they begin the chase, they offer their prayers to Heaven for success; and the first animal which they catch, is called "God's sable," and is dedicated to the church.

The hunting-season being ended, the parties re-assemble, report to their leaders what success they have had,

prefer complaints, or award punishments, against delinquents, and share the booty according to their agreements. Sables vary much in value, according to their fineness, and the beauty of their colours.

#### THE ERMINE, OR STOAT.

This beautiful little animal is about nine inches long. During the summer, it is of a brown colour; but no sooner does the winter set in than its coat becomes thick, soft, and white, adapted to the season; and at that period it is sought after with the utmost avidity.

The winter furs of the ermine constitute a valuable article of commerce in those countries where it is found. In Siberia, these animals are commonly taken in traps baited with flesh. In Norway they are either shot with blunt arrows, or caught in snares.

The ermine has been sometimes found white in Great Britain, and then it receives the appellation of the white weasel. The fur, however, in this country is comparatively of little value; being neither so thick, close, nor shining, as in the more northern regions.

#### THE WEASEL.

This is the smallest of the tribe to which it gives name; the body seldom exceeding six or seven inches in length; while the legs are not more than an inch and a half. The head, tail, legs, feet, and the upper parts of the body, are of a pale tawny-brown colour; but the lower parts are white.

Though diminutive in size, the weasel is nevertheless a formidable enemy to many animals greatly its superior in that respect. It is very destructive to rabbits, poultry, and young birds; but, as some counterbalance for the depredations which it commits on useful animals, it also destroys many that are noxious.

No arts can tame this creature. Though sometimes confined in a cage for amusement or inspection, it resolutely abstains from food while any person is in sight, and

seeks concealment from every eye. It passes the greatest part of the day in sleep, and seems in its proper element only during the darkness of the night.

In a state of nature, it steals from its hole about the evening, and prowls about farm-yards, &c. in quest of prey. It makes an accurate discrimination between what it can manage, and what would be too powerful for its efforts; and seldom fails in its enterprises. In winter it wars chiefly against rats and mice, in barns and out-houses; but during the summer it ventures on more extensive excursions.

The weasel, like all the rest of its family, has a strong fetid smell, which is always greater in summer than in winter, and is constantly increased by irritation. It utters no voice nor cry; except when hurt, when its squeak is grating and offensive to the ear.

#### BEARS.

There are several species of these animals, forming a distinct genus; such as the black bear, the brown bear, the white, and the Kamtschatka bear: but they all, though different in size and form, evince the same original stock, varied by climate and by food.

#### THE BLACK BEAR OF AMERICA

This is a strong powerful animal, covered with black, smooth, glossy hair; and is very common in North America. It is said to subsist wholly on vegetable food; but some of them, which have been imported into England, have shown a predilection for flesh. They strike with their fore-feet like a cat, and seldom use their tusks; but hug their assailant in their paws so closely to their breasts, that they almost squeeze it to death. The females seek the most impenetrable retreats, in which they bring forth their young; and though numbers of bears are annually killed during winter, they are generally found to be males. After becoming fat in autumn, these animals retire to their dens, and continue six or seven weeks in total inactivity

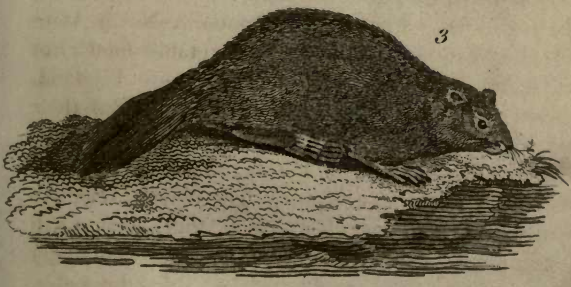
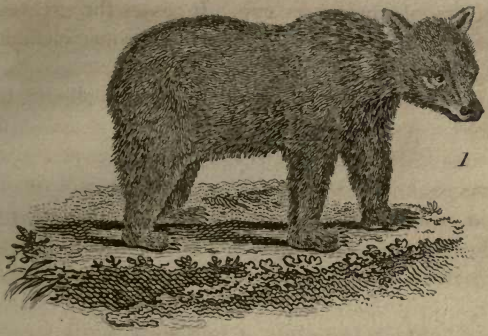
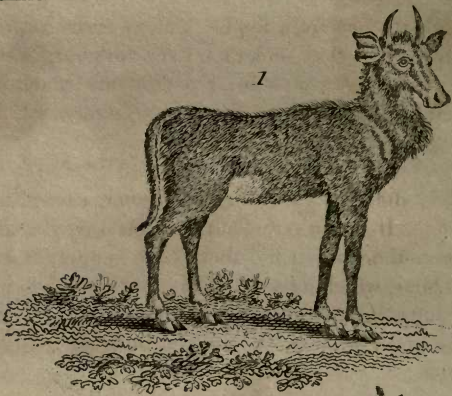
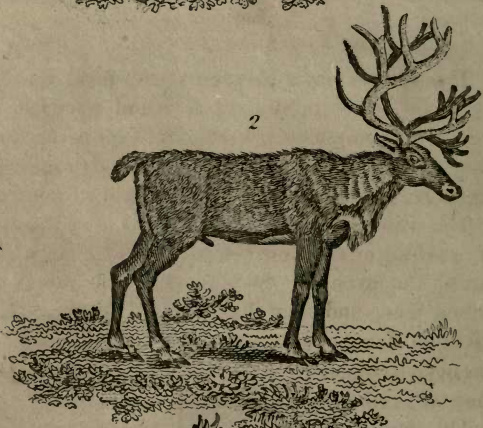


Fig. 1. Brown Bear,  
Fig. 2. White Bear,  
Fig. 3. Beaver.

*Geop. Mus.*



1



2



3

Fig. 1. Nylghau.  
Fig. 2. Rein Deer.  
Fig. 3. Roe Buck.

Cooper sculp.

and abstinence from food. Vulgar error has propagated the idea, that they suck their paws for nourishment, during this period of seclusion; but they are undoubtedly sustained by means of the former exuberance of their fat.

#### THE BROWN BEAR OF THE ALPS.

This differs little from the former, except in size and colour. It is not only solitary, but savage; and though we sometimes see it led about by a keeper, and practising some arts, which it has been taught by a kind of barbarous ingenuity, it is naturally capricious, revengeful, and treacherous, and therefore should not be trusted without great caution.

#### THE WHITE, OR GREENLAND BEAR.

This species has a peculiarly long head and neck, and its limbs are of prodigious size and strength. Its body frequently measures thirteen feet in length; and it is the only animal that arrives at a superior magnitude in the arctic regions, where it seems to reign without a rival.

The white bear lives on fish, seals, and the dead bodies of whales; or even on the corpses of men, which it digs out of the ground. Sometimes it will attack a party of armed men, and even board small vessels. The mutual affection that subsists between the female and her young, has been frequently exemplified in the most affecting trials: they will rather die than desert each other.

The flesh of this animal is white, and tastes like mutton. Its fat is melted for train oil, and that extracted from the feet is used in medicine. A kind of bath was made for one formerly in the Tower of London, so situated below its den, that the creature could plunge into it at pleasure: indeed the white bear can scarcely exist in our temperate climate, without being frequently cooled by water.

#### THE OPOSSUM.

There are several species of this genus, to which Linnaeus gives the name of *didelphis*; all distinguished from

other animals, by having a sort of pouch into which the young can retire, and where they continue to lodge and suckle in security.

Ulloa asserts, that he has found five of these little creatures hid in the pouch of the dam, three days after she was dead, still alive, and adhering to the teat with great avidity. It is probable, therefore, that on their first entering this receptacle, they seldom stir out; but afterwards, acquiring more strength, only take refuge there in cases of necessity or danger.

The opossum is about the size of a cat, but its head and general figure resemble rather the fox. The fore-legs are shorter than the hind; and the feet are furnished with five toes or fingers, armed with crooked nails.

When on the ground, the opossum is a slow and helpless animal. The formation of its legs is alone sufficient to prove its incapacity for swiftness; but to counterbalance this inconvenience, it climbs trees with great facility and expedition. It destroys poultry and birds sucking their blood without devouring their flesh: it also hunts after the nests of birds, and will feed on herbs and roots when in want of better fare.

This creature possesses the facility of suspending itself by the tail, in which situation it will continue for hours, watching an opportunity to seize its prey: when it throws itself down with unerring aim, and speedily devours or kills the surprised victim. It is easily domesticated: but proves an unpleasant inmate; not only from its stupidity, but from its disagreeable scent.

The flesh of the old opossum resembles that of a sucking pig. The Indian women dye its hair, and weave it into garters and girdles. Though this genus of animals is chiefly found in America, it is by no means solely confined to that continent, as Buffon asserts; for there are incontestable evidences, that it inhabits the island of Java, the Moluccas, and New Holland.



## THE KANGAROO.

This animal can scarcely be said to have a place in the Linnæan arrangement. Some zoologists refer it to the jerboa kind; and others, among whom is Pennant, consider it as a species of opossum: perhaps it ought to form a distinct genus of itself.

It was first discovered by our British colonists, on the eastern territory of New Holland; and is yet unknown in any other part of the world. It has a small oblong head, resembling that of a fawn, and tapering from the eyes to the nose. The upper lip is divided; the nostrils are large and patulous; the upper jaw is the longest, and both are furnished with whiskers. The ears are erect, obscurely ovated, and covered with short hairs. There are four broad cutting-teeth in the upper jaw, two long lanceolated teeth in the lower, and four grinders in each. The body gradually increases in thickness to the rump, or near it: the belly is convex and large; the fore-legs are very short, but the hinder almost the length of the whole body. The fore-feet are furnished with five strong claws, the hind with only three. The tail is very long and tapering; and possessed of such strength, that a stroke of it has been known to break the leg of a dog. The hair is soft, and of an ash-colour; but somewhat brighter on the belly than on the back. The length of this animal generally exceeds three feet, and the tail measures about thirty inches.

The kangaroo, since the settlement at Botany-Bay (or rather Sidney-Cove), is better known, and has been more accurately described, than many foreign animals which have for ages fallen under the notice of travellers and zoologists. It lurks among the long grass that covers the almost desolate country which it inhabits. It feeds entirely on vegetables; and walks wholly on its hind-legs, using its fore-legs only for the purposes of digging, and of carrying its food to its mouth. It is naturally very timid; and bounds away from intruders on its haunts, with an aston-

ishing length of spring. When in motion, it carries its tail at right angles with its body ; nor is the swiftest dog able to arrest its flight. The flesh is wholesome and palatable. Animals of this kind are now not uncommon in exhibitions.

#### THE MOLE.

This solitary mischievous animal, which is disseminated over the greatest part of Europe, and of which varieties of species are found in America, Africa, and Asia, is adapted to a life of darkness ; as if nature intended that the earth should be tenanted both above and below. — Judging from our own sensations, we should be led to conclude, that a quadruped, doomed to hunt for its prey under ground, and usually denied the cheering light of the sun, must be wretched to an extreme degree ; yet no animal appears fatter, nor has a more sleek and glossy skin. Indeed, so perfectly is it suited to its way of life, that it probably enjoys no inconsiderable share of felicity, and is exempt from many evils to which other creatures are liable.

The mole is in size between the mouse and the rat ; but resembles no other quadruped, and therefore forms a genus by itself. It is covered with fine, short, glossy, black hair ; and has a long pointed nose, and holes instead of external ears. The neck is extremely short ; the body is thick and round, terminating in a very short tail ; and the legs are so short that the animal seems to rest on its belly.

It was formerly the common opinion that the mole is wholly blind ; but, by the assistance of the microscope, it has been found, that, though its eyes are small, and almost concealed, they possess every part requisite for distinct vision.

The legs of this little animal, though very short, are armed with five claws, which qualify it for digging and entrenching itself ; and so dexterous is it in burrowing, that it generally eludes the grasp of its most vigilant

enemies. It preys on worms and insects, of which it finds abundance in its subterraneous galleries ; nor does it often come into the open air, a situation which may be considered as unnatural to it. However, when the worms are in motion, and approaching the surface of the earth, particularly after rain, it pursues them with much animation ; and then it throws up the hillocks which prove so detrimental to the farmer.

The fecundity of the mole is so great, and its exemption from the tyranny of other animals so complete, that, were it not for inundations, which destroy them in prodigious numbers, and the arts practised by man to catch them, they would be an intolerable hinderance to the labours of agriculture. However, they are not without an instinctive sense of the danger arising from low and moist situations, as they commonly prefer some elevated and dry spot for bringing forth their young.

The skin of these animals is extremely soft and beautiful ; and it appears strange that it has not been generally turned to some advantageous purposes. It is probable that the facility with which they might be procured diminishes their value. The ermine and the sable are sought after in remote and inhospitable regions, with extreme avidity ; but a fur which daily solicits our regard, and is constantly within our reach, is only used in a very limited degree, in the manufacture of hats.

#### THE SHREW.

The common shrew is of a mixed brown and reddish tawny colour, with a white belly, and a short tail. The body is about two inches and a half long ; the nose is slender and pointed ; the ears short and rounded ; and the teeth, in shape and situation, differ from those of all other animals in the world, partaking both of the mouse and the snake kind.

This animal is widely diffused : it frequents old walls, dry grounds, and holes in the earth ; subsisting on corn, insects, and any kind of garbage. Cats frequently kill,

but abstain from eating it. Indeed, it has such a fetid and offensive scent, and its form is so disagreeable, that it is generally shunned; and, from some of its known disgusting qualities, it has obtained an ill fame for others, which it does not really possess.

A small species of the shrew is found in Siberia, which weighs only about a dram, and is considered by Linnæus as the least of quadrupeds; however, Pallas mentions another species, which does not weigh half so much.

#### THE HEDGEHOG.

Few animals are more innocent than the hedgehog, yet few are exposed to such various injuries and insults. Children frequently learn the rudiments of cruelty in torturing it; and it seldom finds a protector among those who are more advanced in years. Humanity, however, is due to the meanest reptile; and whoever is capable of exercising unnecessary barbarity, even towards noxious creatures, must possess defective feelings at least, and probably a vicious heart.

Though the hedgehog has a formidable appearance, from the sharp spines with which its upper parts are covered, it is one of the most harmless creatures in the universe. Incapable or unwilling to injure, all its precautions are directed only to its own security; and its armour is adapted, not to invade, but to repel an enemy. While other animals trust to their force, their cunning, or their swiftness, the hedgehog, destitute of all these, has but one expedient for its protection: as soon as it perceives itself attacked, it draws back and concentrates all its vulnerable parts, rolls itself into a kind of ball, and presents nothing but its prickles to the foe; and thus, while it refrains from attempting to injure any other quadruped, it renders itself proof against the annoyance of most creatures, except man. The enraged dog may bark, and roll it along with its paws; it still patiently submits to every provocation, in order to remain secure.

Like most other wild animals, the hedgehog spends the

greater part of the day in sleep; and forages for worms, insects, and other petty prey, principally in the night. It prefers small thickets, hedges, or bushy ditches, for its retreat; where it makes a hole about six or eight inches deep; which it lines with moss, grass, or leaves. It sleeps during winter; and, at all seasons, is satisfied with a small quantity of food. The flesh is by some esteemed very delicate eating; but epicures only of a peculiar taste make the experiment.

In order to justify the ill-usage which this creature generally receives, it has been accused of sucking the teats of cows and mares, and injuring their udders, as they lie at rest. From this charge it cannot be wholly exculpated. The author of this work has seen the effects produced by it on a mare, which, however, did not give milk but its mouth is not large enough to admit the dug of a cow; and therefore it may be doubted whether it is milk that tempts it to invade this part of animals.

The common species is widely diffused over Europe; and other varieties of the same animal are found in every quarter of the globe.

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#### ORDER IV. — GLIRES.

THE characteristics of this order (which include the porcupine, the hare, the squirrel, the beaver, the mouse, and the rat,) are, two fore-teeth in each jaw, no canine teeth, three toes on each foot, and an adaptation of form to the action of leaping.

##### THE PORCUPINE.

The common porcupine is about two feet long, and fifteen inches broad. It has a long crest on the back of its head, composed of stiff bristles reclining backwards. The body is covered with quills from ten to fourteen

inches long, sharp-pointed, and thickest in the middle, and these are varied with black and white ; between them a few hairs are interspersed. The head, belly, and legs, are covered with strong bristles, terminated with dusky-coloured hair ; the whiskers are long ; the ears resemble the human, as the nose does that of the hare. There are four toes before, and five behind ; and the tail, which is short, is covered with bristles.

The quills of the porcupine, which appear to have been given it rather for defence than annoyance, naturally recline backwards ; but, when irritated, it erects them, and thus opposes an almost unapproachable circle of lances against every assailant. It has been said that it can hurl or project them like darts against a foe ; but this is no more probable, than that an enraged turkey-cock should have the power to dart its feathers.

This animal, according to some, lives on roots, fruit, and vegetables ; while others affirm, that it hunts for serpents and other reptiles as its subsistence. There is some reason to believe this last statement ; or perhaps both are true in a certain degree.

The porcupine has sometimes been domesticated in Europe, and has been known to live to the age of twelve or fifteen years. Only a single young one is produced at a time. The Indians hunt it for the flesh and the quills ; which latter they dye of various colours, and work them up into baskets, belts, and other ornaments, with peculiar elegance.

The porcupine is a native of many parts of Asia, and of Africa in general ; and it is even found wild in Italy, though not indigenious in Europe. It is a dull and torpid creature ; voracious, though capable of great abstinence ; and has received the epithet of *fretful* \*, from its bristling

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“ I could make

Thy knotty and combined locks to part ;  
And each particular hair to stand on end,  
Like quills upon the fretful porcupine.”

*Tragedy of Hamlet.*

up its quills on the slightest appearance of danger. There are three other species known; one a native of Brazil, the second of Canada, and the third of the Indian Archipelago: in every essential feature, however, they agree with the animal which has just been described.

#### THE HARE.

The form of the hare is generally known; but its habits, which are well deserving our attentive notice, are often overlooked. Timid and persecuted; the prey of men and animals for its flesh, and the object of savage sport to the idle or the wanton; did it not owe much to a principle of fear, which is ever alert for its preservation, and to its amazing fecundity, the breed would long since have become extinct.

In order to enable this innocent and delicate creature to perceive the most distant approaches of danger, nature has provided it with very long ears, which, like tubes, convey remote sounds; and with prominent eyes, which receive the rays of light on every side. It is also endowed with extraordinary swiftness; and from its hind-legs being longer than the fore, has the peculiar advantage of an ability to run up ascents with more facility than any of its pursuers. Every species of dog hunts it by instinct, while the cat and the weasel tribe exercise all their little arts to ensnare it: but its most inveterate and destructive enemy is man, who leagues with dogs, or employs the snare or the gun to thin its numbers, often more for needless pastime than for the value of the spoil.

The hare breeds when very young, continues pregnant thirty days, and generally produces three or four, several times every season. In about twenty days the young are able to provide for themselves. The food of these animals is wholly vegetable; and no kind, even the bark of trees, is unacceptable to them. They seldom live more than seven or eight years, even should they escape the multiplied dangers to which they are so exposed. They pass a life of solitude and silence, except during coupling-time.

They are capable, however, in some degree, of domestication; in which state they become fond and caressing; but their attachment to any particular person is extremely weak, and they are sure to seize the first opportunity of regaining their native liberty and independence.

The influence of climate is very perceptible on them. In more northern latitudes they assume a white colour in winter, and assemble in large troops. The hares found in warmer regions are smaller than those of our own country, and have a thinner fur. They are generally diffused over every climate; from the arctic to the equator, and from thence towards the south pole.

The fur of hares is an article of considerable importance in the hat-manufactory. Their flesh is reckoned very delicate eating among some nations, though from superstitious, or different motives, it is detested among others. The ancient Britons, the Jews, the Mahometans, have considered it as unclean; so difficult is it to establish the criterion even of sensual taste! What mankind, at one time, call beautiful, fragrant, or savoury, at another period, or in another country, is regarded as deformed, disgusting, and nauseous.

There are several species of the hare; such as the Varying, the Alpine, the Cape, the Brazilian, and the Calling. All these agree, however, in their general qualities; and only vary in minute circumstances, an enumeration of which would be entertaining only to the professed naturalist.

#### THE RABBIT.

Though the hare and the rabbit strongly resemble each other in form and habits, they are nevertheless distinct species, and have never been known to intermix. The rabbit is one of the most prolific and harmless animals in nature, and at the same time one of the most beneficial to mankind.

This creature has been known to breed seven times in one year, and to bring forth eight each time; from which,



admitting this to happen regularly for four years, it follows, that a single pair might multiply in that period to one million two hundred and seventy-four thousand eight hundred and forty! Such an instance of possible fecundity is truly astonishing; and were not their numbers thinned by the ravages of almost every beast of prey, they would nearly be sufficient alone to supply mankind with animal food. Indeed, in some countries, they have multiplied to such a degree, that the inhabitants consider them as a nuisance. Though capable of enduring a severe climate, they seem to delight in a temperate one; so that in Sweden they are obliged to be sheltered in houses, and in more northern regions they are wholly unknown.

Tame rabbits, as if conscious of protection, never dig holes for their retreats; and they assume a variety of colours. Wild rabbits, on the contrary, burrow in the earth, and are uniformly brown. The flesh of the latter is most esteemed, as well as their fur.

Like the hare, there are different species of rabbits, not only in the Old Continent, but in the New. That of Brazil has scarcely any tail.

#### THE BEAVER.

This animal is far less remarkable for the singularity of its conformation than for its astonishing instincts, which some have exalted into a species of intellect. It has a flat broad tail, covered with scales, which it uses as a rudder; and its toes are webbed, a property which enables it to swim with greater facility than to walk. The length of the beaver is about three feet, and of its tail eleven inches; it has strong cutting teeth, short ears, and a blunt nose. It is found in the northern parts of Europe, Asia, and America; but it is chiefly in the less-frequented regions of the latter, that its habitudes and genuine instincts are most strongly marked, and therefore form the properest subject for observation. In every country where civilised man prevails, many of the inferior animals are repressed and degraded in their character; but where he seldom

intrudes, all their native propensities are exercised, and appear in full vigour.

In the northern regions of America, the beavers begin to assemble in the spring; and form societies of more than two hundred, which generally subsist during the greater part of the year. Their place of rendezvous is always near the brink of some river or lake, where they erect habitations with admirable foresight and regularity. They construct them of the branches of trees, which it might be thought impossible for such diminutive animals to move. These they intermix in such a manner as to form a mound against the violence of the stream: and they plaster their separate tenements with such skill, and appear such proficient in all the arts of architecture, that the ignorant aboriginal natives must, in these respects, be pronounced much their inferiors. Here they bring forth their young, and live in families: during all which time a social compact subsists between them, and influences every member of their association.

The skins of beavers form a very lucrative article of commerce; and the Indian hunters, lured by European commodities, many of which, however, are rather noxious than useful to them, exert all their diligence in procuring a supply of furs to barter for spirits, or for what is often the refuse of English and American markets.

But it is not only the skin of this animal that exposes it to danger from the pursuits of man; its flesh is esteemed by some to be very good for eating, when properly cured; and from its inguinal gland is extracted that valuable drug called castor, so much esteemed in nervous disorders, particularly in hysteric fits, and other female complaints.

#### THE MUSK BEAVER.

This animal is about one-third of the size of the common beaver, but resembles it in miniature. It is extremely prolific, forms societies, and erects buildings; but appears much less provident than the other species. Its fur, however, is not less valued; and its flesh has an exquisite

musky smell, particularly in the summer season, from which circumstance it receives its name.

#### THE GUINEA-PIG.

In the Linnæan system of zoology, the genus *mus* comprehends not only the whole of the mouse and rat kinds, but also several animals, which, in their external form, bear little resemblance to these. Among the latter is the guinea-pig, or common cavy; which is a native of Brazil, though its vulgar appellation among us imports a different original. Few are unacquainted with the figure of this elegant little creature, which is often reared with fond attention as a domestic favourite. It is considerably smaller than the rabbit, its legs and neck are very short, and it has not even the vestige of a tail. It has the lip of the hare, but differs from that animal in the number of its toes. Like other creatures, when taken under the protection of man, its colours vary.

Of all quadrupeds, the guinea-pig is perhaps the most pusillanimous. It has scarcely courage enough to defend itself from a mouse; and the only animosity which it is ever seen to display, is against its own kind. Indeed, the combats of these little animals are ridiculous enough to a spectator. Their jealousies are quickly excited by the most trivial causes; on which occasion they fight in a manner terrible, no doubt, to each other, however whimsical and ludicrous it may appear to us. They scratch, bite, and kick; and sometimes inflict dangerous wounds. A falling leaf, however, will disturb them, the rustling of wind alarm, and the most ignoble foe overcome them.

The guinea-pig, though long domesticated in Europe, requires warmth; and if neglected in extremely cold weather, is sure to perish. It is particularly cleanly: the male and female take a pleasure in licking and decking each other; and they also watch by turns, while the other sleeps. They are very prolific; and are commonly fed with bran and succulent vegetables, but seldom drink.

Their note is peculiar ; and when expressive of pain, is very piercing.

#### THE AGOUTI.

This animal seems to be a middle species between the hare and the marmot. It is very numerous in South America ; and has been denominated the *rabbit* of that continent, which animal it resembles in size ; its ears, however, are shorter, its back arched, and its hair bristly. Its tail also is shorter, and entirely destitute of hair ; and the number of its toes is different from that of the hare-kind. In disposition, no similitude can be traced ; it is voracious in all its appetites, and not nice in its selection of food. It burrows in the cavities of trees ; and is sharp-sighted, agile, and capable of being reclaimed ; after which it seldom reverts to its original wildness.

The female breeds twice or thrice a year : she suckles her young for a short time, and then leaves them to provide for themselves, of which they are soon capable. Vast numbers of these animals are killed for their flesh, which is said to be very good when dressed, like that of a sucking-pig. They are frequently hunted by dogs ; but are more usually driven from their retreats in hollow trees by the smoke of burning substances, applied to the aperture. While this is performing, the poor animal expresses its terror by the most plaintive cries : but seldom quits its hole till the last extremity. When half-suffocated, it descends, and seeks security by flight ; and, when not in a situation to make good its escape, it turns on the hunters, and defends itself by means of its teeth and claws, with an obstinacy scarcely to be expected from such a feeble creature.

#### THE LEMMING.

This extraordinary animal, one of the greatest pests of some of the northern countries of Europe, has the figure of a mouse ; but the tail is shorter, and the body is about five

inches long. The hair is fine, and variously spotted in different animals; the eyes are small and black, and the ears recline backwards.

The lemming, called also the Lapland marmot, pours down periodically from the Scandinavian mountains; and, like a conflagration, consumes every production of the earth that falls in its way. In these migrations, which generally take place after long-continued rains, they generally move in regular bodies, several millions in a troop; advancing by night, and halting by day. Such astonishing numbers are collected, that they frequently cover a mile square; and the simple Laplanders are impressed with the belief that they are really rained from the sky. In vain do the wretched inhabitants resist them, or attempt to check their progress: like an overflowing torrent, they carry all before them. Wherever their motions are directed, nothing can impede them: they swim across rivers and lakes, and climb over houses, rather than deviate from the regular line of the march; and, in their progress, devour every species of vegetable with which they meet, leaving a wilderness and desolation behind them.

Enemies so numerous and destructive would soon depopulate the country that produced them, did not the same voracity which prompts them to destroy the labours of industry at last impel them to prey upon each other. After committing incredible devastations, they sometimes divide into two armies, and fight with deadly fury. What becomes of the victors or the vanquished is unknown: it is probable, that, having devoured every thing else, they subsist on each other; and being, on their whole migration towards the sea, attended by larger animals of prey, their ranks thus grow thinner and thinner, till they all either are destroyed or expire naturally. Sometimes such numbers have been found dead, that their putrid carcasses have infected the surrounding air, and occasioned malignant distempers.

These animals are prolific beyond conception; and,

though millions thus leave the country where they are produced, and millions more are devoured in their native mountains, as well by animals of prey as by the Laplanders, (who eat their flesh,) there appears no deficiency in their numbers. Happily for mankind, however, their emigrations happen not oftener than once or twice within twenty years.

#### THE MARMOT.

This animal is nearly the size of a hare, which it resembles in the shape of its head; but its ears are much shorter, and the tail more tufted. The body is clothed with long hair; under which is a fine short fur, of different colours, generally cinereous mixed with tawny.

The marmot is a native of the Alps; but is likewise found in Poland, part of Tartary, and (with some specific differences) in Africa and America. When taken young, it is easily tamed, and taught to dance, to obey the call of its master, and to perform several tricks for his amusement. It is in general a very harmless and inoffensive animal; and, except in its antipathy to dogs, which appears invincible, it lives in friendship with every creature that abstains from giving it provocation.

Marmots feed indiscriminately on flesh, bread, fruit, or vegetables; but are particularly fond of milk and butter. When irritated or frightened, they utter a piercing cry. Though cleanly in their habits, they have a disagreeable scent, particularly in warm weather; as the cold sets in, however, they begin to prepare their winter residence, and lie in a state of torpidity, like the bat and the dormouse, till the return of spring.

The marmot produces but once a year, and usually brings forth four or five at a time. It speedily arrives at maturity; consequently its life is short, seldom exceeding nine or ten years.

#### THE DORMOUSE.

There are several varieties of this pretty little animal probably produced by climate, or other accidental causes

but all agree in their propensities and habitudes. The common dormouse has full black eyes, round naked ears, a tail two inches and a half long, with a body about the size of the common mouse, though rather more plump. It is covered with a red tawny fur, except on the throat, which is white. This variety inhabits every part of Europe. It generally builds its nest near the bottom of a thick hedge, either with moss or leaves; and subsists on nuts, which it eats in an erect posture, like a squirrel.

Towards the approach of winter, these animals form magazines of nuts, beans or acorns; and, as soon as the cold is sensibly felt, they prepare to mitigate its effects by rolling themselves up into a round ball, and thus exposing the smallest surface to the weather. It frequently happens, however, that either the heat of the sun or the transition from cold to warmth thaws their nearly stagnant fluids, and awakens them from their torpor. On such occasions, as their provisions are at hand, they enjoy their stores till their natural lethargy returns; in which they usually continue about five months out of the twelve. The female breeds but once in the year, and seldom brings forth more than four or five at a time.

## COMMON MOUSE.

Though there are field-mice, garden-mice, and wood-mice, which are only slightly discriminated from each other, the timid, cautious, active, little animal now under consideration, is wholly domestic. Fearful by nature, but familiar through necessity, it is a parasitical attendant upon the human race. To seek food is the only incitement which it has to quit its hole, and then it seldom ventures farther than its wants compel it. When fed in a cage, it retains all its natural apprehensions; and, though it may be tamed to a certain degree, it never discovers the smallest signs of attachment to its benefactor.

No animal has more enemies to avoid than the mouse; yet its extreme fecundity keeps up the race without any apparent diminution. Aristotle informs us, that, having

put a pregnant mouse into a vessel of corn, he soon found a hundred and twenty mice, all sprung from the same original.

#### THE RAT.

This is one of the most pernicious of the smaller quadrupeds; nor can all the arts of man extirpate the race. Not only our food, our drink, our clothes, and our furniture, are a prey to it, but it makes dreadful havoc among young poultry, rabbits, and game. It can gradually penetrate the hardest wood, and the most solid mortar; and no care or ingenuity can wholly exempt us from its depredations. The cat, the weasel, and the dog, combine with the human race in thinning its numbers; yet it finds means to elude their united efforts, and still remains formidable.

Till about the commencement of the last century, Britain was indeed annoyed with rats, but by a species comparatively harmless. Our small black rat, which has now given way to the Norway breed, was much less injurious than the latter; but the species is almost extinct. Such is the superior ferocity of the large Norway rat, that it has almost annihilated the indigenous animal, and has entailed upon our country a still greater plague.

The rat is said to produce from fifteen to thirty at a time, and that frequently: hence we cannot wonder at its astonishing numbers, and that all the means employed to reduce them are only partial and temporary alleviations of the evil. Its bite is not only severe but dangerous; and its resolution, reinforced by its disgusting appearance, renders it the object even of terror to many. The harmless mouse pleases more than it alarms by its intrusions; but there are few who do not feel a sort of antipathy at a rat, and even shun it as they would a viper.

The Europeans first introduced these animals into America, about the year 1544; and they are already become the pest of that whole continent. America has lent us its ills; but, by bestowing on it the rat, from which no vigilance can give protection, we have, in some measure, balanced the account of injuries. The water-rat, which



is a different species from the domestic, chiefly subsists on frogs, small fish, roots, and insects; and itself becomes sometimes the prey of the pike.

#### THE SQUIRREL.

Several species of squirrels are enumerated by zoologists; such as the common, the Ceylon, the Abyssinian, the Bombay, the ruddy, the grey, the black, the Hudson's-bay, the varied, the fair, the Brazilian, the Mexican, the palm, the white-nosed, the sailing, and the flying. These families are all distinct from each other; but a general idea may be obtained of the whole race, from a description of the first and the last.

The common squirrel is a well-known, lively, and elegant little animal. Its ears are terminated by long tufts of hair, its tail is long and bushy, the legs are short and muscular, and the nails sharp and strong. The head, body, tail, and legs, are of a bright reddish colour; the belly and breast are white.

This beautiful animal merits the benevolent protection of man, on account of its docility and its innocence. It usually feeds on fruits, nuts, and acorns; and, with provident care, lays up in summer and autumn a sufficient stock of provisions for its winter subsistence. It lodges in the hollows of trees; and, by its sportive bounds from one tree to another, enlivens the sylvan scene, and seems to tempt pursuit, though it generally knows how to frustrate the aims of its pursuer.

The squirrel, of all quadrupeds, is the most completely formed for climbing; and its agility is extreme. It is easily tamed, and becomes very familiar. Fond of warmth, it will creep into our pocket, our sleeve, or our bosom. When provoked, it will bite with some severity; but is far from being naturally ferocious.

#### THE FLYING SQUIRREL.

This little animal, which is frequently imported into our country, is less than the common species. Its skin,

which is very soft, is elegantly adorned with a dark fur in some parts of the body, and a light grey in others. It has a lateral membrane, extending from the fore to the hind legs; and its tail is covered with long hair, horizontally disposed. By means of the appendage connecting its legs, it is capable of darting itself twenty yards, from one tree to another, at a single bound.

This animal is a native of North America and New Spain; a variety of it is also found in Lapland, Poland, and Russia. It is easily tamed; but embraces the first opportunity of making its escape; and, though playful, discovers little attachment.

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### ORDER V.—PECORA.

THE characteristics of this order (which includes the camel, the musk, the stag, the goat, the sheep, and the ox kinds) are, that the animals have cutting teeth in their under, but none in their upper jaw; and but five molar teeth in both.

#### THE CAMEL.

There are two varieties of this very useful animal, both of which may be considered as essentially serviceable to the natives in the parched deserts of Africa, Arabia, and other tropical countries. One, which is called more peculiarly the camel, has two protuberances on its back; the other, which obtains the name of the dromedary, has only one, and is neither so large nor so strong as the former. Both races, however, intermix; and their united offspring is reckoned more valuable than the pure breed of either. The dromedary, indeed, is by far the more numerous, and extends over very spacious regions; while the camel is scarce, excepting in Turkey and the Levant. Neither of them can subsist or breed in the variable climates of the north; and they seem intended by Provi-

dence for the service of man in those countries where no other animals are qualified to excel in this respect.

The camel has a small head, short ears, and a long bending neck. Its height, to the top of the dorsal protuberances, is about six feet and a half. The colour of the hair on the protuberances is dusky, and that on the other parts is reddish ash. It has a long tail, small hoofs, and flat feet, divided above, but not separated. On the legs are six callosities; and, besides the four stomachs which all ruminating quadrupeds possess, it has a fifth, which serves as a reservoir for carrying a supply of water in the sandy parched deserts that it is obliged to traverse.

Every part of this animal is applied to some beneficial purpose. Its milk, its flesh, its hair, its urine, and even its dung, are all turned to advantage by man. Its chief utility, however, consists in its being a beast of burden in countries where no other quadruped could live and perform that office. By means of this useful creature, the trade of Turkey, Persia, Arabia, Barbary, and Egypt, is principally carried on. It is not only qualified to carry heavy burdens, but to support extreme abstinence; and, at the same time, it travels with great expedition. In a word, it is the most tractable and most valuable animal to be found in all the warm regions of the old continent.

#### THE LAMA

This animal has obtained the appellation of the camel in the New World; it is found, however, only on those mountains which extend from New Spain to the straits of Magellan. Peru seems to be the country where it thrives best, and where its services are most used. It is, indeed, the only native beast of burden which America originally produced. It is far inferior to the camel in strength, speed, and magnitude. Its utility, however, when reclaimed (for numbers run wild) is very great, and entitles it to much consideration, both from the aboriginal natives and the intruding Spaniards; among whom, in many cases, it constitutes a principal article of wealth. In fact, without the

lama, it would be impossible to transport goods, and costly metals, from one place to another: it climbs the most craggy rocks, or descends the steepest precipices, with a load of about a hundred weight, and where its conductor is hardly capable of accompanying its steps.

This animal is about three feet high. The neck is long, the head small, and the colour white, black, or brown. The female produces only one at a time; and the period of its life appears limited to twelve years.

#### THE MUSK.

Though the drug which is called by the name of this animal was imported into Europe ages since, and has long obtained celebrity in medicine, it is only of late years that we have had any accurate knowledge of the creature that produces it.

The musk is destitute of horns, and of fore-teeth in the upper jaw; but has on each side a slender tusk, nearly two inches long, projecting in view. The length of the body is about three feet and a half, and of the tail scarcely an inch. The hair is remarkable for its length and fine texture; it is parti-coloured from the root upwards, but tipped with ferruginous; the belly and tail are whitish.

The musk inhabits the kingdoms of Tibet, Tonquin, and Boutan. It delights in mountains covered with pines, and shuns the abodes of men. It is extremely timid; and, if pursued, ascends the most inaccessible cliffs. However, great numbers are killed on account of the drug which they possess; and which is found in a bag under the belly of the male, about the size of a hen's egg. This appendage the hunters cut off, and secure for sale. Tavernier informs us, that he purchased seven thousand six hundred and seventy-three musk-bags in one journey; a proof how amazingly numerous these animals must be. The flesh, though astonishingly infected with the scent, is nevertheless eaten by the Tartars and Russians.

The Brazilian, the Indian, and the Guinea musks are all different species of this genus. The latter is only ten



Fig. 1. Dromedary.  
Fig. 2. Camel.

Cooper sculp.

found, that animals transported from temperate latitudes to the more northern are less affected than such as are brought from the latter to the southern.

This is an awkwardly formed animal, with a very inelegant gait. The fore-legs are long; the neck short; and the horns very large and spreading, plain on the inside, and furnished with several sharp points on the exterior. There are no brow-antlers. Under the throat appears an excrescence.

The moose-deer stands very high before, and is altogether a bulky animal; but its dimensions have been very much exaggerated by some travellers. It is very inoffensive, except when wounded, or in the rutting-season. In Canada, it is hunted during winter; and its flesh is esteemed very light and nutritive. The nose and tongue, however, are the greatest delicacies, in the estimation of epicures.

The skin makes excellent buff-leather, and is said to be capable of resisting a musket-ball. The hoof was formerly reputed very efficacious in curing epilepsies; but, in this view, it has now justly fallen into neglect.

#### THE REIN-DEER.

Of all the animals in the arctic regions, the rein-deer is the most useful, and the most worthy of our attention. It is found as near the pole as man can penetrate; and, as if intended for the service of the natives in the hyperborean climates alone, is incapable of existing under a milder sky.

From the rein-deer singly, the Greenlanders, the Laplanders, and other inhabitants of the north frigid zone, derive a supply for their most pressing wants. It answers the purpose of the horse in conveying them from one place to another, that of the cow in affording them milk, and that of the sheep in furnishing them with clothing: while the flesh serves for food, as the tendons do for bow-strings; and which last, when split, supply the want of thread.

The horns of the rein-deer are very large, but slender, projecting forwards, and palmated towards the top. The height of a full-grown animal of this kind is about four feet and a half; it is very strongly built, has thick hair, and invariably a black space round the eyes. Its pace, which is rather a trot than a bounding motion, it will continue for a long time without apparent fatigue, particularly when yoked to a sledge on the snow.

A Laplander regards the rein-deer as his principal source of wealth, and some individuals possess a thousand of them in a single herd. The season of parturition is about the middle of May, and the females continue to give milk till about the middle of October. Every morning and evening, during that interval, the herdsmen drive them to the cottages to be milked, and afterwards back to pasture. In winter, however, they are left to shift for themselves; and chiefly subsist on a species of moss, or lichen, which they instinctively discover and paw out from beneath the snow.

The rein-deer is of two kinds, the wild and the tame; the former being stronger and more mischievous than the latter. The mixed breed between them is generally preferred.

#### THE STAG, OR RED-DEER.

This species of deer has long upright horns, much branched, and slender, sharp, brow-antlers. The colour is generally of a reddish-brown, with some black about the face, and a black list down the hind part of the neck and between the shoulders. The stag is common to the northern parts of every quarter of the globe, and is pretty generally diffused over Europe. It is one of those mild, tranquil, and innocent animals, which seem created to adorn and animate the solitude of the forest: and to occupy, remote from the visits of man, the peaceful retreats of nature. Like the rest of the deer-kind, the stag annually sheds its horns, from which that useful volatile spirit called hartshorn is obtained. The hind, or female, goes with young somewhat more than eight months. In

the rutting-season, it is dangerous to approach the male. As the flesh is not much esteemed, they are seldom taken under the immediate protection of man, like the fallow-deer, but are left to range in forests and chases, where they furnish diversion to hunters. The stag is supposed to live about forty years. It has good eyes, an exquisite smell, and a quick sense of hearing. It appears fond of music; and shows no particular dread of man, unless when attended by dogs, or furnished with arms: against dogs it will sometimes make head with peculiar resolution. Indeed, its intrepidity on emergencies is very great; and William, duke of Cumberland, having caused a tiger and a stag to be inclosed in one area, the latter made such a bold defence that the savage beast was obliged to fly.

#### THE FALLOW-DEER.

Though the fallow-deer and the stag are as nearly allied as any two animals can possibly be, they show a rooted aversion to each other; and will neither associate nor breed together.

The fallow-deer, the male of which is called a buck and the female a doe, is a well-known animal, and is kept in parks to serve the purposes of pleasure and luxury. Having undergone a species of domestication, it varies very much in colour; and climate and food have a very sensible effect on its size, and the flavour of its flesh. The English venison is reckoned superior to that of any other country; and no where do the inhabitants seem more capable of appreciating its good or bad qualities. Good eating is, indeed, here reduced to a science; but the proficiency acquired in it is generally in an inverse ratio to the improvement of the understanding.

The doe goes eight months with young, and commonly brings forth one at a time. From July to October, the flesh of the buck is most in season; and from November to February the doe is preferred: the haunch of the latter, however, is small and insipid, compared with the former.



## THE ROE-BUCK.

This beautiful little animal, the smallest of the deer kind, though formerly a native of Wales and of the northern parts of England, at present exists in no part of Great Britain, except the Highlands of Scotland. The species, however, is diffused over the northern parts of Europe, Tartary, and China; and, according to some, is found in North America. It is about three feet long and two high, and the horns measure about eight or nine inches. The figure of this animal is extremely elegant, and its fleetness is equal to its beauty. Its hair is always smooth, clean, and glossy; and, as it delights in the purest air, it frequents only dry situations. It bounds with grace and agility; and, with extraordinary cunning, finds means to avoid the hunters.

Instead of herding together, these animals form separate families; the sire, the dam, and the young, associating with each other, and excluding all strangers from their community. Every other species of deer is inconstant in affection; but the roe-buck never forsakes its mate, and the progeny live together till they are old enough to commence an independent society of their own.

The female's period of gestation is only five months and an half, in which respect the roe-buck seems to approximate to the goat kind. When she is ready to bring forth, she retires to the thickest part of the wood, and generally produces two at a time.

## THE ANTELOPE, OR GAZELL KIND.

Linnæus makes antelopes a species of the goat genus; but other zoologists consider them as a distinct race, and enumerate a considerable number of species. The distinguishing characters are these: their horns are annulated, or ringed round, at the same time that there are longitudinal depressions running from the bases to the apex; they have bunches of hair on their fore-legs, a party-coloured streak running along the inferior parts of

their sides, and three lines of whitish hairs on the internal sides of their ears. They resemble the goat in never shedding their horns; on the other hand, they have a conformity to the roe-buck in the elegance of their form, and the graceful agility of their motions.

Most of these animals are natives of the torrid zone; and are always confined to it, or its vicinity. There is none, however, in the New World; but in Asia and Africa they are surprisingly numerous. All the species, of which we can only enumerate a few, may be characterized as active and elegant, restless and timid, vigilant and vivacious, and remarkably swift and nimble. The eyes are so extremely brilliant, and at the same time of such a mild aspect, that they furnish a never-failing simile to oriental lovers, when they wish to compliment the beauty of their mistresses. One species produces the bezoar, which was once held in high reputation for its fancied medicinal virtues.

#### THE COMMON ANTELOPE.

This animal, which is a native of Barbary, is somewhat inferior in size to the fallow-deer, but resembles it in all the proportions of its body. Its horns are upright, spirally twisted, and encircled almost to the top with prominent rings. The colour of the body is brown mixed with red and dusky; the belly and the insides of the thighs are white. The female is destitute of horns.

#### THE WHITE-FOOTED ANTELOPE, OR NYLGHAU.

This peculiarly elegant and beautiful animal measures upwards of four feet to the top of the shoulders; and nearly the same in length, from the bottom of the neck to the insertion of the tail. Its horns are short, and project a little forward. It has a short black mane, extending half-way down the back; and a tuft of long hair on the fore-part of the neck, above which is a large white spot, another on the chest, a third on each fore-foot, and two



*Fig. 1. Goat of Angora.*

*Fig. 2. Mutton.*

*Fig. 3. Many horned Sheep.*

*Cooper sculp.*

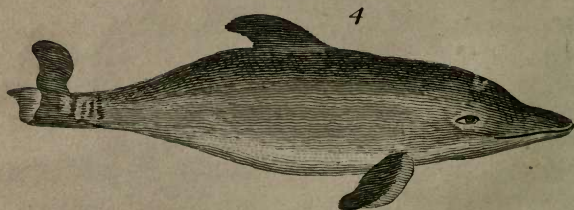
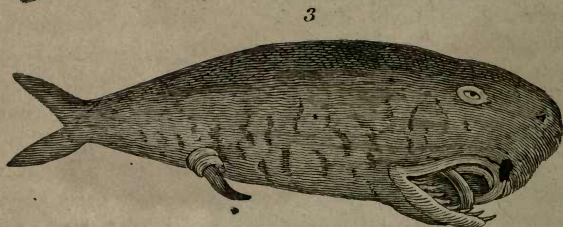
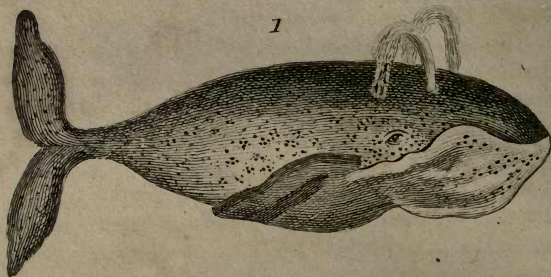


Fig. 1. Whale.  
Fig. 2. Narwal.

Fig. 3. Cachalot.  
Fig. 4. Dolphin.

Cooper sculp.

on each hind foot. The colour of the male is a dark grey; that of the female a pale brown.

This species inhabits the interior parts of Indostan; and, during the reign of Aurengzebe, was highly prized for the diversion which it afforded in hunting; the flesh is no less valued for eating at this period, being reckoned a present fit for a prince.

White-footed antelopes have occasionally been introduced into England; and, notwithstanding the surprising difference of climate, they have been known to breed; an instance of this kind was witnessed in Blenheim-park, where a pair were kept in a separate paddock for some time; but, occasionally showing symptoms of ferocity, they were destroyed, for fear of accidents to the heedless or venturesome spectators.

#### THE ROYAL ANTELOPE.

This species, called also the chevrotin, is perhaps the smallest and most beautiful of all cloven-footed quadrupeds. Its legs are not much larger than a goose-quill; the height about nine inches, and the length fourteen. The shape is delicate beyond description, and it appears like a stag in miniature.

The royal antelope is a native of Senegal, and the hottest climates of Africa. Its agility is extreme: for, notwithstanding its diminutive size, it will bound over a wall twelve feet high. When domesticated, it becomes entertaining and familiar; but is too delicate to exist in a much colder climate than that in which it is produced.

#### THE COMMON GOAT.

The goat is one of those domestic animals whose value is overlooked, merely because it is far exceeded by the sheep. Thus the ass is lightly esteemed, because we have a more useful servant in the horse.

The common goat inhabits most parts of the world, either as a denizen or naturalized. It endures all kinds of weather, and seems to thrive in every climate; but it

was not originally found in America. The colour and size vary extremely, as is usual with most animals so widely diffused and so long reclaimed; but in every region it exercises its native propensity of climbing, and appears fond of situations inaccessible to other animals.

The goat, indeed, prefers the neglected wild and the abrupt precipice to the cultivated fields of art. It is playful, capricious, and extremely salacious. In warm climates, the female, which goes five months with young, produces three or four at a time, twice a year.

In several parts of Ireland, Scotland, and Wales, goats constitute the principal property of the poor. The milk is sweet, nutritive, and medicinal, and peculiarly grateful, as well as serviceable, to invalids. The kid is considered, even by the epicure, as a dainty; and the flesh of the old, when properly prepared, is agreeable food. The skin, the hair, the horns, are all applied to beneficial purposes; and, in short, every part of this animal has found its appropriate use.

The goat was held in great veneration by the ancient Egyptians; and was never offered in pagan sacrifice, because Pan was represented with the legs and feet of that animal. We must except the Greeks, however, by whom it was immolated on account of its mischief to the vines. There are various species of this well-known animal.

#### THE IBEX.

This creature, which is a native of the Carpathian and Pyrenean mountains, the country of the Grisons, the Rhetian Alps, and various districts of Asia, has large knotted horns reclining backwards, and sometimes three feet in length, a small head, full eyes, and rough hair. The colour is a deep brown mixed with some hoary, and the male has a dusky beard.

During the rutting-season, the males make a horrible noise; and the females separate at the time of parturition, and retire to the side of some stream, in order to bring

forth. Being strong and intrepid, the chase of these animals is difficult, and sometimes dangerous: they will, when pressed, endeavour to precipitate the incautious hunters from the rocks; while, in the last extremity, they will fling themselves down the highest precipices, and, falling on their horns, escape unhurt.

#### THE GOAT OF ANGOLA.

This animal seems to be confined to a district of two or three days' journey in extent, about Angola, Beibazar, and Cougua, in Asiatic Turkey. It is covered with fine brown, black, or white hair, of a silky texture, which forms the chief materials of our best camlets. The goat-herds are extremely careful of their flocks, frequently combing and washing them; and this gives a beauty to their hair, which is unrivalled in any other part of the world.

#### THE MOUFFLON.

This animal, the *capra ammon* of Linnæus, has obtained various appellations: by some it is considered as the sheep in its native state, and indeed it bears a more striking resemblance to the ram than to any other animal. It has been known to intermix with the domestic sheep; and, though by nature extremely wild, retains all the marks of the primitive race, except that it is covered with hair rather than wool.

There is a strong similitude between the male and the female of this species, but the latter is considerably smaller. The horns of the ram, in all their convolutions, have been sometimes known to measure two ells in length, and with these it maintains obstinate conflicts with others of its kind.

The moufflon is extremely fleet: it inhabits the most uncultivated parts of Greece, Sardinia, and Corsica, and is found likewise in the deserts of Tartary.

#### THE SHEEP.

The distinguishing characters of this genus are, the horns hollow, bent backwards, wreathed, crooked, and

scabrous externally, eight cutting-teeth in the lower jaw, but none in the upper.

Linnæus enumerates three distinct species; the ram or common sheep, the Guinea sheep, and the Cretan sheep, besides several varieties; such as the broad-tailed sheep, the many-horned sheep, the fat-rumped tail-less sheep, and the African sheep: but all may be fairly derived from the common breed, for which reason we shall confine our description to it alone.

The sheep in its present domestic state is at once the most useful, and the most defenceless of animals. Destitute of every quality necessary for self-preservation, they endeavour to fly without swiftness, and to oppose without courage or strength. These feeble efforts only serve to provoke the insults of their enemies; the dog pursues the flock with increased delight on seeing them fly, and attacks them with less fear, not suspecting any attempts at resistance. In short, the sheep derives its own safety from man; and must now rely on that art of protection, to which it originally owed its degradation.

In its servile state, the sheep is not only void of all means of defence, but it appears the most innocent and stupid of all animals. Its physiognomy indicates no traits of cunning or courage, of attachment or reserve. The better it is fed, the more dull and sluggish it becomes; and, in fact, all the changes that have been effected on this animal, and all the pains that are taken with it, tend as much or more to the benefit of man than to its own.

In many parts of the Alps, however, and in some provinces of France, where the sheep are penned every night to secure them from the wolf, they evince a degree of docility and obedience to their keeper. When the sun declines, he sounds his pipe, and they follow him, apparently pleased with his pastoral music: thus realising in some measure the high-wrought accounts of Arcadian scenes, on which the mind of sensibility cannot dwell without some degree of enthusiastic pleasure.

It does not appear that the culture of sheep was much



attended to among our ancestors, the Britons : but, by persevering efforts, during a long succession of ages, the breed is now brought to the highest perfection in this island ; and, except in the fineness of their fleeces, in which we are excelled by the Spanish sheep, in consequence of their milder climate and more suitable pasturage, no country is more famous for this valuable race of animals than our \* own. We have, indeed, several varieties, one distinguished by its size, another by the fineness of its wool, and a third for the delicacy of its flesh. Not only the grand divisions of this island but almost every country, has a peculiar variety ; the judicious intermixture of which is at once beneficial to the breeder and the public.

#### THE OX, OR COW KIND.

The characteristics of this genus are, eight cutting teeth in the lower jaw, and nine in the upper ; the skin along the lower side of the neck pendulous, and the horns bending out laterally.

Of the various domestic animals, the cow may be said to be most universally conducive to the comforts of mankind. The horse generally falls to the lot of the rich ; sheep are kept in flocks, and require attendance : but the cow is more peculiarly the poor man's blessing, and furnishes the principal means of his support. The most fortunate among our peasantry have no other possession than an individual of this useful race ; although, even of it, not a few are little more than nominal owners. They may, indeed, come in for the refuse of the milk ; but the butter and cheese are prepared for other tables, and to the flesh they claim no pretensions.

In countries, however, where simplicity of manners prevails, and where luxury and avarice have not blunted the nicer feelings, the cow is of more general advantage ;

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\* The merino or Spanish breed is now pretty well naturalised in this country ; and while its flesh is improved, its fleece does not appear to be materially deteriorated.

but, in England, the prevailing monopoly of land debars thousands, among the common people, from keeping this excellent animal, whose very milk they cannot purchase from the opulent farmers, even for money.

The climate and pasture of this island are admirably suited to the nature of the cow: it loves to graze in high and rich pastures; and here its taste is highly and amply gratified. In consequence, it grows to a very large size, and yields an abundant supply of milk.

The cow seems more subject to changes from climate and food than any other quadruped. Within the narrow bounds of the British islands, we can easily trace the different varieties produced among these animals by the richness or poverty of the soil. Indeed, in every part of the world, the cow is found either large or small, in proportion to the luxuriant or scanty nature of its aliment. Thus, Africa is remarkable at once for the largest and smallest cattle of this kind. The same effects may be traced to the same cause, in India, Poland, and many other countries. Among the Eluth Tartars, where the pastures are remarkably rich and flourishing, the cow grows to such an enormous size, that a tall man can scarcely reach the top of its shoulder; in France, on the contrary, where this animal is stinted in its food, it greatly degenerates, and is neither valuable for its milk nor its flesh. The variations, however, in the size of this quadruped are less remarkable than those of its form, its hair, and its horns; in many, indeed, these variations are so extraordinary, that they have been considered as constituting different species. However, the wild cow and the tame, the animal peculiar to Europe, and that to Asia, Africa, and America; the bonasus, the urus, the bison, and the zebu, all possess the certain criterion of a common origin, namely, that of breeding and propagating together. In the course of a few generations, the discriminations between them become extinct; yet the bison appears so essentially different from the common cow, that it merits a particular description, which we shall give in a separate section.

Among cows, the period of gestation is nine months, and very seldom more than one is produced at a birth. Every part of the animal has its particular use in domestic economy, commerce, or manufactures. The ox, too, in many instances, is preferable to the horse in the labours of agriculture. He may be maintained much cheaper; he is less liable to disease; and after his services are over, his flesh, when well fed, is not the worse, but rather the better, for his previous employment, while the horse at last is only food for dogs.

#### THE BISON.

This is unquestionably a variety of the cow kind, distinguished from the rest by a lump between its shoulders. Like the domestic cow, this animal varies very considerably in size, and other particulars. In general, however, it has a long shaggy mane, a beard under the chin, a small head, fiery eyes, a look furious and commanding, and horns placed far asunder.

The bison is found in all the southern parts of the world, both Old and New. It is capable of being tamed, and in that state acquires a degree of docility and attachment superior to the common cow. When in its native pastures, however, it is fierce and dangerous; and even when reclaimed, may be trained to warfare, as is sometimes the practice among the Hottentots.

The American bison differs in various particulars from that of the ancient continent. Its horns are shorter; and the hair springing from between them falls over its eyes, and gives it a frightful appearance. The bunch is covered with long reddish hair, and the rest of the body with a sort of black wool, which is highly valued.

#### THE BUFFALO.

Between this animal and the common ox there is a very striking similitude, both in figure and disposition; and yet there are no two quadrupeds more distinct, or which have a greater aversion to each other. They are unquestionably

different species; though the resemblance between them is infinitely greater than that between the bison and the cow, which are known to unite by copulation.

Buffaloes are as much diversified in size and form as the ox kind: in general, however, they are considerably larger, and in a wild state much more formidable, very frequently attacking travellers, whom they gore to death and afterwards trample on, at the same time mangling their bodies in a most shocking manner. They are hunted for their flesh and hides, but the former by no means equals that of the ox.

Though these animals are chiefly found in the torrid zone, they are nevertheless bred in Europe, particularly in Italy; into which country they appear to have been introduced about the year 600. In Apulia they are yet said to run wild, and to grow to twice the size of our largest oxen.

Compared with the cow, the figure of the buffalo is more clumsy and awkward: its air is more savage, and it carries its head nearer to the ground; its limbs are less fleshy, nor is its tail so well covered with hair. The body is shorter and thicker, the legs higher, the head smaller, the horns more compressed, the skin more destitute of hair. The flesh also is less palatable, and the milk less nutritive, though yielded in sufficient abundance. In short, the hide, which is justly celebrated for its softness, thickness, and impenetrability, is the most valuable production of this animal.

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## ORDER VI. — BELLUÆ.

THE distinguishing characteristics of this order are, that the fore-teeth are obtusely truncated, the feet hoofed, and the food vegetable. The genus of the horse, hippopotamus, hog, and rhinoceros, belong to the Belluæ.

### THE HORSE.

The horse is the most beautiful of all quadrupeds; and,

next to the dog and the elephant, the most docile and affectionate. His noble form, his graceful ease, his strength, and above all, his activity and usefulness to man, render him a principal object of our attachment, curiosity, and care; and teach us to regard him as an animal whose welfare is in some measure connected with our own. Yet, though he is often pampered with food, and flattered by attendance, he is much more commonly ill-treated, even while in youth and vigour; and when his services are over, he is criminally neglected.

After carrying an unfeeling or unthinking master, on the road or in the chace, till his strength is decayed, he is sometimes doomed to pass the remainder of his days in a drudgery to which his powers are now unequal, and is left to sink under the load of years and oppression. Yet surely humanity to such a faithful servant is rather a duty than an act of favour; and whoever is wanting in this essential quality to the animal that has long ministered to his pleasure or convenience, will probably be found to pay little regard to the closer ties that connect him to kindred and country.

To form an adequate idea of this noble animal, we must not contemplate him in a domestic state, beautiful as he appears; but in those wild and extensive plains where he ranges without control, and riots in all the luxury of uncultivated nature. In some parts of Africa, where the perennial verdure of the fields supplies his wants, and the genial warmth of the sky invigorates his native spirit, he appears in all his grandeur. There his enemies are few, and most of these no match for him in the combat: he seeks his safety, however, in society, and the troop unites for self-defence, not for annoyance.

Though the horse is found in almost all countries, and is now perfectly naturalised in America, to which he was not indigenous, it is evident that the colder climates do not suit his constitution; for in them he becomes not only ill-shaped, but diminutive. It is chiefly in warmer or temperate latitudes that all the beauties of his form, and

the energies of his character, are displayed. The wild horses of Arabia have been long celebrated throughout the world as the most elegant, the most generous, swift, and persevering of the kind; and the natives employ every stratagem to secure them. They are rather smaller than those which are bred up tame; their colour is brown, their manes and tails are very short, and the hair black and tufted. A stranger can form no adequate idea of their fleetness; and the value set upon them, not only by the natives but the princes and grandees of Europe, has gradually thinned the numbers of those in a state of liberty and independence, and probably will in time extinguish the race.

After the Arab, the Barb, which is sprung from the same stock, is most esteemed, and the Spanish genetive ranks next in order. Every country of Europe has been at abundant pains to cultivate the breed of horses, but England has succeeded most in those destined for the chace, for labour, for war, or the race. The latter, considered abstractedly, is, perhaps, the most useless of the kind, and least deserving the encouragement of a people, who consider morals as far superior to tasteless and expensive amusement.

In this country, indeed, horses are multiplied to such a degree, that they are become almost a nuisance, rather than a blessing. The numbers of those kept for pleasure or parade consume such a portion of the produce of the land, as to be a serious national injury. Their use is not confined, as formerly, to the man of fortune, the farmer, the inn-keeper, the coach-master, and the carrier; but every petty tradesman is now fired with the ambition of keeping one or more, at an expense hurtful alike to himself and to the community. History relates, however, that in the reign of queen Elizabeth, the whole kingdom of England could not supply two thousand horses for raising a body of cavalry. How much is the case altered now? and what consequences have arisen to the poor from the change? Even the tax laid on horses, the most politic

and economical that ever was imposed, has not materially diminished the numbers, kept or bred. Vanity, co-operating with luxury, overlooks expense in its gratification, and regards no personal sacrifices that can be made.

These reflections are not meant against the most useful and generous of animals, but against those who retain him for no purposes of utility; and consequently lessen the quantity, or enhance the price, of those supplies which are more properly due to the human race.

The horse, as being a martial animal, was dedicated to the god of war. The Persians, Armenians, and other nations of antiquity, sacrificed horses to the sun. The Suevi, according to Tacitus, maintained white horses in the sacred woods, at the public charge, and from them drew omens. — The sight of a horse, according to Virgil, was generally considered as ominous of war.

#### THE ASS.

From the first view of this animal, we should be led to imagine it of the same species with the horse, but only somewhat degenerated. The two creatures are, however, perfectly distinct; for, though they will breed together, the mixture between them is barren: a wise regulation of Nature to preserve the unities of form, and the discriminations of species. Indeed, whatever external similarity there may be between them, they are widely different in their natures, tempers, and habits. They have in general a marked aversion to each other; at least, the generous and high-spirited horse seldom fails to evince a shyness at the approach of the humble but patient ass.

In Africa and some other countries, however, the onagra, or wild ass, is little inferior in beauty to the zebra; and, when united in troops, neither fears nor attends to the presence of man; but, in a state of domestication, we see the ass sunk to a passive slave, abused by every petty tyrant, and generally left to chance for the scanty fare which its nature requires. It is indeed commonly the servant of the poor, and so participates

in all the hardships of their situation. — This, indeed, might be excusable, because it is not to be remedied; but the wretched creature frequently falls into the hands of the untaught or unprincipled, and is treated by those unfeeling monsters with a severity in the highest degree disgraceful to human nature. Its faithful services are repaid with insult, its best exertions with blows; and Dr. Percival relates, that, after its hard labour, he has seen its abandoned owner toss up with a companion whether he should lay out a trifle in buying it a feed, or in a glass of gin for himself.

The ass seems to be originally a native of Arabia and the East. By degrees it has spread over colder regions. It appears that there were scarcely any in England during the reign of queen Elizabeth: yet they were certainly known here at least four hundred years before. At this time Scotland contains very few, nor do we find that they have yet reached Norway. The Spanish breed is by far the most esteemed; and the mules produced by this mixture possess several good qualities, which do not exclusively belong either to the horse or the ass.

The hide of this animal is manufactured into several useful articles. The milk of the female is highly and justly valued as a restorative of health.

#### THE ZEBRA.

Whether we consider symmetry of shape or beauty of colours, this is perhaps the most elegant of all quadrupeds: it unites the graceful figure of the horse with the fleetness of the stag.

The zebra is rather smaller than the horse, and in its general shape approximates to the ass; but no two creatures keep at a greater distance from each other, and all attempts to unite them have proved abortive. The colours of the zebra are singularly beautiful: the male is striped all over, in regular lines, with white and brown; the female with white and black. In a word, it is impossible to look at this creature without admiration, or to con-



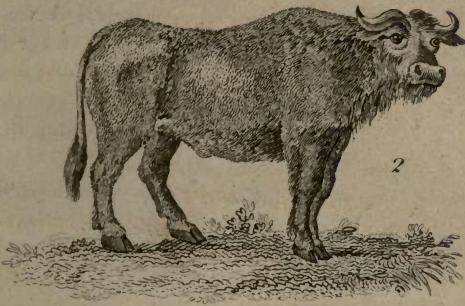


Fig. 1. Bison.  
Fig. 2. Buffalo.  
Fig. 3. Zebra.

Cooper sculp.



Fig. 1. King of the Vultures.  
Fig. 2. Golden Eagle.

Copper sculp

template the difficulty of procuring and taming it without regret. It has been said, indeed, that a set were once yoked to the coach of the king of Portugal; but that they could never be divested of their native ferocity and independence of spirit. So that, with all the arts of man, it seems as if the zebra can never be perfectly reclaimed and numbered with our beasts of draught or of burden.

The zebra is chiefly a native of the southern regions of Africa, and whole herds of them are sometimes observed feeding in those extensive plains that lie north from the Cape of Good Hope. Their vigilance, however, is so extreme, that they will suffer nothing to approach them; and such is their fleetness, that they soon leave every pursuer behind.

#### THE HIPPOPOTAMUS, OR RIVER-HORSE.

This is a large and formidable animal, in magnitude only inferior to the elephant. A full-grown male will measure seventeen feet in length, from the extremity of the snout to the insertion of the tail, seven feet in height, and fifteen in circumference. The head is enormously large, and the jaws extend upwards of two feet. The body is of a lightish colour, thinly covered with hair, which at first sight is scarcely perceptible. Though amphibious, the hoofs, which are quadrid, are unconnected by membranes; and the whole figure exhibits something like a mixture between an ox and a hog. Indeed, its voice too bears some mingled resemblance to the bellowing of the one, and the grunting of the other.

This quadruped, which is thought to be the Behemoth mentioned in the book of Job, resides chiefly at the bottoms of the great rivers and lakes of Africa, from the Niger to the Cape of Good Hope. It is found also in Upper Egypt, and in the lakes and fens of Ethiopia. Being fond of ease, it seldom exerts its might, excepting when prompted by the calls of hunger, or in its own defence. Its usual food is fish; but, when this fails, it leaves its watery retreats, and lives on the spontaneous

fruits of the earth, or the labours of agriculture, which it devours in an instant. In vain do the natives attempt to repel its inroads: its skin is so thick and strong as to be impenetrable to the stroke of a sabre, though it yields to a musket-ball; and, if it feels itself only slightly wounded, its fury against the assailants is terrible. It generally, however, takes to the water on the first appearance of real danger; and here, in its native element, it manifests all its strength and resolution. "I have seen," says a traveller, "one of these animals open its jaws, and, seizing a boat between its teeth, at once bite and sink it to the bottom. I have seen it, on another occasion, place itself under one of our boats, and, rising, upset the vessel, with six men in it."

The female always produces its young on land, and seldom more than one at a time. They live in families; every male having several under its protection. The flesh of the young is said to be excellent; and the negroes, who, indeed, are not very delicate in their taste, never reject that of the old. According to Belon, the hippopotamus is capable of being tamed; and he mentions one which was so gentle as to be let loose out of a stable, and fed by its keeper without attempting any mischief.

### THE HOG-KIND.

Animals of this genus seem to unite in themselves all those distinctions by which others are separated. They resemble the horse in the number of their teeth, the length of their head, and in having but a single stomach; they resemble the cow in their cloven hoofs, and the position of their intestines: and they resemble the claw-footed tribe in their appetite for flesh, and their numerous progeny.

### THE WILD BOAR.

This animal, which may be considered as the parent-stock of our domestic swine, is by no means the filthy, de-

graded creature that constantly falls under our view. It is much smaller than the tame hog, but at the same time stronger and more undaunted. In its own defence it will turn on men or dogs; and scarcely shuns any creature of the forests, in the haunts where it ranges. Its colour is always an iron-grey, inclining to black; its snout is longer than that of the common breed, and its ears are comparatively short. Its tusks are very formidable, and all its habits are fierce and savage.

Hunting the wild boar is a favourite diversion in Germany, Poland, and other European countries, and its flesh is much esteemed when properly cured. It is a native of most parts of the world; but the breed has long been extinct in England, though under William the Conqueror the killing of one was punished with loss of the offender's eyes.

#### THE DOMESTIC HOG.

It would be superfluous to give a long description of an animal so well known. In a domestic state, the hog is apparently the most impure and filthy of all quadrupeds; yet it is not without its taste, and in some respects makes a selection of its food with much nicety. It devours, indeed, the most nauseous offals; but this is only when it cannot find aliment more congenial to its palate.

The hog is one of the most prolific animals in the world, and is most universally disseminated. Varieties of it are found in every climate, excepting within the frigid zone; and different as their appearance may be (from the nature of their food, and other local causes), all the breeds intermix, and will thrive in any temperate latitude. In civilised countries, it is one of the greatest comforts to the poor; and, among the savage islanders of the South Sea whom our navigators have discovered or visited, it is almost the only animal on which they feed. Its flesh, says Linnæus, is wholesome for persons of athletic constitutions, and for such as habituate themselves to much exercise; but it is

improper for the sedentary and studious, and particularly when cured.

#### THE PECCARY, OR TAJACU.

This animal, which, of all others the most resembles the hog in its external appearance, is yet extremely different from it: the body is less bulky, the legs are shorter, the bristles stronger, and the tail scarcely covers the posteriors. It differs still more essentially from that quadruped in having a hump on its back, not unlike the navel in other animals, and which secretes a liquor of a very fetid smell.

The colour of this singular animal is gristly, the bristles being variegated with black and white: the belly is almost bare; but, towards the ridge of the back, the bristles increase in length, and measure nearly five inches.

The peccary is a native of South America, where it is found in large herds of several hundreds. It is extremely prolific; and, in a state of nature, courageous in defence of its young. Though it is capable of being tamed, it never shows any signs of docility, but to the last continues in a state of stupid submission, neither manifesting attachment nor offering injury. It refuses to unite with the common hog, and appears incapable of enduring our variable and more severe climate.

#### THE CABIAI, OR CAPIBARA.

This animal, called also the water-hog, is a native of the same country as the peccary. It has the general appearance of a hog of two years old; but its snout is divided like that of the hare-kind, and is furnished with thick, strong whiskers. It has no tail, and is in a manner web-footed, a peculiarity well adapted for swimming, in which it takes great delight. It preys on fish, flesh, and vegetables, indiscriminately; and, when alarmed, its cry resembles the braying of an ass rather than the grunting of a hog. When pursued, it plunges to the bottom of the stream, where it remains so long that it frequently ex-

hausts the patience of the hunter before it rises. The flesh is fat and tender, but has a fishy, disagreeable taste to most palates. It is easily tamed, and then discovers some signs of attachment to its feeder.

#### THE BABYROUESSA, OR INDIAN HOG.

Though this animal is placed in the hog genus, it has neither the hair, bristles, head, stature, nor tail of that quadruped. Its general figure bears a resemblance to that of a stag; and its hair, which is of a greyish colour, has rather the appearance of wool than of bristles. It has also four enormous tusks growing out of the jaws: the two uppermost of which rise like horns, and, bending backwards, point towards the animal's eyes.

These vast tusks are of pure ivory, and give the animal a very formidable appearance; yet it is less ferocious than the wild boar. It is gregarious; emits a strong scent; and when pursued growls dreadfully, often turning on the dogs, and wounding them with the tusks in the lower jaw. It has an excellent scent, and is extremely swift of foot: when in danger, it will plunge into the sea or rivers, and swim and dive alternately till it reaches a place of security.

The babyrouessa reposes in a very singular manner; by hooking one of its upper tusks on the branch of a tree, and then suffering its whole body to swing down at ease. Thus suspended by a single tooth, it will remain the whole night out of the reach of annoyance.

It appears to subsist chiefly on the leaves of trees and vegetables, shuns the haunts of men, and is harmless, unless when excited to exertion in its own defence. This animal is very common in the island of Borneo, to which it was formerly supposed to be peculiar; but it is now known to inhabit many other parts of both Asia and Africa.

#### THE RHINOCEROS.

Of this animal there are two varieties; one with a single

horn, the other with two, on its snout. Next to the elephant, it is the most powerful of quadrupeds; and the most bulky, except the hippopotamus. Its length is commonly twelve feet, its height six or seven, and its circumference nearly equal to its length.

Except in strength, however, Nature has not endowed the rhinoceros with any qualities that exalt it above the ordinary rank of quadrupeds. Its principal resources consist in its moveable lip and the offensive weapon on its nose, which latter is peculiar to the kind. This is indeed a very formidable instrument of annoyance or defence: it is solid throughout; and situated so advantageously, that it protects the whole visage, and enables the animal to assail its foes with irresistible effect. It frequently rips open the belly of its antagonist, and is dreaded by the tiger more than the elephant itself.

The body and limbs are covered with a blackish skin, so impenetrable as to resist the claws of the most ferocious animals, as well as the spear and the shot of hunters. Being incapable of either extension or contraction, it is rolled up in large folds at the neck, the shoulders, and the rump, in order to facilitate the motion of the head and limbs; which last are massy, and furnished with large feet armed with three toes.

The horn of the rhinoceros sometimes measures nearly four feet in length, by six or seven inches diameter at the base. It is commonly of a brown or olive colour, and is more esteemed by the Indians than the ivory of the elephant; not on account of real advantage derived from it, but for certain medicinal qualities which it possesses, or rather is fancied to possess.

Without being either ferocious or carnivorous, the rhinoceros is perfectly untractable. It is merely among large animals what the common hog is among small; temerarious and brutal, without intelligence, sentiment, or docility. It seems even to be subject to paroxysms of fury which nothing can mitigate; for one that Emanuel, king of Portugal, sent to the Pope in 1513, destroyed the vessel which



was transporting it; and a rhinoceros exhibited some years ago in Paris was drowned in a similar manner, while on a voyage to Italy.

This huge beast is fond of wallowing in the mire like a hog; and testifies a marked predilection for moist, marshy grounds, never quitting the banks of rivers. The species is not very numerous, but it is found in both Asia and Africa. The female produces but one at a time, and that at considerable intervals. During the first month the young rhinoceros is much about the size of a mastiff.

Destitute of every beneficial quality, the rhinoceros consumes an immense quantity of provisions while alive, and its flesh is of no value when dead. Its skin, indeed, forms the hardest and best leather in the world; and, among the ignorant natives of the countries where it is found, almost every part of its body is reckoned an antidote against poison, or beneficial in some diseases.

Having no appetite for flesh, but subsisting on vegetables alone, it neither disturbs the small, nor dreads the largest animals. It is rather solitary than savage, and never attacks mankind unless in its own defence.

The two-horned rhinoceros is a scarce animal. It is found only in Africa; and was a long time supposed to be merely a fabulous creature, till observed by Dr. Sparrman at the Cape of Good Hope, and described in his travels.

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## ORDER VII.—CETÆ.

THIS order includes the whale-kind, the cachalot, and the dolphin. Though inhabitants of the deep, they are viviparous, respire through lungs like quadrupeds, and suckle their young.

### THE NARWAL, OR SEA-UNICORN.

In size this animal is inferior to the whale; seldom exceeding sixty feet in length, and the body is more slender,

and less adipose. Its most distinguishing character, however, is its horn, which projects forward from the upper jaw about twelve feet in length.

Of all the variety of weapons with which nature has furnished her animal offspring, none is more formidable than this. It is perfectly straight, about three or four inches in diameter, tapering to a point, and wreathed in the most curious manner. It is whiter, harder, and heavier, than ivory; and is capable of piercing the hardest substances; but, when the animal ventures to strike this instrument, which it has received for its defence, against other tenants of the deep, into the side of a ship, it generally loses its life for its temerity.

Nevertheless, the narwal is naturally inoffensive: it lives chiefly on marine insects, associates in large herds in the northern seas of Europe and America, and is frequently killed by the Greenland whalers.

#### THE WHALE.

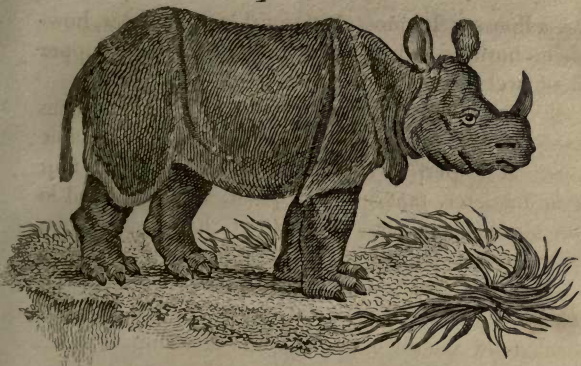
There are several species of this genus; the common, the pike-headed, the round-lipped, and the beaked; but I shall confine my description to the former.

The common, or Greenland whale is the largest animal of which there is any authentic information; being frequently ninety feet long in the northern seas, where it is annually molested in its haunts; and upwards of a hundred and fifty, in places where it is suffered to acquire its full natural size.

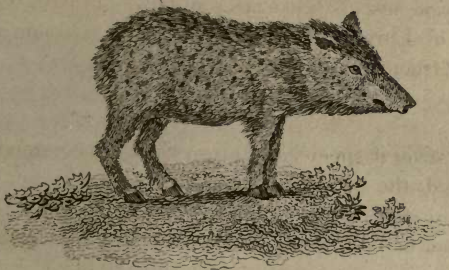
The whale is an unwieldy, ill-shaped animal, the head constituting one-third of its length. There are two orifices in the middle of the head, from which it spouts water to a prodigious distance, and with great noise, especially when disturbed. The eyes, which are not larger than those of an ox, are placed far back in the head, which enables it to see objects both before and behind. The tail is broad and semilunar.

The colour of the whale is not uniform, but admits a great variety of shades, which may be occasioned by age

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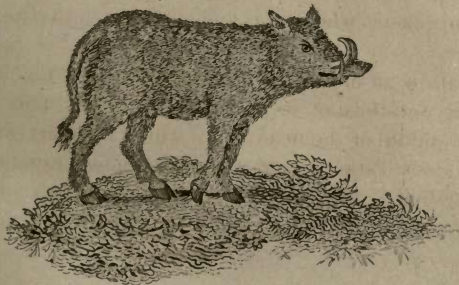


Fig. 1. Rhinoceros.  
Fig. 2. Peccary.  
Fig. 3. Babouïnsi.

Cooper sculp.

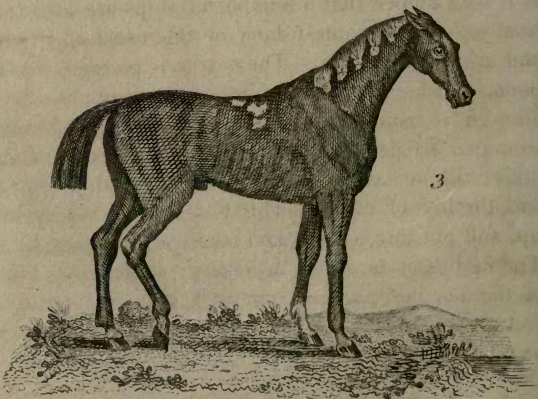
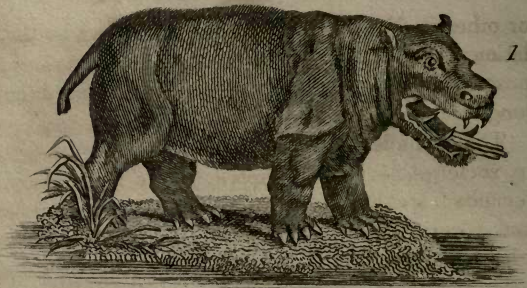


Fig. 1. Hippotamus.  
Fig. 2. American Bison.  
Fig. 3. Race Horse.

Cooper sculp.

or other accidents. The substance known by the appellation of whalebone adheres to the upper jaw, and is composed of thin parallel plates, some of which are four yards long.

The whale is faithful to its mate; and, though it lives in societies, is not corrupted by the intercourse. The female suckles her young for a year with maternal fondness, and is resolute only in its defence. Indeed, though the whale is one of the largest of animals, it is, at the same time, one of the most harmless. Instead of preying on the other inhabitants of the deep, it appears to subsist solely on insects of the medusæ kind.

It is not to be wondered at if such a pacific animal should have many enemies to encounter. A small shell-fish, called the whale-louse, adheres to its body, and preys upon its fat; but, next to man, the xiphias, or sword-fish, is its greatest pest and most dangerous foe. Against its adversaries of the deep, however, it may prevail by force, or escape their malice by artifice; but men, the lords of the creation, pursue it with dexterous and successful hostility, stimulated by mercantile avarice, or a more laudable wish to supply the necessary wants of human life. It is well known that a number of ships are fitted out annually for the whale-fishery on the coast of Greenland, and in the South Sea. The animal is pierced with a harpoon, to which a long rope is affixed, kept coiled up, and allowed to run off to a great length; as often as the wounded whale rises to respire, it receives another harpoon; till at last it sinks, exhausted with fatigue, pain, and the loss of blood. The blubber, or fat, is then cut up, and put into barrels, and is afterwards melted into oil. The flesh is of no value, according to our taste; but some of the northern nations consider it as a great delicacy, and even a dead whale thrown on their shores as a special blessing of Providence.

#### THE CACHALOT, OR PHYSETER.

Naturalists are not agreed with regard to the number of

species or varieties comprised under this genus; but the principal are the blunt-headed, the round-headed, and the high-finned.

This tribe is of dimensions inferior to the whale, properly so called, being, in general, about sixty feet long, and sixteen in circumference. They are more slender, and afford a larger quantity of oil in proportion to their bulk. The head constitutes at least half the length, and the thorax is wide enough to admit and contain an entire ox. In the stomach of the whale scarcely any thing is to be found; but in that of the cachalot there are frequently vast quantities of fish of different kinds; so that this animal is as destructive among fishes as the whale is harmless.

But, terrible as it may be to its companions of the deep, it is by far the most valuable and desired by man, as it yields two very precious drugs, ambergris and spermaceti. These are so universally used for the purposes of luxury or medicine, that the capture of a single cachalot is reckoned a sufficient compensation for the risk and expense of distant voyages, undertaken for this end alone.

The spermaceti, as it is naturally formed, is, in fact, nothing but the brain of the animal; and one of them will yield about sixteen barrels of this substance. The ambergris is lodged in a bag of considerable capacity under the belly, in pretty large lumps; and, though of little intrinsic value, has gained a fictitious reputation, which enhances the price.

#### THE GRAMPUS, THE PORPOISE, AND THE DOLPHIN.

I have thrown these three species of the same genus together, because their distinctions are not very considerable, and their general history is the same. The grampus, which is the largest, never exceeds twenty feet; it may be sufficiently distinguished by the flatness of the head, which resembles a boat turned upside down. The porpoise is about eight feet long, and its snout has more resemblance to the hog than to that of the grampus. The dol-

phin bears a striking similitude to the porpoise, excepting that the snout is longer and more pointed. All have dorsal fins, very large heads, and perfectly agree in their appetites, their manners, and conformations, being equally voracious, active, and roving.

These animals possess so much agility that they are not taken without difficulty. They seldom remain a moment above water; but pursue the shoals of herrings, and other gregarious fishes, with unwearied vigilance. They are frequently seen gamboling in the deep; but whether this arises from pleasure or terror is not clearly ascertained. The fishermen consider the capture of one as no mean prize, on account of the oil; and the flesh, particularly if the animal be young, is said to resemble veal, and to be equally good. Like the whale, they seldom bring forth more than one at a time. They live to a considerable age, and sleep with their snout above water.

From the earliest times, historians and philosophers have contended in inventing the greatest number of fables concerning these animals. The dolphin, in particular, was celebrated among the Greeks and Romans for its attachment to the human race; and scarcely an accident could take place at sea without this creature being said to offer itself to convey the unfortunate mariner on shore. In short, it might be amusing enough, though little instructive, to read all the legends respecting them. Falsity seems, in every instance, to have prevailed in what related to them: even painters, from the arched form in which they generally appear above water, have invariably drawn the dolphin as crooked and deformed, though, in fact, it is sufficiently straight.

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## CLASS II. — BIRDS.

BIRDS constitute the second grand division of animated nature. Though inferior to quadrupeds in strength, saga-

city, and utility, yet in most of these respects they exceed the other classes. The general character of birds is, that they are feathered, two-legged, two-winged, have a hard bony bill, and that the females are oviparous.

This beautiful race is formed to embellish the most sequestered retreats of nature, to cheer with their melody, and to captivate by their innocence. From none of them has man any thing to fear, and very few of them are prejudicial to his interest; he therefore participates in their pleasures, their instincts, and desires, and feels his own enjoyments enhanced by their happiness.

Though all ranks and orders of animals are admirably adapted for their respective situations, none is more apparently so than birds. They share the produce of the earth in common with quadrupeds; and, to compensate for their want of strength, they are endowed with the quality of ascending the region of air, where they are secure from annoyance.

In proportion as animals attain greater perfection, the fewer are the species. Man, the most noble of the creation, is diversified only by climate, or other accidental variations; quadrupeds, as has been already seen, are pretty numerous; birds are vastly more so; fishes are still more various; and, descending to the lower classes of insects and worms, the species are so multifarious, that the most active and inquisitive observer cannot enumerate them all.

Quadrupeds are observed to bear some distant resemblance, in their internal structure, to man; but that of birds is entirely dissimilar. Formed chiefly to move or float in air, all their parts are wonderfully adapted to their destination. Being light and sharp before, they cleave that fluid element with the greatest facility; and, swelling gradually in the middle, they again terminate in expansive tails, which preserve the buoyancy and direction of the body, while the fore parts are cutting their way. Hence they have been compared to a vessel in the sea; the trunk of the animal's body answering to the hold, the head to the prow, the tail to the rudder, and the wings to the oars.



The external apparatus of birds is not less the object of just admiration, than their shape and figure. The position of their feathers, tending backwards, and regularly lying over each other, produces warmth, celerity of motion, and security. Next to their skin is a soft down to protect them from the cold; while the exterior plumage is arrayed in double beards, disposed and inserted in the most perfect and regular lines, such as no ingenuity of man can imitate. To secure them from the injury of violent attrition or wet, birds are furnished with glands, near the rump, distilling a kind of oil, which they occasionally press out with their bills, and spread over the ruffled feathers. This fluid, which is peculiar to the winged tribes, varies in quantity, according to their habitudes and necessities. Aquatic fowls possess it in the greatest abundance; and, though it improves their plumage, it communicates a rank flavour to the flesh, which renders some species disagreeable, and others wholly unfit for our food.

The position of the wings in every kind of birds is such as appears best calculated to preserve the equipoise of the body; and at their extremities they have a finger-like appendage, usually denominated the bastard-wing. This auxiliary instrument of flight is likewise furnished with feathers, which differ from the common only in the largeness of their size, and their springing from the deeper part of the skin. By its means, progressive motion is facilitated, and strength communicated.

To enter into the anatomy of birds forms no part of my present plan; yet I may properly notice a few particulars, as likely to stimulate enquiry, and to evince how well every creature is adapted to its sphere of action. The eyes of birds, for instance, are more flat and depressed than those of quadrupeds, by which means they are enabled to take in a wider expanse of vision. At the same time, to guard the organ of sight the better from external injuries, it is provided with a nictitating membrane, which

can be drawn over the ball of the eye on occasion, while the lids continue open.

External ears would be rather an inconvenience to an animal so constituted ; but, to supply the place, birds are furnished with auditory ducts of extreme delicacy. This sense of hearing, indeed, must be exquisite : for how else could they learn musical notes by artificial instruction, or pronounce words exactly in the tone of the human voice ?

Nor are the olfactory nerves of this class less wonderful. Some birds are capable of smelling their favourite food at an astonishing distance, and even perceive danger from the approach of other creatures before it is near. The persons who earn a subsistence by catching wild fowl, are so well aware of this instinctive sense, that they sometimes keep a piece of burning coal close to their mouths, lest the objects of their pursuit should smell their breath, and thus escape their lures.

The legs and feet of birds are lightly constructed, for their easier transportation through the air. The toes of those that are destined to swim are webbed ; in other kinds disjointed, the better to enable them to retain what they have seized, or to cling occasionally to the branches of trees. Such birds as are furnished with long legs have also long necks, as they would otherwise be incapable of picking up their food ; swans and geese, however, with necks extremely long, have very short legs ; and for that reason are better formed for swimming than for walking.

Thus each of the external parts appears fitted to the life and situation of the animal. Nor are the inward, though not immediately appropriated to flight, less necessary to safety. All the bones are extremely thin and light ; and the muscles very slight and feeble, excepting those which afford motion to the wings.

I shall next advert to the general history of this class. To expatiate on such a subject would be not a little

pleasing; but a slighter notice will probably be sufficient for my readers.

At the approach of spring, birds begin to pair; and then indeed commences the era of love, joy, and harmony, to all animated nature, but more peculiarly to the feathered race. The notes, which are so delightful to the ear of man, proceed from the male birds; and are the language of courtship to their mates, or of endearment to their young. In a state of nature, the two sexes, after pairing, preserve their love-engagement, for the season at least, with inviolable fidelity. Such animals, however, as are under the care of man, are in some measure affected by his corrupt habits. A partial attachment is not very common among domestic fowls. Quadrupeds also, in general, follow the law of constancy, more or less, in their native haunts; and are depraved only when reclaimed.

Before the female begins to lay her eggs, a nest is prepared; in which business, many species display a very considerable degree of ingenuity, both in the construction, and in concealment from the prying eye of man, or shelter from the injuries of other animals. Some birds, however, evince some neglect in this point; but all have a distinct style of architecture, or a particular selection of place, and such as appears best adapted to the general purposes of convenience or protection.

The period of incubation is the happiest part of life to the feathered tribes. Both parents watch their progeny with unremitting vigilance and attention; and seem to feel all the honest pride and importance of the office in which they are employed, and all the fondness of parental solicitude. How wanton, how cruel, then, to wound the tuneful warbler's breast, by robbing it of its eggs, or its young! Trivial is the highest gratification that such plunder can afford, compared with the pain which is thus inflicted!

But instinct, however strong, has none of the permanent attachments of reason. When birds have complied

with the dictates of nature, in rearing their young, and enabling them to provide for themselves, the connection, both between the parents and the offspring, immediately ceases, and perhaps is never again renewed. The expressions of pleasure are then suspended, and silence broods over the groves, so full of melody before. Few birds, indeed, cheer us with their song beyond this period\*; and such as continue their warblings during the autumnal and winter months are the deserved favourites of man. Among these, the robin-red-breast has long been consecrated to the domestic affections; and is at once the sweetest songster of the fall of the year, and the most innocent and familiar among all the winged tribes. The moulting-season quickly follows that of incubation, and of rearing the young. It generally takes place about the end of summer, so that birds are equipped in full plumage before the severe weather sets in; this change, however, is always attended with circumstances of pain and dejection.

Towards autumn, many species of birds begin to collect in flocks, and to leave this country for some places beyond sea; impelled to it by the love of a warmer climate, or by hopes of more plentiful food. Though nothing, perhaps, has more excited the curiosity and exercised the speculation of naturalists than these migratory excursions, few subjects continue so much involved in obscurity.

The place from which some kinds of birds come, and to which they again retire, is still unknown, notwithstanding the improved state of geographical and natural knowledge; but of all subjects that have perplexed and bewildered ornithologists, the disappearance of swallows is the most remarkable. Some contend that they retire to the warm climates of Africa; others, that they lie torpid in caves, old walls, or hollow trees; while, as if to try how far human credulity can go, there are not

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\* Few birds sing after the end of June.

wanting grave and respectable authorities in favour of the opinion, that they plunge to the bottom of ponds, and the beds of rivers, where they lie involved in mud till they feel the genial influence of spring.

In what manner swallows dispose of themselves at their period of migration is certainly undecided, and perhaps will long remain so; but it may be observed, that, as these birds subsist on insects, it is impossible they should continue in this climate during winter, and still retain their vital powers. Several animals are known to become torpid when the cold sets in, and to remain in that condition till the return of spring. From analogy, then, why may not swallows be so affected?—But who has discovered their general retreats? We witness their collection into immense flocks; but have no satisfactory proof, either that they were ever seen taking their flight from our coasts, hiding in our caverns, or plunging in our streams.\*

Of the docility of birds we have numberless instances. A canary-bird has been taught to pick up the letters of the alphabet, and to arrange them at the word of command, so as to spell the name of any person in company; while the notices given on this occasion by the teacher, and obeyed by his pupil, were such as to elude the discernment of every spectator. The aptitude to receive instruction which is displayed by the hawk, the parrot, the magpie, the bull-finch, and various other birds, needs only mention to be allowed and admired.

Linnæus divides birds into six orders: I. ACCIPITRES, or the rapacious kind; II. PICÆ, or the pye-kind; III. ANSERES, or the duck kind; IV. GRALLÆ, or the crane kind;

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\* Having for many years been collecting information respecting the Swallow-tribes, which perhaps may some time be given to the public, on this occasion I shall only observe, that the impression on my mind is, they lie torpid during the brumal season. The reasons on which this opinion is founded, would lead me too far to explain in a work of this nature.

V. GALLINÆ, or the poultry kind; and VI. PASSERES, or the sparrow kind; containing altogether about a thousand species.

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## ORDER I. — ACCIPITRES, OR THE RAPACIOUS KIND.

BIRDS of the hawk kind constitute that class which live by rapine. They are distinguished by their beaks; which are hooked, strong, and notched at the points; by their short muscular legs, their strong toes, and their sharp crooked talons; by the strength of their bodies, and the impurity of their flesh; by the nature of their food; and by the cruelty and ferocity of their disposition.

### THE CONDOR.

This is the largest bird of the vulture kind; and for magnitude, strength, and rapacity, is without a rival among the winged tribes. It is formidable not only to animals but sometimes to man himself. According to some authors, the expansion of its wings is eighteen feet, the beak is strong and sharp enough to perforate the body of a cow, and two of these creatures will devour an ox at a single repast.

Indeed the condor shows no signs of alarm at the approach of man; through the benignity of Providence, however, there are but few of the species, or the consequences might be dreadful. If we may credit the testimony of the Indians of South America, where alone the condor is found, it will carry off a deer or a young calf in its talons, as easily as an eagle carries off a hare or a rabbit. It seldom frequents the forests, as it requires a large space for the display of its wings; but is sometimes seen on the sea-shore, and the banks of rivers; whither it descends at certain seasons from the heights of the mountains or the deserts, which are, for the most part, peopled

by the monstrous births of nature. In those wild regions, every thing inspires a latent horror: broken precipices, prowling panthers, forests only vocal by the hissing of serpents, and mountains of the most forbidding aspect, rendered still more terrific by being the haunt or retreat of the condor.

The colour of this bird is brown. One of its feathers is nearly two feet and a half in length, and in the largest part an inch and a half in circumference.

#### KING OF THE VULTURES.

Vultures in general (which are common in some parts of Europe, and known in every quarter of the globe, though absolute strangers in England) are easily distinguished from birds of the eagle kind, which they resemble most, by the nakedness of their heads and necks; these parts, in fact, having no other covering than a very slight down, or a few scattered hairs. They are all indelicately voracious; though some species, particularly that now under consideration, is not without some claim to beauty.

The king of the vultures is a native of America, and is somewhat larger than a turkey-cock. It is remarkable for the singular formation of the skin on the head and neck, which is bare and of an orange-colour. This rises from the base of the bill, and extends on each side of the head; from which it proceeds like an indented comb, falling according to the inclination of the head. A scarlet-covered skin surrounds the eyes, and the irides have the colour and lustre of pearl. Behind the head rises a tress of black down, from which issues a wrinkled skin, extending below the throat, of a brownish colour, mixed with blue and reddish. Below, on the naked part of the neck, is a collar of soft longish feathers, of a deep ash-colour. Into this collar the bird frequently withdraws its neck, and the greatest part of its head, which gives it, for the time, a very singular appearance.

By these marks, the king of the vultures may be suffi-

ciently distinguished; and though, like the rest of the genus, all its habits are unclean, it is doubtless the most beautiful of them.

### THE EAGLE KIND.

Birds of the eagle kind, of which there are several distinct species in the Linnæan arrangement, belong to the genus *falco*. They generally fix their retreats remote from the habitations of men; choosing rather to prey on the wild game of the forest (thus getting only a precarious subsistence) than to sacrifice their safety to their appetites.

The eagle is among birds what the lion is among quadrupeds. They both exercise a kind of sovereignty over their fellows of the forest; equally magnanimous, they disdain all petty plunder, and pursue only such animals as are worthy of conquest. The eagle will not share the spoils of another bird, but rejects what is not acquired by its own industry and prowess. However craving its appetite, it never stoops to feed on carrion; and, when once satiated, never returns a second time to satisfy its hunger on the same carcase. It is proud and indignant under restraint; yet is capable, with kind usage, of being tamed; and has been known to evince no small share of attachment to its keeper.

The eagle soars the highest of all the feathered tribe, and hence has been emphatically denominated the bird of heaven. Its eye is so strong, that it can look undazzled on the sun; but its sense of smelling is much inferior to that of the vulture. Though very vigorous when on the wing, it finds some difficulty in rising after a descent; but yet will with facility carry off a goose, a hare, a lamb, or any other animal equally large. Even infants have at times fallen victims to its rapacity.

### THE COMMON EAGLE.

The common eagle is of a brown colour: the head and the upper part of the neck incline to red; the feathers of



the tail are white, excepting towards their extremities, where they are blackish; and the legs are clothed with a reddish-brown plumage. This species is found in the northern parts of England, in Scotland, and in other countries. They build their nests upon inaccessible cliffs: and the female seldom lays more than two or three eggs; on which she sits thirty days before they are hatched.

#### THE GOLDEN EAGLE.

This is the noblest and largest of the eagle kind; being about three feet long, and the expansion of the wings upwards of seven feet. The head and neck are covered with narrow, sharp-pointed, dark-brown feathers, edged with tawny; the whole body is a dark brown, the plumage on the back being delightfully shaded with a deeper tinge of the same colour. The legs are feathered down to the feet, and the toes are armed with formidable claws.

This species is found in the mountainous parts of Ireland, and generally breeds in the loftiest cliffs. It has also, at times, been seen in Caernarvonshire; but in that country it is migratory.

#### THE SEA-EAGLE.

This bird is found in several parts of Great Britain and Ireland. It has generally been confounded with the golden eagle, from the great similarity in their colours; but the sea-eagle may be easily distinguished by the nakedness of its legs, and more so by its peculiar habits. It is generally supposed to derive its subsistence from the water; darting down with unerring aim on fish, as they sportively swim near the surface, from a very considerable height.

#### THE FALCON KIND.

There is much confusion in the arrangement of this family, as is generally the case in animals whose breed

has been mixed to gratify the taste of mankind. Falconry was long the favourite amusement of our hardy ancestors, and a person of rank seldom stirred out without his hawk on his hand; indeed in old paintings this appendage is generally considered as the criterion of nobility. The expense that attended this sport was very great; and among the ancient Welsh princes the royal falconer was the fourth officer of state; he was limited to three daily draughts of beer from his horn, lest, from intoxication he should fail to discharge his duty. In the reign of Edward the Third, it was felony to steal a hawk; and even to take their eggs was punishable with imprisonment for a year and a day.

Falcons are distinguished by being long or short winged. In the former division (which is the more generous breed) are the gyr-falcon, the falcon properly so called, the laner, the hoby, and some others; in the latter are the gos-hawk, the sparrow-hawk, the kite, and the buzzard.

#### THE GYR-FALCON.

This elegant species exceeds all others with respect to size; excepting the osprey, which Linnæus ranks in this family. Its bill is yellow, and much hooked; the throat a fine white; and the whole plumage is of one colour, excepting that it is marked with dusky lines, spots, or bars.

This bird was in high estimation when falconry was fashionable, being always trained to pursue the noblest game. It inhabits the northern districts of Scotland.

#### THE PEREGRINE-FALCON.

This is rather a large bird. The bill is much hooked, and is armed near the end of the upper mandible with a very sharp process. The feathers on the forehead are whitish; on the crown black mixed with blue, and on the hind part black. The back, scapulars, and coverts of the wings, are elegantly barred with deep black and blue, and the tail with several dusky and blue strokes. The breast and

belly are whitish, the legs short and yellow, and the toes very long.

The peregrine-falcon breeds in Wales and Scotland, and even now is sometimes trained to the amusement of catching birds. Its flight is surprisingly rapid; for one of them, which had been trained by a gentleman in Angushire, having escaped from him with two heavy bells fastened to each foot, was killed in less than two days afterwards near Mostyn, in Flintshire.

#### THE GENTLE FALCON.

This species is very elegantly formed. The head is of a light rusty colour, with oblong black spots. The whole breast and belly are white tinged with yellow, each feather being marked with cordiform dusky spots pointed downwards. The back is brown; and the quill feathers, which are dusky, are barred on one side of their webs with black, and on the other with white. The tail is marked with four or five black and the same number of cinereous bars. This is the falcon properly so called, and was highly valued in former times.

#### THE BUZZARD.

The length of this bird is about twenty-two inches, and the full expansion of its wings upwards of fifty. It is the most common of all birds of the hawk kind in England. It breeds in extensive woods, and lays two or three eggs. Its colours are liable to considerable variations; but it is unnecessary to describe a bird so well known.

The buzzard is very sluggish and inactive; remaining perched on the same bough for the greater part of the day, and always near the same place. It feeds on birds, rabbits, moles, and mice; and, when impelled by hunger, will make a meal on frogs, earth-worms, or any sort of insects.

#### THE KITE.

The kite may be distinguished from all the rest of its tribe by its forky tail; as well as by its slow, equable, and

almost incessant motion on the wing. Its length is twenty-seven inches, and the expansion of the wings about five feet. It subsists principally on accidental carnage, and is an insidious thief, rather than a bold robber. It prowls about in quest of prey; and, when it meets with a stray chicken or an unsuspecting bird, pounces upon it at once,

The kite usually builds its nest in woods, particularly in mountainous countries. Lord Bacon observes, that, when this bird flies high, fine dry weather may be expected. Formerly it was considered as valuable in medicine, but on no just foundation.

#### THE GOS-HAWK.

This bird is larger than the common buzzard, and of a more elegant conformation. The skin at the base of the bill has a yellowish-green colour: over each eye is a long white line, and on each side of the neck a tract of broken white. The head and hind part of the neck, the back, and the wings, are of a deep brown colour; the breast and belly are white, beautifully marked with transverse bands of black; the tail is long, and of a brownish-ash colour marked with dusky bars.

While falconry flourished, this species was in high estimation. It builds its nest in lofty trees; and is extremely destructive to game, darting through the woods on its prey with vast impetuosity; but, if the object of its pursuit eludes its first attack, it almost immediately gives up the chase.

#### THE SPARROW-HAWK.

Like other birds of the hawk kind, this species varies greatly in its colours; but it is too well known to require a very particular description. The male and female differ considerably in size, as well as in tints: the length of the former being about twelve inches, and the expansion of the wings twenty-three; while the length of the latter is fifteen inches, and the expansion of the wings twenty-six.

This is by far the most elegant, but the most pernicious, of British hawks. It builds its nest in high rocks, large ruinous buildings, and hollow trees : whence it issues to make dreadful havoc among pigeons and partridges.

It appears that the sparrow-hawk was held in great veneration among the ancient Egyptians ; and their god Osiris was represented under this form.

### THE OWL KIND.

This whole family may be considered as robbers who take advantage of the darkness to execute their schemes of plunder. They are distinguished from all other birds by the quality of more perfect vision in the night than in the day : dazzled by too refulgent a light, they require a portion of obscurity to assist them in their depredations. They seldom, therefore, come abroad till about the close of day, at which time they are seen skimming up and down the hedges in pursuit of their prey. The note is hideous in a high degree ; and, being frequently heard in the silence of the night, disturbs the general tranquillity with a horrid interruption. Indeed the prejudices of mankind co-operate with their sensations to make the cry of the owl disgusting ; for, among the lower class of country-people, the note of one species at least has always been considered as the presage of some calamity.

But, though owls are by no means favourites, and are for the most part either ridiculed or disliked, they are not without utility. The barn-owl, in particular, is of infinite service in destroying mice ; and, as it preys only on what is inimical to human industry, it may be reckoned among the benefactors of mankind. There are about twelve species in all.

### THE EAGLE-OWL.

This species almost equals the eagle in size. The head and whole body are finely varied with lines, spots, and

specks, black, brown, cinereous, and ferruginous; the wings are long; the tail is short, and marked with dusky bars.

This bird has been occasionally seen in the north of England and in Scotland, inhabits inaccessible rocks and deserted situations, and preys on hares and feathered game.

#### THE HORNED OWL.

At first view, this species appears very large; which is in a great measure owing to the fulness of its plumage. Its horns, which distinguish it from all others, are composed of six feathers each, rising about an inch high, variegated with yellow and black; and which it can erect or depress at pleasure. The breast and belly are of a dull yellow, marked with slender brown spots: the back and coverts of the wings are varied with deep brown and yellow.

This bird usually breeds in caverns, hollow trees, or ruined turrets. It is common in the north of England, in Cheshire, and in Wales.

#### THE WHITE OWL.

This bird, commonly called the barn-owl, is the best known of any. It may be considered as almost domestic, as it inhabits barns and out-buildings the greatest part of the year, and is extremely useful in clearing them of vermin. At the season of incubation, however, it takes up its residence in the woods. It seldom hoots; but snores and hisses in a most violent manner, and often screams tremendously.

#### THE IVY-OWL.

This species commonly receives the appellation of the screech-owl, to which superstition has ascribed a power of forboding death or calamity by its cries. The ancients

believed likewise that it sucked the blood of young children; and hence it has been dreaded or detested in all ages, probably, however, without any just cause. Its screams indeed are alarming; and, as it frequently approaches windows where there is a light in the room, a circumstance very common in apartments of the sick at all hours of the night, its voice is equally appalling to the superstitious invalid and to his friends.

#### THE BUTCHER-BIRD.

There are several species of this genus; but as they agree in their general character, it is unnecessary to enumerate them all. A description of the greater butcher-bird may serve to convey an adequate idea of the rest.

The greater butcher-bird is no larger than the black-bird, yet it is very fierce and destructive. The bill is about an inch long, and hooked at the extremity. The crown of the head, the back, and the coverts of the wings, are cinereous; the quill-feathers are black, with a broad white bar in the middle of each, the throat, breast, and belly, are of a dirty white, and the legs are black. The toes, which are formed differently from those of other birds of prey, seem to make it the connecting link between the carnivorous and the granivorous and insectivorous kinds. Accordingly, its habits correspond exactly with its formation, as it feeds indiscriminately on either flesh or insects: but it prefers the former; and will attack birds much larger than itself with astonishing spirit, and often with success.

When it has killed a bird or insect, it fixes them on some neighbouring thorn, and tears them to pieces with its bill, its claws being too weak for this purpose. In summer it resorts to the mountainous parts of the country, but in winter descends into the plains.

The butcher-bird is extremely affectionate to its young; and the whole brood, even after they are able to provide for themselves, live in one family. Peace and subordi-

nation are preserved among them ; and they usually hunt and eat together.

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## ORDER II. — PICÆ, OR THE PYE KIND.

BIRDS of the pye kind are distinguished by having a beak in some degree resembling a wedge, and formed for cleaving ; legs short and strong ; bodies slender and impure, from their subsisting on miscellaneous food. They generally breed in trees ; and the females are fed by the males during the period of incubation.

### THE PARROT.

In the vegetable and mineral kingdoms, minute description is often necessary for enabling us to distinguish between what may be useful or injurious, poisonous or salubrious ; but, among animals, where species vary only by shades of colour, which the pencil alone can explain, it might be thought superfluous to enter into particular details of what language at best can very indistinctly describe.

Linnæus makes forty-seven species in the beautiful family of parrots ; and probably he has not described more than half of them ; but the history of the genus, which applies to every individual of which it is composed, may be here sufficient for every purpose.

The distinguishing characters of the parrot family are, that the bill is hooked ; that the upper mandible is furnished with a moveable cere ; that the nostrils are situated in the base of the beak ; that the tongue is fleshy, obtuse, and entire ; and that the feet are formed for climbing.

For the sake of distinction, this genus has been divided into MACCAWS, which are considerably larger than the rest of the kind, and approach the raven in size ; COCATOOS, which are easily known by their beautiful crests ; PARROTS, properly so called, of a middling size, varied



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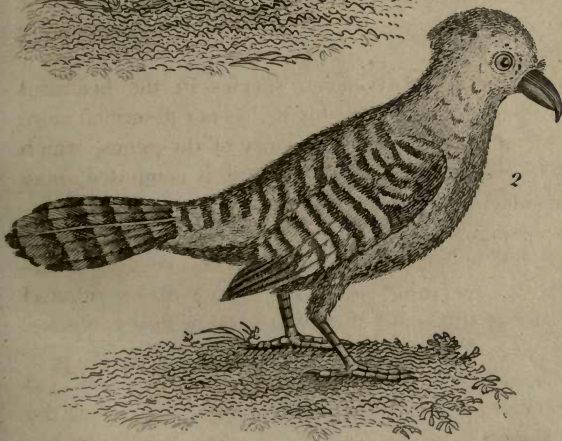


Fig. 1. Horned Owl.  
Fig. 2. Butcher Bird.

Cooper sculp.

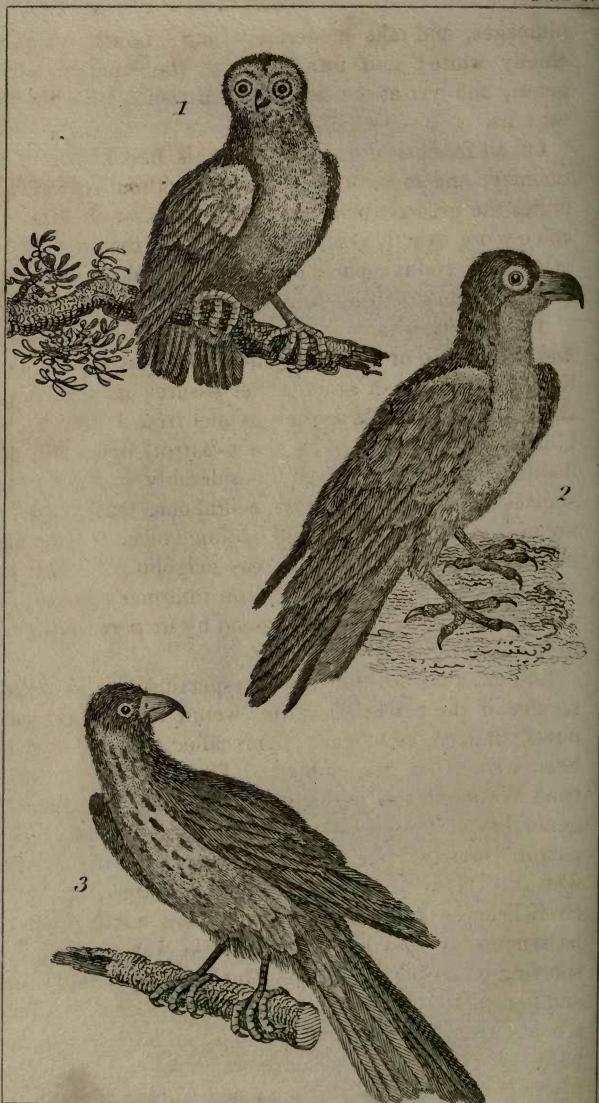


Fig. 1. White Owl.  
Fig. 2. Buzzard.  
Fig. 3. Gyr Falcon.

Copper sculp.

plumages, and tails moderately long; LORIS, which are chiefly white; and PARROQUETS, the smallest of the genus, and yet at the same time furnished with the longest tails.

Of all foreign birds, the parrot is best known in this country, and is most admired; nor without reason, as it unites the greatest beauty with the greatest docility. Its voice more exactly resembles the human than that of any other bird, and is capable of numerous modulations, which even the tones of man cannot reach.

The facility with which this kind are taught to speak, and the degree of memory which they possess, are not a little surprising. A grave writer assures us that one of them learnt to repeat a whole sonnet from Petrarch; and Goldsmith asserts, that he saw a parrot, belonging to a distiller, who had suffered considerably in his circumstances from an informer his neighbour, that could pronounce, in a very distinct and audible voice, "Thou shalt not bear false witness against thy neighbour." The bird was generally placed opposite the informer's house, and greatly amused the neighbourhood by its persevering exhortations.

So numerous are the stories respecting the loquacious faculty of the parrot, that they would form an agreeable novel; indeed, an elegant poem, called the *Vert-vert*, has been written on this subject. The following anecdote from Willoughby is perhaps more entertaining than the generality of those in which the parrot is the hero: "A parrot," says he, "belonging to King Henry the Seventh, who then resided at his palace of Westminster, by the river Thames, had learnt to talk many words from the passengers as they happened to take water. One day, sporting on its perch, the poor bird fell into the water; and immediately exclaimed, as loud as possible, "A boat! a boat! twenty pounds for a boat!" A waterman, who happened to be near, hearing the cry, made up to the place where the parrot was floating; and, taking him up, restored him to the king. As the bird happened to be a

favourite, the man insisted that he ought to have a reward more equal to his services than to his trouble; and, as the parrot had proposed twenty pounds, he said that his majesty was bound in honour to grant it. The king agreed to leave it to the parrot's determination; which the bird hearing, cried out, "give the knave a groat!"

Parrots of different varieties are prodigiously numerous in the tropical climates. The forests swarm with them; and the beauty of their plumage, though not their disagreeable natural voice, adds a degree of vivacity to the loveliest scenes.

There are several peculiarities in the conformation of these birds, that deserve notice. They have all two toes before, and two behind, which they use in a singular manner, in walking or eating. For the former purpose they stretch out two of their toes forward and two backward; but when they want to bring any thing to their bills, they dexterously turn the great hind-toe forward, so as to gain a firmer grasp of what they are going to devour.

The bill is formed in a still more curious manner; the upper chap as well as the lower being moveable. By this means they can open their bills wider, and with more facility admit their food, which, from the formation of the upper mandible, would be difficult if only one of them had motion.

The tongue of the parrot somewhat resembles the human; which, in the opinion of some writers, qualifies it so well to imitate the voice of man; but the organs by which the sounds are articulated lie much farther down in the throat.

Though the parrot is commonly domesticated in Europe, it will not breed here on account of the cold. It indeed can survive our coldest winters, but both its spirits and appetites are visibly affected by severe weather. It then becomes torpid and inactive, and seems quite changed from that bustling loquacious bird which it appears beneath a more genial sky. Nevertheless, with proper at-



Fig. 1. Blue & Red Macaw.  
Fig. 2. Green Brazilian Parrot.

Cooper sculp.

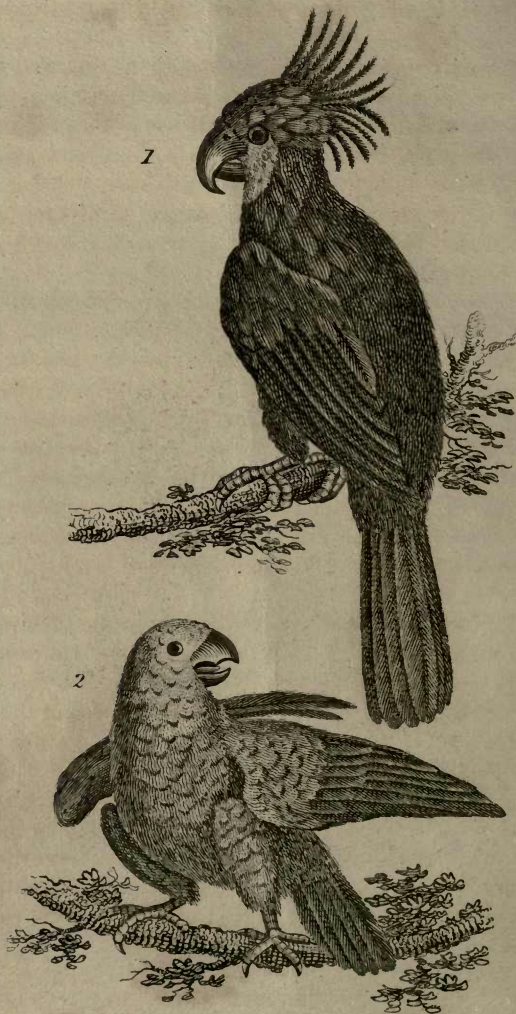


Fig. 1. Great Black Cockatoo.  
Fig. 2. White headed Parrot.

Cooper sculp.

tendance, it will live many years under the protection of man.

The extreme sagacity and docility of this bird form the best apology that can be made for the time which is spent in teaching it to talk. At first it obstinately resists all instruction, but seems to be won by perseverance; makes a few attempts to imitate the first sounds; and, when it has acquired the articulation of one word distinctly, the rest of its lesson is generally learnt with great ease.

These qualities of sagacity and docility seem also natural to them, in their residence among the woods. They live together in flocks; and assist each other against their enemies, either by their courage or their notes of warning. They generally breed in hollow trees, where they make their nests. The largest kinds lay only two or three eggs; but it is probable that the smaller lay more. The natives are very assiduous in seeking the places where they nestle, for the purpose of procuring the young; because those prove the most teachable and lively which are reared in confinement.

The Indians are not anxious to possess these birds for their talking alone, for sale, or for beauty, but also for food; since, though some of them are ill-tasted, others are said to be very delicate, particularly those of the parrot kind.

Numerous as the species are, and widely as they are disseminated over Asia, Africa, and America, yet it appears that they were not very generally known by the ancients. The green parrot with a red neck was the first of this family imported into Europe, and the only one that was described, from the time of Alexander to that of Nero.

#### THE TOUCAN.

There are several species of this singular bird: but they agree in having an enormously large bill, convex, and

serrated at the edges; which distinguishes this genus from all others.

The common toucan is shaped like the jack-daw, and its size is pretty nearly the same. The head is very large, and well calculated to support its vast beak; which is upwards of six inches in length, and in the thickest part two in breadth. The whole substance of this member is extremely slight, and almost as thin as parchment. The chaps are of a bright yellow; except on the sides, which are a beautiful red. A black line surrounds the base of the bill. Round the eyes is a space of bluish skin, destitute of feathers. The head, hind part of the neck, the back, wings, tail, belly, and thighs, are black; while the under side of the head, the throat, and the commencement of the breast, are white. A series of red plumage appears between the black and the white, in a crescent form. The covert feathers under the tail are red, and those above it are yellow.

It is well ascertained, that, though the toucan is furnished with such a formidable beak, it is very gentle and inoffensive; and so easily tamed, that it will sit and hatch its young in the dwellings of men. It principally feeds on pepper, which it devours very greedily.

Pozzi, who bred up one of these birds tame, says, it leaped up and down, vibrated its tail, and cried with a voice resembling that of a magpie. Though it fed miscellaneously, it showed a predilection for grapes, which, when plucked off singly and thrown into the air, it would catch with great dexterity before they fell to the ground. This gentleman observes, that the tongue is extremely long, and curiously fringed on each side; and that the animal can extend it several inches beyond the bill.

This species, which is a native of the warm climates of South America, is much esteemed for the delicacy of its flesh and the beauty of its plumage. The feathers of the breast are particularly admired; and the Indians pluck off the skin from that part, which, when dry, they glue to



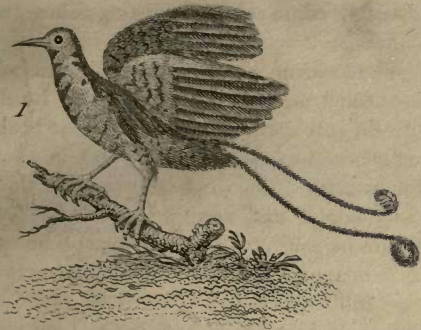


Fig. 1. King of the Birds of Paradise.

Fig. 2. Golden Throated Bird of Paradise.

Fig. 3. Green Cuckoo.

Fig. 4. Black Cap Lory.

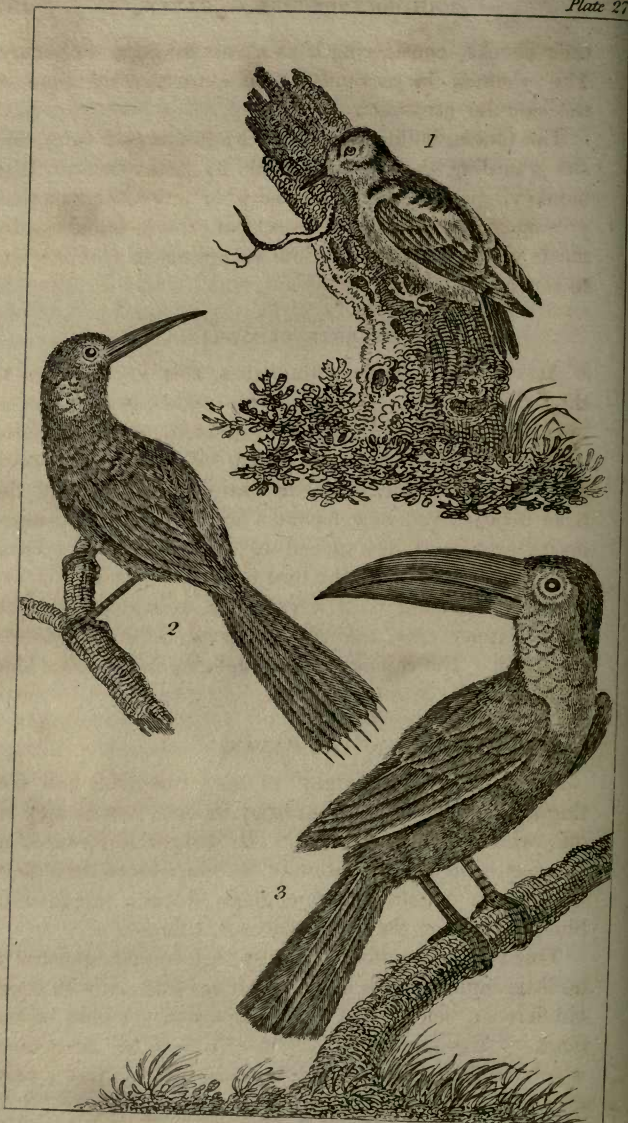


Fig. 1. Great Spotted Woodpecker.  
Fig. 2. Oriole.  
Fig. 3. Toucan.

Cooper sculp.

their cheeks, considering it as a vast addition to beauty. The women, in particular, are extravagantly fond of this singular ornament.

The toucan builds its nest in the hollows of trees, and sits guarding the entrance with its great beak. If a monkey, prompted by curiosity or any other motive, presumes to pay a visit to its retreat, the intruder usually meets with such an ungracious reception as compels him to retire.

#### THE RHINOCEROS-BIRD.

According to some ornithologists, this bird belongs to the family of ravens; but Linnæus makes it a species of buceros. It is very ugly and ill-scented, and of superior magnitude to the common raven. The head and neck are very thick, the eyes are extremely large, and the beak is bent like a bow, having a large horn-like substance on its upper part, and turned up at the extremity. From this last circumstance, the bird receives its name.

The whole beak is of a yellowish colour below; but, on the upper part, towards the head, is of a beautiful vivid red. The rhinoceros-bird delights in the same kind of food as the raven.

#### THE RAVEN.

The raven is the largest of the crow kind, and distinguished from them not only by its size, but also by its bill, which is more hooked. Its length is upwards of two feet, and the expansion of its wings more than four. The whole colour is a fine glossy black, tinged with blue, except on the belly, where it is dusky.

This bird is a native of every region, and appears to be little influenced by climate. It can sustain, with equal indifference, the heat of the equator and the cold of the poles. The only perceptible effect is on its colour, which, in the more northern regions, is sometimes a pure white.

The raven is sufficiently docile: it may be instructed

in the art of fowling, like the hawk; may be taught to fetch and carry, like the spaniel; and even to speak, like the parrot. Goldsmith assures us that it may be brought to imitate any vocal music; and that he heard one sing a ludicrous song with great distinctness, truth, and humour.

As a domestic inmate, the raven possesses many qualities that render him extremely amusing. Active, curious, and impudent, he pries into every thing: plays a number of antic tricks; and never fails to conciliate the favour of the cook-maid, conscious of her ability to reward him. Being by nature a glutton, and by habit a thief, he purloins every thing to gratify his appetite, and even hoards what he cannot enjoy.

In a state of nature the raven is a most voracious plunderer. He preys equally on the living and the dead; and, after having sufficiently crammed himself, flies to communicate tidings of his spoil to his companions. His scent is most exquisite, by which he can distinguish carrion at a prodigious distance.

The raven generally builds a nest in trees, and lays five or six eggs at a time. It is not fond of the vicinity of towns, but prefers the most unfrequented places. A remarkable superstition has prevailed in favour of this bird from remote antiquity: even at this time the Swedes regard it as sacred, and no one offers to molest it. In longevity it equals any of the feathered race; according to Hesiod, it will live nine times as long as man; and, though this is an exaggeration, it is certain that some of them have reached a hundred years.

#### THE CROW.

The bird, which usually receives the appellation of the carrion-crow, resembles the raven in shape, appetites, and manners. It is about eighteen inches long, and the expansion of its wings is upwards of two feet. Its colour is well known, and its habits are extremely disgusting.

England produces more birds of this kind than any other

country of Europe. In the reign of Henry the Eighth they were grown so numerous, and deemed so injurious to the farmer, that they became the object of parliamentary attention; and an act was passed for their destruction, including rooks and choughs. Every village was to provide crow-nets for ten years; and during that period the inhabitants were obliged to assemble at certain times, in order to project the most effectual means of extirpating them. But, though crows are so numerous here, Linnæus mentions them only as birds he once knew killed in Sweden. There are some foreign species of much superior beauty.

#### THE ROYSTON, OR HOODED CROW.

This is a bird of passage, and in all its habits resembles the rook. It visits England about the beginning of winter, and leaves us with the woodcock. In the Highlands and Islands of Scotland it breeds, and continues during the whole year. This species is about twenty-two inches long, and of nearly the same width when the wings are expanded. The upper parts of the body are of a fine black, glossed with blue; the under parts are of a pale ash-colour. It builds its nest indifferently in all kinds of trees, and subsists chiefly on insects.

#### THE ROOK.

This well-known bird differs little in size or colour from the common crow: the principal distinction is in the bill; which, as the rook frequently thrusts it into the ground in search of grubs and earth-worms, is bare of feathers as far as the eyes, and appears of a whitish colour. This discrimination is the more necessary to be pointed out, as the poor bird now under consideration has frequently suffered on account of its similitude to the crow; and thus a friend to the farmer, which destroys the insects that feed on corn, has been confounded with an enemy that frequently makes great havoc among the young poultry, and is at best disgusting and useless. Indeed the rook, instead of being proscribed, as it has sometimes been, till its loss was missed,

and its services were acknowledged, ought to be protected by every person who considers what incredible damage is done to the fruits of the earth by caterpillars, &c. notwithstanding the numbers that are destroyed by this industrious bird.

Rooks have another claim to our protection, because they seem to solicit and trust to it. They frequently build their nests in trees and groves near the habitations of men; sometimes even in the midst of populous cities and towns. In these aerial abodes they establish a kind of fraternity, and prevent all strangers from intruding among them.

At the commencement of spring the rooks begin to build or repair their nests, in which business their skill and assiduity are worthy of observation. After having deliberately selected a proper branch for a new nest, they begin collecting materials; and then construct the outside with sticks, and line the inside with fibrous roots, the whole being regularly and substantially disposed. Sometimes a quarrel arises, when a young couple presume to intrude too near the mansion of an older pair; this dispute is always decided by equal numbers; but, should a stranger attempt to establish himself in the society, the whole grove would instantly unite and expel him. I have often noticed their habits in Woodstock, where a large elm-tree in the very centre of the public street is annually crowded with their nests, to the no small gratification of the neighbouring inhabitants, who protect them with an affectionate concern, in which I warmly participate.

#### THE JACKDAW.

This very common bird has a large head in proportion to its body; the hind part of which is of a fine light grey colour that gives it the appearance of a cravat. The breast and belly are dusky, inclining to cinereous; and the body is black, slightly glossed with blue.

The jackdaw is a docile and loquacious bird. It frequents steeples, ruined castles, and high cliffs, where it

builds its nest; and feeds on insects, seeds, and grain. It is very voracious, and of such a thievish disposition, that it frequently carries off much more than it can consume. In fact, it is extremely injurious to farmers and gardeners; and therefore is continually proscribed, and destroyed by various devices.

#### THE JAY.

This is one of the most beautiful of our native birds. The forehead is white, streaked with black; the head is covered with very long feathers, capable of being erected at pleasure; the neck, breast, back, and belly, are of a faint purple colour, dashed with grey; and the greater coverts of the wings are most elegantly barred with a lively hue, black and white.

The jay feeds on fruits, and is very injurious to gardens. In winter, it derives part of its subsistence from acorns, and will sometimes kill small birds. Its natural note is very disagreeable; but such is its docility, that it is easily taught to imitate the human voice. There are various species, all distinguished by the beautiful tints of their plumage.

#### THE MAGPIE.

The magpie ranks among the most elegant birds of the crow kind. Its colours, black, green, white, and purple, with the rich gilded variations of its tail, justly entitle it to admiration; but these natural perfections are not a little depreciated by its ambition and affectation. Vain, restless, loud, and quarrelsome, it is every where an unwelcome intruder, and seems to take a delight in mischief.

This bird lives not only on birds and insects, but also on such small animals of the feathered race as it is able to overcome. It has even the insolence to tease the largest quadrupeds, when it is sure that it can escape punishment. It often perches itself on the back of a sheep or an ox, picking out the insects that lodge there, chattering, and tormenting the animal; and, on any symptom of disple -

sure from the sufferer, stretches out its neck in a menacing posture.

No food comes amiss to the magpie; and it seems actuated by a foresight not usual with gluttons; for, when it is satisfied for the present, it reserves the remainder of the feast till a future occasion. In a tame state, it will hide its food when it has finished a repast, and, after a time, return to the secret hoard with renewed appetite and vociferation. It has sometimes been taught to speak; but its articulations are too shrill and sharp to be a perfect imitation of the human voice.

#### THE CHOUGH.

This bird, which generally obtains the epithet of Cornish, is almost as large as the crow, and nearly of the same shape. The bill, legs, and feet, are red; but the plumage is wholly black.

It is capable of a high degree of domestication; and is remarkable for the uncommon softness of its modulations, when it applies for food to those who caress it, and equally so for its frightful shriek when it is alarmed.

In its wild state it shows a great timidity of disposition, and seeks the most sequestered retreats to build its nest in. This bird is found in the Alps, and in the island of Crete; and in our own climate in Ireland and Wales, as well as in the county of Cornwall.

#### THE ORIOLE.

This is a very beautiful bird, common in several parts of Europe, and India; where it inhabits the woods, and suspends its nest very artfully, between the slender branches on the summits of ancient oaks. It has a loud note, expressing a sound somewhat like its name.

The oriole is about the size of the thrush. The head and whole body of the male are of a bright yellow colour, and the bill is red. The wings are black, marked with a yellow bar; and the two middle feathers of the tail are of the same colour, while the rest have yellow tips. The female is of a dull green hue, with dusky wings.



## THE BIRD OF PARADISE.

This is by far the most beautiful genus in all the order of picæ, and indeed some species are unrivalled among the feathered tribes; but being confined to the remotest regions of the East, they were little known by our best naturalists till Sonnerat, in his voyage to New Guinea, threw much new light on the subject, and described several species which had hitherto eluded the notice of every other writer or observer.

Whatever is rare and beautiful is sure to give rise to fiction. Some have described the bird of Paradise as an inhabitant of the air only, living on the dew of heaven, and never resting on the earth; and, to complete the absurdity, have denied it legs, which the romantic habits thus ascribed to it had indeed rendered unnecessary.

The Europeans were, for a long time, the dupes of their own credulity. The natives of the Moluccas, where this bird is common, perceiving the inclination of travellers to purchase it on account of the extraordinary beauty of its plumage, and being aware that its feet by no means corresponded with the general elegance of its appearance, cut off those parts, and thus, in some degree, confirmed the idea which ignorance had first adopted. As this bird possessed a sort of supernatural beauty, it was honoured with an imaginary heavenly residence, from which circumstance it received, and still preserves, its name; though it is certain that it is in fact a bird of prey, and that its qualities entitle it to neither admiration nor respect.

There are two kinds; one about the size of a pigeon, and the other not larger than a lark. Both varieties are sufficiently distinguished from all other birds, not only by the superior lustre of their tints, but by the feathers of the tail; there being two long slender filaments, bearded only at the end, which proceed from the upper part of the rump, and extend far beyond the tail. This appendage, however, is not common to the whole genus; but every species has some peculiarity in the construction of the plumage to be found in no other of the feathered tribes.

These magnificent birds associate in large flocks, and thus flutter through the delightful spicy groves of their native oriental islands. From the rapidity of their flight, as well as from their being continually on the wing, they are sometimes called the swallow of Ternate. However, as the countries where they breed are periodically visited with storms of thunder and of rain, at such times they are seldom seen; from which circumstance they are supposed to migrate into other regions.

About the beginning of August, they collect in great numbers; and, according to the prevailing opinion of the inhabitants of the Moluccas, follow a king among them, who is distinguished from the rest by the vivid beauty of his plumage, and the voluntary homage which they pay him. In the evening they perch on the highest trees of the forest; and particularly on one bearing a red berry, which appears to be their favourite food. The natives, who make a profitable trade in killing and selling them to the curious Europeans, conceal themselves in those trees to which the birds resort; and, having furnished themselves with arrows, exert their utmost art and dexterity to shoot the king; for, if they succeed in this, the flock becomes an easy prey.

#### THE KING OF THE BIRDS OF PARADISE.

Though every species of these birds has some peculiar beauties, either in its tints or the conformation of its plumage, the king is universally allowed to be the most singular and worthy of notice. It has, however, been so variously described and figured, that it would be difficult to recognize the real bird, were it not for its general colours, and the two long filiform appendages of its tail. According to Sonnerat, (who is the best authority in this respect,) the king is about the size of the European blackbird. The greater part of its external plumage is of a bright and vivid ermine; and all its colours have a soft and silky appearance, in some parts bearing the gloss of polished metal. The two filaments, or shafts, which pro-

ceed from the rump, are blackish, without beards, and extend far below the tail and wings. Near their extremities these shafts become bearded, and form a pretty large circle, of an emerald colour, bright and varying.

#### THE CUCKOO.

The note of the cuckoo is universally known: but its real history, and the country to which it migrates, are involved in much obscurity.

Its bill and claws are smaller and weaker than those of other rapacious fowls. It has round and prominent nostrils on the surface of the bill, which alone distinguish it from all other birds. The lower part of the body is of a yellowish colour, with black transverse lines under the throat, and on the top of the breast: the head, the upper part of the body, and the wings, are marked with tawny and black transparent stripes; and on the top of the head are a few white spots. The legs are feathered down to the very feet.

The arrival of the cuckoo is considered, at least in this country, as the harbinger of spring. The note of this bird is so uniform, that its name in every language is derived from it. Neither here nor in other countries does it ever make a nest of its own; but deposits its eggs in that of some other bird, to whom it leaves the care of hatching them, and rearing the young. A water-wagtail, or even a hedge-sparrow, frequently officiates as nurse to the young cuckoos; and, if they happen to be hatched at the same time with its own offspring, they quickly extrude the latter from the nest.

When the young cuckoo is sufficiently fledged, it soon quits its foster-parent, and pursues its native propensities. What becomes of the family in winter is as little known as the retreat of the swallow. Some imagine that they lie torpid in hollow trees; and Willoughby tells a curious story of some logs of wood being put into an oven to heat, when a cuckoo, being revived in this extraordinary manner, began to utter its note, to the great astonishment of

those who were present. It probably lies torpid, or migrates to warmer climates, for it is certain that it cannot exist during the winter in this country. The following beautiful ode to this bird is very descriptive of its natural history:—

Hail, beauteous stranger of the grove!  
 Thou messenger of Spring!  
 Now heav'n repairs thy rural seat,  
 And woods thy welcome ring.

What time the daisy decks the green,  
 Thy certain voice we hear.  
 Hast thou a star to guide thy path,  
 Or mark the rolling year?

Delightful visitant! with thee  
 I hail the time of flowers;  
 And hear the sound of music sweet,  
 From birds among the bowers.

The school-boy, wand'ring through the wood  
 To pull the primrose gay,  
 Starts, the new voice of Spring to hear,  
 And imitates thy lay.

What time the pea puts on the bloom  
 Thou fliest the vocal vale;  
 An annual guest in other lands,  
 Another spring to hail.

Sweet bird! thy bow'r is ever green,  
 Thy sky is ever clear;  
 Thou hast no sorrow in thy song,  
 No winter in thy year.

Oh! could I fly, I'd fly with thee,  
 We'd make, with joyful wing,  
 Our annual visit o'er the globe,  
 Companions of the Spring.

#### THE WRYNECK.

This small bird, which is about seven inches long, and the expansion of its wings eleven, has its colours pen-

cilled in the most elegant manner, though its plumage is marked in the plainest. The bill is slender, round, and pointed; the nostrils are concave and naked; and the feet are formed for climbing.

Pennant is of opinion that the wryneck is a bird of passage. It generally appears a little before the cuckoo, and builds in hollow trees, forming a nest of dry grass. It has a very singular and whimsical method of turning its neck round, and bringing its head over its shoulders; from which it has received its name. It also possesses the faculty of erecting the feathers of its head like the jay. Its usual food is ants; which it transfixes with the sharp end of its tongue, and then draws them up into its mouth.

#### THE WOODPECKER.

There are several species of this genus; such as the green, the great spotted, the lesser spotted, and the three-toed woodpecker; but, though these differ in colour and size, they correspond in manners and habitudes. In every part of the world some of these birds are to be found; and the wisdom of Providence, in the admirable contrivance and adaptation of the parts of animals to their respective situations, cannot be better illustrated than from this tribe.

Woodpeckers subsist entirely on insects, and their principal action is that of climbing up and down the branches and trunks of trees. For the purpose of procuring their food, they are provided with a long slender tongue, armed with a sharp point barbed on each side, which they can dart into the clefts of the bark of trees, transfixing and extracting the concealed insects.

When a woodpecker discovers a hollow rotten tree, likely to contain its favourite insects, it immediately begins boring till it opens the whole internal habitation. It then emits its loud cry, which alarming the insects, they are all instantly put in motion, and devoured at the pleasure of their successful assailant. It sometimes also opens ant-hills in the ground, and lures the disturbed

insect by protruding its long red tongue, on which the ants settle with avidity, and are immediately drawn into its throat.

This bird builds its nest in the cavities of trees, and lays five or six eggs. It forms its mansion with much neatness; but uses neither straw, feathers, nor any other kind of lining. However, the woodpeckers of Guinea and Brazil suspend their nests from the extremities of trees with matchless art and contrivance, in order to secure the eggs and young from the depredations of monkeys and serpents.

#### THE NUT-HATCH.

This bird, which is a native of England, and various parts of Europe, is about six inches long, and the expansion of its wings nine. The bill is long and straight; the crown of the head, the back, and the coverts of the wings, are of a fine bluish grey; and the breast and belly of a dull orange colour.

Dr. Plott, in his Natural History of Oxfordshire, says that this bird, by inserting its bill into the crack of a tree, can utter a violent sound, or noise, as if the wood were splitting, which may be heard at a considerable distance. It possesses the faculty of running up and down the trunks of trees, and feeds not only on insects, but nuts; of which latter it lays up a store in the cavities of trees, where it builds its nest. In autumn, it begins to make a kind of chattering noise; but is silent during the greater part of the year.

#### THE KING-FISHER.

Numberless instances might be produced of the credulity of former ages with respect to this bird. It is the *halcyon* of the ancient naturalists, which was fabled to build its nest on the waves during the most tranquil seasons; and hence the poets have, in all ages, used the term *halcyon days* to denote a state of peace and felicity. The fictions which originated in pagan ignorance have been

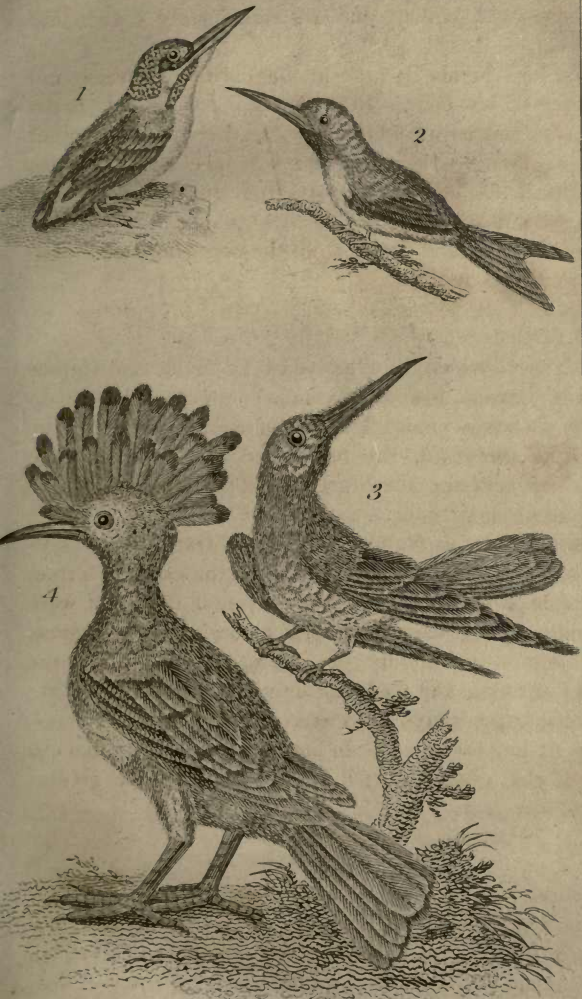


Fig. 1. King Fisher.

Fig. 2. Amethystine Humming Bird.

Fig. 3. Ruby Necked Humming Bird.

Fig. 4. Hoopoe.

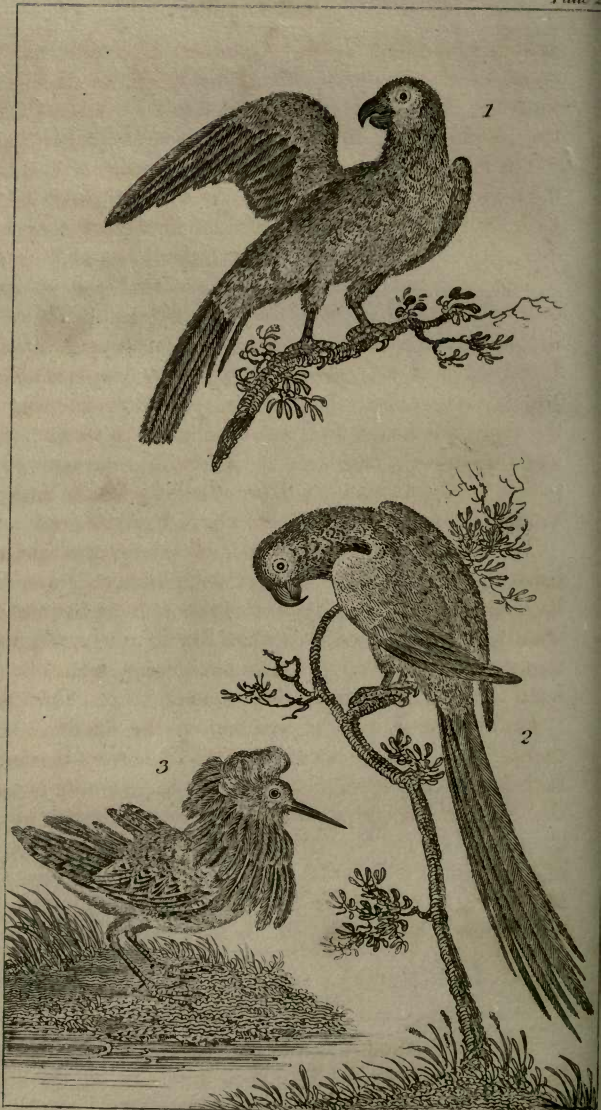


Fig. 1. East India Parro-quet.  
Fig. 2. Long Tailed Parro-quet.

Copper sculp.



seriously adopted by St. Ambrose; who tells us, with superstitious simplicity, that Providence, to manifest his kindness, grants a perfect exemption from storms during the period which this bird requires to hatch her young. "The seamen," adds he, "are not ignorant of this blessing; they call this interval of fair weather their halcyon days; and are particularly anxious to seize the opportunity, as they have then no interruption to dread."

The king-fisher is, indeed, a beautiful and an extraordinary bird, but it little deserves the praise which the romantic writers of antiquity have heaped upon it. It unites in itself, however, something appertaining to almost every tribe. It possesses appetites for prey like the rapacious kinds, and an attachment to water like the aquatic fowls; it has also the beautiful plumage of the peacock, the delicate shadings of the humming-bird, the short legs of the swallow, and the bill of the crow.

This bird frequents the banks of rivers; and feeds on fishes, which it catches in surprising numbers, considering its clumsy form and diminutive size. It is almost constantly in action; and on a clear day its plumage exhibits an astonishing diversity of brilliant colours, while the bird itself remains in the air.

During the season of incubation, the fidelity and attachment of the male are exemplary; he brings the female such large supplies of fish, that she is generally fatter at that season than any other. The young are hatched at the end of twenty days; but do not acquire the beauty of their plumage in perfection, till after the first moulting-season. The species of this genus are pretty numerous, and widely diffused.

#### THE BEE-EATER.

This bird is about the size of a blackbird, and is shaped like the king-fisher. The bill is like that of the latter tribe, except that it is a little more incurvated; the tongue is long, slender, and fringed at the tip; and the feet are

exactly like those of the king-fisher. Indeed it resembles that bird in the general brilliancy of its colours, but its appetites are totally different; it feeds on bees, insects, and sometimes on seeds. It is common in Italy, and particularly so in the island of Candia, or Crete; but is never seen in England. Other species of this beautiful little bird are found in the oriental regions, but especially in Bengal.

#### THE HOOPOE.

This bird occasionally visits the British islands, and is found in various parts of Europe and Africa. The Turks call it by a name signifying the messenger-bird, and the Swedes consider its appearance as ominous of war. In our own country, likewise, it was formerly deemed the harbinger of some calamity.

The hoopoe is a small bird, and feeds on various insects, berries, and vegetables. It breeds in hollow trees, and receives its name from its note. The head is adorned with a most beautiful crest (a singularity which may well distinguish it from all other birds) that rises about an inch and a half high, and is composed of two series of feathers, which the bird can elevate or depress at pleasure.

#### THE CREEPER.

This is a small bird, about the size of a wren; and is generally seen adhering to the trunks and boughs of trees, and creeping along them like the woodpecker. Besides the common creeper, there are various species found in different parts of the world; one is called the wall-creeper, which is sometimes seen in England. It receives its name from creeping up walls, but builds its nest in the holes of trees.

#### THE HUMMING-BIRD.

Linnæus enumerates more than twenty species of this very beautiful genus of birds, which is wholly confined to

the western hemisphere. The distinguishing characters of the family are, that the beak is tubulated, and terminating in a fine tube, or pipe; the tongue is filiform, and rendered tubular by the junction of two threads; and the feet are formed for walking.

These birds are found to vary in size from that of a small wren to that of a humble bee, and consequently are the smallest of the feathered race. A European can scarcely conceive, how much these numerous minute tribes add to the beauty of a rich trans-atlantic landscape. No sooner is the sun above the horizon, than humming-birds, of different kinds, are seen fluttering incessantly about the flowers, without resting on them. Their wings are in such rapid motion, that it is impossible to discern their colours but by their effulgence. They are incessantly flitting from flower to flower, and extracting the mellifluous juices; for which purpose they are furnished with forked tongues, adapted to enter the cups of the flowers, and to rifle their nectareous stores, which seem to be the sole subsistence of these innocent birds. The quick movement of their wings produces a kind of humming noise, from which they derive their name.

These birds suspend their nests from the extremities of the small branches of different trees with surprising skill, and line them in the most elegant manner. The eggs are about the size of a small pea, and the male and female relieve each other in the office of incubation. At the end of twelve days the young burst their shell, and at that time are not much larger than a common blue-bottle.

The plumage of the humming-bird was formerly in high estimation among the Indians, as an ornament for their belts and head-dresses.—These birds are caught on rings, smeared with a viscous substance. The feathers are dried in stoves, which is found to be the best means of preserving their beauty.

## ORDER III.—ANSERES.

BIRDS of the duck kind have smooth bills, covered with skin, and nervous at the points, serving as strainers to their food. Their legs are short, their feet formed for swimming, and their toes connected by membranes. They pass the greater part of their time in the water; but usually breed on land.

## THE SWAN.

Of this elegant bird there are two varieties, the wild and the tame. The former is a native of the hyperborean regions, and only migrates into our temperate latitudes when compelled by the severity of the cold. It frequents the lakes and forests of Lapland, in common with other aquatic fowls, during the summer months; and there also it rears its young.

The wild swan is much less than the tame. It is of an ash colour along the back and on the tips of the wings; the eyes are bare and yellow, and the legs are dusky. Its cry is very loud, and may be heard at a great distance. In the new settlements of Cumberland county, in New Holland, black swans are seen as common as the white are with us.

The tame swan is too well known to require a minute description. It is the largest of British birds, and the most majestic and picturesque, when exercising its natural propensities in the water. It lays seven or eight eggs, which it is nearly two months in hatching. It subsists chiefly on aquatic plants and roots, but sometimes devours insects.

The swan was considered as very delicate meat among the ancients, by whom the goose, however, was reprobated as wholly indigestible. Thus even tastes are not exempted from the vicissitudes of revolution: as the goose is become a high favourite with modern epicures; while

the swan is seldom served up, except for the purpose of magnificence or ostentation.

The ancients speak highly also of the vocal powers of this bird, though experience shows us that it is the most silent or dissonant in its note of all aquatic fowls. The narratives which have descended to us in this respect, can only be accounted for by supposing that some mythological meaning was concealed in them; for it would be ridiculous to imagine that its voice can have undergone a change by the lapse of time.

The swan is supposed to live about a hundred years, and is considered as among the first ornaments of rivers or artificial pieces of water.

#### THE GOOSE.

The bill is the principal characteristic which distinguishes the goose kind from all the feathered tribes. In other birds, round and wedge-like, or crooked at the extremity; in the goose it is flat and broad, formed for the purpose of skimming from ponds and lakes the weeds which grow upon their surface.

Though this tribe do not reject animal food, they willingly subsist on vegetable, and seldom seek any other. The body is large; notwithstanding which, the appetite is not very craving. Their fecundity is in proportion to the facility with which their food is procured; and their various good qualities have operated on man to take them from a state of nature, and render them domestic. How long they have been reclaimed from their original independence is not easy to be ascertained. The time must have been very remote, if we may judge from the many changes produced in their colour, their figure, and even their internal structure, by human cultivation.

The different species of these fowls, in a wild state, are simple in their colouring. When an exact description of the plumage of one wild goose or wild duck is given, it will to a feather correspond with that of any other; but in the tame kinds, no two of any species are seen alike.

The flesh of the tame goose is reckoned very delicate eating; and the bird is no less valued in some places, particularly in the Lincolnshire fens, for its feathers. In that county a single proprietor will sometimes possess a thousand old geese, which, in one season, will increase sevenfold, and are generally plucked five times in a year. This is certainly a very cruel operation; but, as quills form a valuable article of commerce, the inhumanity of the action is in this, as in many other cases, overlooked in the necessity that produces, and the profit that attends it.

The tame female is very assiduous in hatching her eggs, but has her place sometimes supplied by the gander. When the young are excluded, the pride of the gander is raised to an inconceivable height. Considering himself as a champion to defend his progeny, he resolutely pursues dogs, and even men, when they approach too near. He hisses and stretches out his neck, as if he were furnished with weapons of annoyance; and, when the object of his animosity has retired, he returns to the female in triumph, screaming and clapping his wings, as if elate with victory.

To describe all the wild species would swell this article to an immoderate length. The principal are the grey-leg, the bernacle-goose, the white-fronted goose, the Canada-goose, the blue-winged goose, the Muscovy-goose, the spur-winged goose, the antarctic or white-winged goose, the mountain-goose of Spitzbergen, and the mountain-goose at the Cape of Good Hope. The domestic geese are generally allowed to be produced from the grey-leg, the largest species found in Britain.

#### THE DUCK.

There are numerous species of this genus; as the tame duck, the wild, the eider, the velvet, the scoter, the tufted, the scaup, the golden-eye, the burrough, the pin-tail, the long-tailed, the pochard, the ferruginous, the gadwall or grey, the gargenny, the broad-beaked, the morillon, the grey-headed, the little brown-and-white, the whistling, the white-bellied, the Barbary or Guinea duck, the great



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Fig.1. Canada Goose.  
Fig.2. Goosander.  
Fig.3. Gannet or Soland Goose.

Cooper sculp.

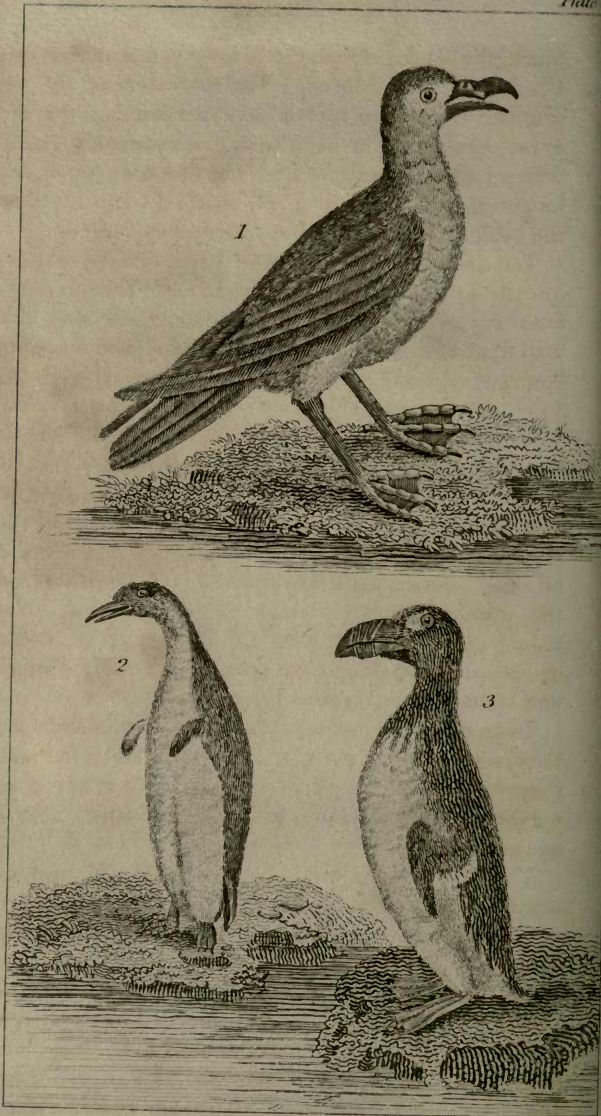


Fig. 1. Mank's Petrel.  
Fig. 2. Magellanic Penguin.  
Fig. 3. Auk, or Razor-Bill.

Cooper sculp



black, the black-crested, the Muscovy, and various others, besides teal and widgeon. The characters of the family are, that the beak is shorter in proportion than that of the goose, strong, flat or depressed, and commonly furnished with a nail at the extremity. The feet are proportionably longer than those of the goose kind; the legs are shorter, the beak flatter, and the body more compressed.

Tame ducks are reared with great facility, and as frequently by hens as by their own kind. Yet this does not alter any of their habits: for no sooner are they able to walk than they desert their foster-dam, and direct their course if possible to their favourite element; while she in vain tries to recall them from the apparent danger, and with marks of terror clucks round the brink of the water in which they are swimming for their pleasure.

The common species of tame ducks derive their origin from the mallard, and may be traced to that bird by unerring characters. Though the drakes vary in colour, they all retain the curled feathers of the tail, and both sexes the shape of the bill peculiar to the wild kind. Nature indeed seems to sport with the colours of all domestic animals, that mankind may with more facility distinguish and claim their respective property.

Tame ducks are extremely beneficial to mankind; and, as they subsist on lost corn, worms, snails, and other insects, they are not expensive in keeping. They lay a great number of eggs annually, and may be fattened with ease and expedition.

The principal difference between wild and tame ducks arises from their size, and the nature of those places from which they derive their existence. The several varieties of wild ducks associate together in flocks during the winter; fly in pairs during the summer; and rear their young by the water-side, or at least in moist situations. The nests are generally composed of long grass, mixed with heath, and lined with feathers; but, in proportion as the climate becomes colder, they are more artificially constructed and provided with still warmer linings.

Those which visit this country at the approach of winter, and therefore may be called birds of passage, are neither so fat nor well-flavoured as those which continue with us the whole year. As soon as they arrive, they fly about in search of a proper residence: in the choice of which they have two objects in view; plenty of food, and security from molestation. For this purpose they prefer lakes in the vicinity of marshes and thickets, where insects are most abundant, and where they can have a speedy retreat in case of annoyance. But, notwithstanding all their care, the fowlers make terrible havoc among them; and decoy-ducks are tamed to inveigle them into nets.

The decoys in Lincolnshire are hired for considerable sums annually; and from them the London market is chiefly supplied with this delicate fowl. Upwards of thirty thousand ducks, widgeon, and teal, are said to have been sent up in the course of one season, from ten decoys in the vicinity of Wainfleet.

#### THE GOOSANDER.

This bird belongs to the goose genus, with which fowl it agrees in most particulars. It frequents our rivers and lakes, especially in severe winters; but during the summer retires far northward, for the purpose of breeding, and is never seen even in the more southern parts of this island. It feeds entirely on fish; which communicates such a rankness to its flesh, that it is scarcely eatable.

#### THE AUK, OR RAZOR-BILL.

This bird, which is a native of the northern parts of Europe, is about eighteen inches long, and the expansion of its wings twenty-seven. The bill is pretty long, black, strong, and sharp at the edges: the upper mandible being marked with four transverse grooves, and the lower with three. The head, throat, and entire upper side of the body, are black; but the tips of the smaller quill-feathers on the wings are white, as is the whole under-side of the body.

These birds fix their abodes on the extreme margins of lofty rocks which overhang the sea, where they make a very grotesque appearance, from the singular order of the rows in which they sit one above another. The eggs are a favourite food with the natives of those coasts where they are found; to secure which, they will frequently risk their lives, in places of the most imminent danger. The auk, indeed, lays but one egg; but this is very large in proportion to the bird; and, if taken or destroyed, it produces another, to supply its place, a second or a third time. It builds no nest, but deposits its eggs with such nice equilibrium on the edge of a rock as to prevent them from falling off; though, if once displaced, it is extremely difficult, and sometimes impossible, for human art to give them exactly the same position again. A very large species of auk breeds in the isle of St. Kilda about the beginning of May, and retires about the middle of June.

#### THE PETREL.

Of this marine bird there are several species; the distinguishing characters of which are, that the bill is straight, and hooked at the extremity; that the nostrils are cylindrical and tubular; that the legs are naked above the knees; and that a sharp spur, pointing downwards, supplies the place of the hind-toe.

The common petrel, called also the fulmar, is frequent on the isle of St. Kilda, where it breeds, and continues the greater part of the year. It lays one large egg, and the young are hatched about the middle of June. This bird feeds on the blubber, or fat, of whales, and similar substances, which, being soon convertible into oil, supply them at once with the means of defence, and with provision for their young. The whole genus of petrels possess the peculiar faculty of spouting from their bill, to a considerable distance, a large quantity of pure oil, and this they never fail to do on the approach of an enemy; so that the natives, who esteem this substance peculiarly

beneficial in medicine, generally take care to seize them by surprise.

One species of these birds, known by the name of the stormy petrel, from their appearance being deemed a presage of bad weather, are almost continually at sea. They are dispersed over the vast Atlantic Ocean, at the greatest distance from land, often following vessels, in expectation of picking up any thing that may chance to fall overboard.

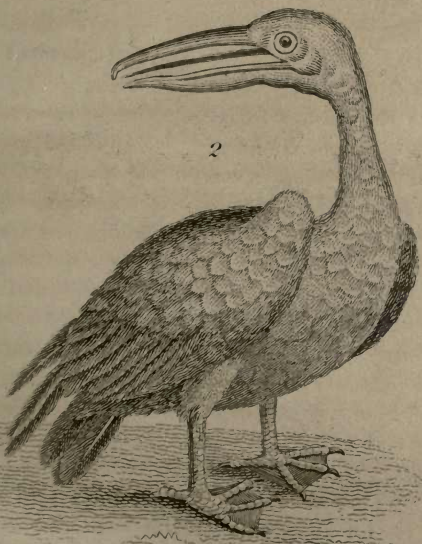
#### THE ALBATROSS.

This bird is one of the largest and most formidable of all the tribes of aquatic fowl. It abounds in the Southern Ocean, particularly about the Cape of Good Hope and Cape Horn. The body is large; and the wings, when extended, measure ten feet from tip to tip. The bill, which is six inches long, is yellowish, and terminates in a crooked point. The top of the head is of a bright brown, the back is darker, and the belly is white.

Such are the leading features in the figure of the albatross; but these alone would give us a very inadequate idea of its history. It preys when on the wing, and devours not only a large quantity of fish, but also such water-fowl as it is able to take by surprise. In our northern seas, indeed, a dreary expanse, alone ruffled by winds, and seemingly abandoned by every class of animated nature, presents itself; but in the tropical seas, and in the southern latitudes, the scene is enlivened by fishes and birds, alternately pursuing and pursued. Every different species of the gull kind is there seen hovering on the wing, at an immense distance from the shore. The flying-fish is continually rising to elude its enemies of the deep; but, in escaping one danger, it frequently falls into another. Just as it rises, the dolphin is seen to dart after it, though generally in vain; but the gull is often successful; while the albatross, pursuing the gull, compels it to relinquish or disgorge its prey. Thus the whole horizon presents



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Fig. 1. Albatross.  
Fig. 2. Pelican.

Cooper sculp.

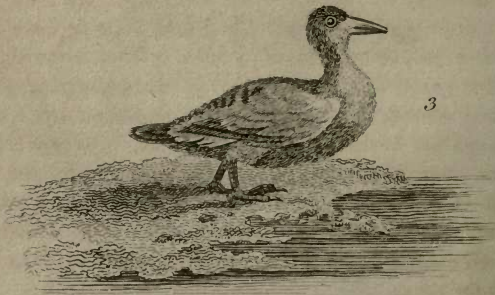
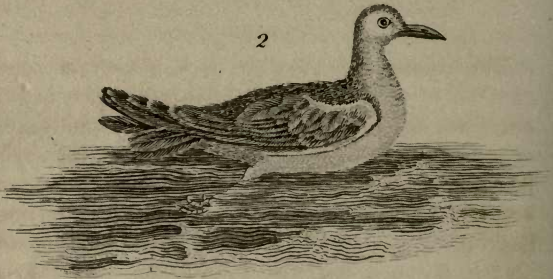
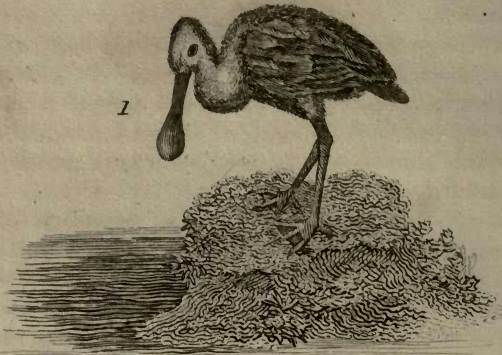


Fig. 1. Spoonbill.  
Fig. 2. Gull.  
Fig. 3. Eider Duck.

one general scene of rapacity and cunning, of stratagem and evasion.

Perhaps no bird is capable of supporting itself so long on the bosom of the air as the albatross. It seldom approaches the land, except during the season of incubation; but continues hovering night and day on the wing, apparently insensible of fatigue, but always appearing as if emaciated with hunger.

Though this bird may be justly deemed one of the greatest tyrants of the deep, it is not destitute of some social qualities. Between it and the penguin there seems to be a reciprocal affection: they always choose the same breeding-places, usually some unfrequented island; here their nests are contiguous, and their harmony is undisturbed.

#### THE PELICAN.

The common pelican (for there are several species) is considerably larger than the swan, and nearly of the same shape and colour. Its neck is long, and the toes are all connected by webs. But the chief peculiarity of the pelican consists in its enormous bill, and the extraordinary pouch underneath. The former is fifteen inches long, from the point to the opening of the mouth, which is placed at some distance, behind the eyes. From the lower edges of the under-chap is suspended a large bag, reaching its whole length; and said to be capable of containing fifteen quarts of water. This appendage the bird is capable of contracting or distending at pleasure. When empty, it is scarcely perceptible; but when the pelican has been successful in fishing, it becomes dilated to an incredible extent; for the first occupation of the bird on such occasions is to replenish its bag, after which it retires and feeds at leisure. This bag is said to be capable of concealing as many fish as would satisfy six hungry men.

Wonderful as the conformation of the pelican is, it falls very short of the fables that have been invented con-

cerning it. Stories have been told of its feeding its young with its own blood, and of filling its pouch with water to supply them in the deserts. Struck with its extraordinary figure, mankind seem to have been willing to supply it with no less extraordinary qualities and appetites; and, having found that it possessed a large reservoir, they were inclined to convert it to the most tender and parental uses. But the fact is, pelicans are very heavy, sluggish, and voracious birds; and possess no instincts but what are necessary for the preservation of their kind, and the supplying themselves with a sufficient quantity of food. However, they feed their young with macerated fish for a time, and tend them with affectionate assiduity, till they are able to provide for themselves.

With all the apparent dulness of the pelican, it is not wholly incapable of receiving instruction in a tame state. A naturalist affirms, that he had seen one that would go off in the morning at the word of command, and return before night to its master with its pouch full of plunder; part of which it would unload for the proprietor's use, and part it retained for its own sustenance. Another also speaks of a tame pelican, the property of the emperor Maximilian, that lived upwards of eighty years, and always attended his army on the march.

#### THE CORMORANT.

The cormorant is upwards of three feet long, and four feet in the expansion of the wings. The coverts of these, the scapulars, and the back, are of a deep green, edged with black, and glossed with blue; the quill-feathers and the tail are dusky, and the breast and belly are black. Its figure is clumsy, and seems to indicate sluggishness; yet few birds are so powerfully predaceous. It devours fishes in astonishing numbers; and its digestion is so rapid, that its appetites seem always craving, yet never satisfied.

This bird, even in its most healthful state, emits a very



rank and nauseous smell, much more fetid than that of putrid flesh. Its form is disagreeable, its voice is hoarse and croaking, and all its qualities are disgusting. It is not, therefore, to be wondered at, that Milton should make Satan personate this bird, when he goes to survey with anxiety the beauties of Paradise, and to sit devising destruction on the tree of life.

The indefatigable industry and great dexterity of the cormorant in catching fish have induced some nations to keep it in a tame state. In China it is still used for this purpose; but while employed, a ring is constantly fastened round its throat, to prevent it from devouring for its own use what is intended for its master's.

#### THE GANNET, OR SOLAND GOOSE.

This bird is of the size of the tame goose, but its wings are much longer. The bill is six inches long, inclining down at the point; and the sides are irregularly jagged, in order to give a firmer hold of its prey. From the corner of the mouth proceeds a narrow slip of black bare skin, extending to the hind part of the head; and beneath this is a dilatable pouch like that of the pelican, capable of containing five or six entire herrings, which, in the breeding-season, it carries at once to its mate or its young. The colour is chiefly white.

These birds are extremely numerous in some of the Hebrides, the Skelig islands in Ireland, and the Ferro between Scotland and Norway. But it is in the Bass island, in the Frith of Forth, that they are seen in the greatest numbers.

They lay only one egg at a time; and never more than three in a season, should they be robbed of their first and second. The young are reckoned very delicate food, and therefore are sold at a high rate.

The soland goose is a bird of passage. In winter, it seeks the more southern coasts of Cornwall; in doing which, it is determined by the migrations of the shoals of herrings, which come pouring down the British Channel,

and supply it with an exhaustless banquet of food the most congenial to its palate.

#### THE MAGELLANIC PENGUIN.

Birds of the penguin kind are ill adapted for flight, as their wings serve rather for paddles to assist their progressive motion than to raise them in the regions of the air; and their legs are so singularly constructed, that they are scarcely formed for walking. Yet no animals can be more admirably fitted for an aquatic life; for they swim and dive with equal celerity and ease. As they never visit land except for the purpose of breeding, their plumage derives a tinge from their situation; that part of them which has been continually bathed in the water being white, while their backs and wings are of different colours, according to their species. Their plumage also is more close and warm than that of most other birds, so that the sea seems to be their natural element.

The Magellanic penguin, the largest and the most remarkable of the kind, is of nearly the size of the common goose. Its wings are very short, and covered with stiff hard feathers, of no use in flight. The plumage of the upper part of the head and back, and of the rump, is likewise stiff, and of a black colour; while the belly and breast, as is common in this kind, are of a snowy whiteness, except a line of black which crosses the crop.

These birds walk with their heads erect, the fin-like wings appearing as arms; and, when viewed at a distance, they may not unaptly be compared to so many children with white aprons. They uniformly feed on fish, which abound in the latitudes where they frequent; and indeed their fatness is a proof of the plenty in which they live. They dive with great rapidity, and are voracious to a great degree. Their flesh, however, is rank and filthy; yet seamen, for want of better fare, are sometimes glad to make a meal of it.

These fowls are social and gregarious, especially when

they come on shore ; where they are seen drawn up in ranks with the albatross, as if in deep consultation. They begin laying about the month of November. Their preparations for this business are soon adjusted ; a small depression of the earth, without any nest, answers their purpose ; nevertheless, the warmth of their feathers, and the heat of their bodies, are such, that the incubation is rapidly carried on. The female lays but one egg, which is larger than that of the goose ; and sometimes several lay their eggs in the same hole, and sit on them by turns.

#### THE DIVER.

Birds of this genus have a sharp, straight, narrow bill, linear nostrils, a pointed tongue serrated near the base, short wings, and legs placed far backwards, with broad feet. The northern diver, one of the most remarkable of the family, measures about three feet and a half in length, and four feet and a half in breadth. The head and neck are of a deep black, the hind part of the latter being streaked with a large white band shaped like a crescent ; and exactly under the throat there is a corresponding band. The lower part of the neck is a deep black tinged with a rich purple gloss, and the under side of the body is wholly white ; but the back, the coverts of the wings, and the scapulars, are black, marked with white spots. The tail is very short, and hid by the scapulars, which are dusky, and spotted with white ; and the legs and toes are black.

These birds, which frequent the northern seas, feed wholly on fish. The dab-chick belongs to the family ; and, like the rest, moves with more facility under the water than on its surface. It raises itself from that element with difficulty ; but, when once it has gained the higher regions, it is capable of continuing its flight for a considerable time. It forms its nest on the banks of lakes or rivers.

## THE GULL.

This is a pretty large genus, the distinguishing characters of which are, that the bill is long, straight, and incurvated at the extremity; the tongue is slightly cloven; the body is light, and covered with thick plumage; the wings are large, and the legs short. These birds, which are almost incessantly upon the wing, feed upon fish, and are extremely clamorous along the shores which they frequent. The British islands, particularly the northern parts of them, furnish several species. The common gull, the most numerous of the kind, breeds on the ledges of cliffs that hang over the sea; and, during the winter season, frequents almost every part of our shores where the boldness of the cliffs presents a favourable situation. Like other rapacious birds, it lays but few eggs; which circumstance, added to the numbers continually destroyed for subsistence, has considerably thinned the breed in many places.



## ORDER IV.—GRALLÆ, OR THE CRANE KIND.

THE bills of birds among the crane kind are formed for the purposes of searching and examining the bottom of pools; their legs are long, and adapted for wading; the thighs are half naked; their bodies are slender, and covered with thin skins; their tails are short, and the flesh is in general savoury. They live on animal food, and commonly build their nests on the ground.

The cranes form a numerous family, which, including the stork and the heron, may all be known either by the length of their legs, or their scaly coverings, and their adaptation to wading. They lead a life of precarious liberty in fens and marshes, on the margins of seas or lakes; and subsist on fish, reptiles, and insects.

## THE FLAMINGO.

This is a tall, bulky, and most beautiful bird. The body, which is of a vivid scarlet, is about the size of a swan; but the legs and neck are of such extraordinary length, that, when it stands erect, it is upwards of six feet high.

This extraordinary bird was once known on all the coasts of Europe, but is now chiefly found in America, and some parts of Africa. Its magnitude, its beauty, and the peculiar delicacy of its flesh when young, have afforded so many incitements for its destruction, that it has long abandoned the shores frequented by man, and taken refuge where he seldom intrudes. In some of the wild and solitary tracts of America, it lives in a state of society, and under a polity which excites our admiration.

The flamingoes chiefly delight in the vicinity of salt-water lakes and swampy islands. In the day-time they come down to the mouths of rivers; but towards night retire more inland, to secure themselves from annoyance. When they suffer themselves to be seen by mariners, they always appear drawn up in a close line of two or three hundred together, and exhibit, at the distance of half a mile, the exact representation of a long brick wall. When they seek for food, their ranks are broken; yet not before they have stationed one of their number to give the signal of any approaching danger. As soon as this faithful sentinel perceives the remotest signs of annoyance, he screams with a voice as loud as a trumpet, and instantly the whole flock are on the wing.

## THE SPOONBILL, OR SHOVELER.

The most remarkable peculiarity of this bird is its bill, from the shape of which it derives its appellation. This part is of a bright shining black colour, and has its upper surface waved with dotted protuberances; the whole substance being thin, light, and elastic, like whalebone. The plumage of the whole body, wings, and tail, is white; and the head is adorned with a beautiful crest of white feathers,

bending backwards. The legs are black, as are the thighs, which are naked half their length. In short, this bird has all the natural instincts, and the awkward form of the crane kind, living in the water, and subsisting on frogs and other aquatic animals.

The American spoonbill differs from that of Europe, in being of a beautiful rose or crimson colour. Beauty of plumage, indeed, belongs to all the birds of that continent; and, in the present instance, is bestowed on one whose general conformation is very far from a standard of elegance.

This bird lays from three to five eggs; and commonly builds its nest in high trees, in company with the heron.

#### THE COMMON CRANE.

This is a long, tall, slender bird, of little elegance or beauty in its external appearance. The head is covered with black bristles; and the back part of it, which is bald and red, is a sufficient distinction between it and the stork, to which in other respects it is nearly allied. The plumage is ash-coloured; and two large tufts of feathers spring from the pinion of each wing, bearing some resemblance to hair, which the bird can erect or depress at pleasure. In former times its feathers were often set in gold, and worn in the caps of persons of distinction, by way of ornament.

Many fables have been invented by the ancients, and repeated by the moderns, concerning the cranes. The manner in which they keep up their social intercourse, their filial and parental affection, and their connubial attachment, have all furnished just matter for speculation; and almost seem to have sanctioned the stories that have been related in their favour.

The usual abodes of these birds are the arctic regions: they descend, indeed, into the more southern parts of Europe; but it is rather as visitants than inhabitants, and they have long ceased to frequent the British islands at any season. However, they were formerly known here,

and were held in much estimation for the delicacy of their flesh. Their favourite food is corn, but scarcely any thing comes amiss to their appetite. The common people of every country still pay a kind of affectionate regard to cranes, the ancient prejudices in their favour even now continuing to operate.

There are various species; as the Balearic or crowned African crane, the hooping crane, the Numidian crane, and the gigantic crane. The two last of these shall be here described, on account of their singular habits.

#### THE NUMIDIAN CRANE.

This species obtains the different appellations of the buffoon-bird, and the *demoiselle*, or lady; for, no sooner does it perceive itself noticed, than it begins to dance or curvet, and to exhibit a variety of gesticulations; but whether these antic tricks proceed from vanity or fear is yet undecided.

The Numidian crane is adorned with a crest of white feathers; but the rest of the plumage has a leaden grey colour, except some large feathers in the wings, which are darker, as are a few about the head and neck. Besides the crest, the fore part of the neck is covered with some black feathers, composed of very fine soft filaments, which hang down on the stomach, and give a degree of elegance to its whole figure.

#### THE GIGANTIC CRANE.

The expansion of the wings of this species is nearly fifteen feet, and the height, when the head is erect, is about seven. It is found in Africa; but is most commonly known and noticed in Bengal, where it arrives before the rainy season, and retires as soon as the dry weather commences. Its aspect is disgusting; yet the centinel bird, as it is called in Calcutta, is one of the most useful, by clearing the country of snakes, reptiles, and insects, and the streets of garbage of any kind.

The Gentoos believe them to be animated by the souls of the Brahmins, and that they are invulnerable. They soon become familiar, from being treated with indulgence, and feeling themselves secure from annoyance.

#### THE STORK.

The stork is a larger bird than the common heron, but its neck is shorter and thicker. The head, neck, breast, belly, and tail, are white; and the rump, with the exterior feathers of the wings, black. The eye-lids are naked; the beak is long and reddish, and the legs are of the same colour.

The stork so nearly resembles the crane, that, on a first view, they might be confounded; but the former has a peculiar manner, by which it may easily be discriminated. The stork is silent, whereas the crane has a loud piercing voice; the former preys on frogs, fishes, birds, and serpents, while the latter shows a partiality for vegetables and grain; the crane avoids the abodes of men, but the stork seems to delight in human society.

Storks are migratory, and generally make their appearance in Europe about the middle of March, when they build their nests on the tops of chimneys and high trees. They are sometimes seen on the coasts of England, but have never been known to breed here.

As these birds destroy a great number of noxious reptiles, it is no wonder that different nations have evinced a predilection, and even a sort of veneration, for them. The ancient Egyptians paid divine honours to the ibis (which is generally supposed to be a species of stork) on account of its beneficial qualities. The Dutch to this day are very solicitous for the preservation of the stork, which seems to have made itself a denizen of their towns, building on the tops of houses without molestation, and even resting familiarly in the streets; being protected by the laws as well as by the prejudices of the people. Indeed there are few towns on the continent, the situation of which is low and marshy, that have not the stork as an inmate;



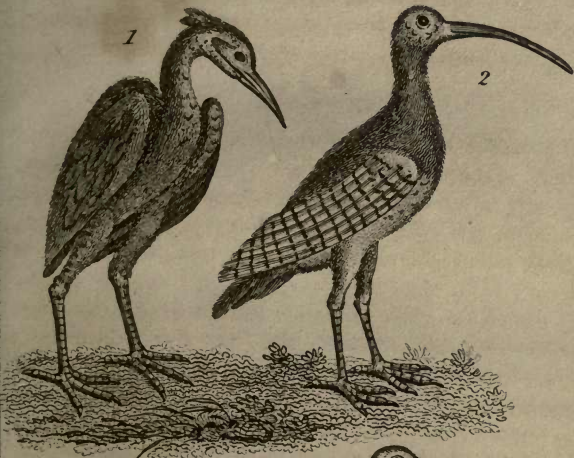


Fig. 1. Heron.  
Fig. 2. Curlew.  
Fig. 3. Common Crane.

Cooper sculp.

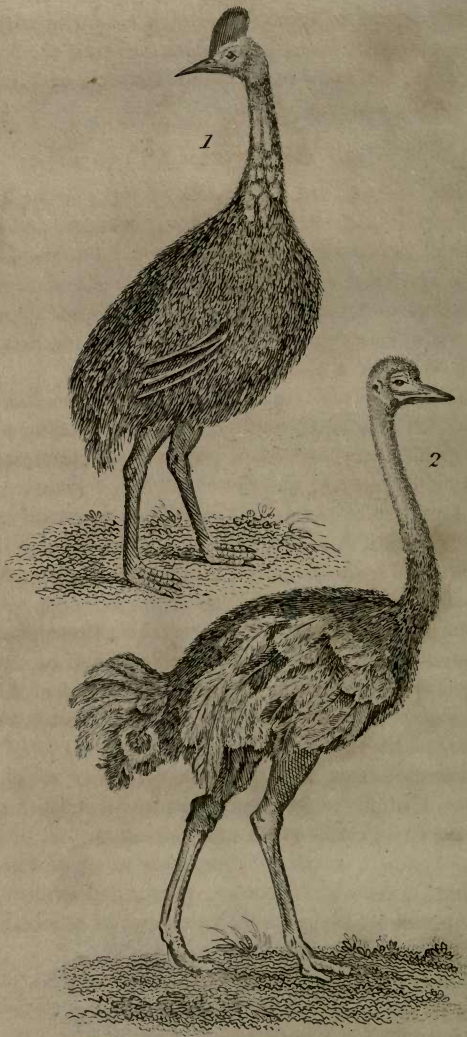


Fig. 1. Cassowary.  
Fig. 2. Male Ostrich.

Cooper sculp.

and every where it appears to be a favourite with the common people. There is a black species, the modern ibis of Egypt, and another, found in America, which differs little from the common stork.

#### THE HERON.

This well-known bird is remarkably light in proportion to its bulk; its body being extremely slender, and all its members of a corresponding structure. The male has a loose pendant crest of long black waving feathers, which the female is without. Indeed, the colour and plumage of the two sexes vary so much, that many naturalists have been led to consider them as different species.

Though the general appearance of the heron indicates its fitness for a state of warfare, it is nevertheless a very timorous bird; except when committing its devastations on fishes, which it attacks and devours without mercy. It is a general robber of ponds and lakes; and frequently, with instinctive foresight, builds its nests in places where the stock of fish is artificially kept up, in order to gain a better opportunity for plunder.

The heron wades into the water as far as possible, and there patiently waits the approach of a shoal of fish, which no sooner appear, than it darts on its victims with almost inevitable aim: it will, in fact, destroy more fishes in a week than perhaps any other bird could in a month. "I have seen a heron," says a respectable writer, "which had been shot, that had seventeen carps in its belly at once, which he will digest in seven or eight hours, and then fall to fishing again." Indeed, the voraciousness of this bird is extreme: and he is, of course, proscribed in most gentlemen's parks, and wherever there is water stocked with fish.

The flesh of the heron was formerly much esteemed in England; where now, such is the variation of tastes, this bird is almost every where killed as a common nuisance. In France, however, the young ones are still held in high estimation, and consequently heronries are encouraged.

One species has obtained the appellation of the night-raven, from its flight in the night-time, and from a very singular hoarse noise.

#### THE BITTERN.

The bittern is a bird of the heron kind; distinguished from all others by its dismal hollow note, of which it is impossible to convey any adequate idea to such as have never heard it: it is not unlike the interrupted bellowing of a bull, but more continued and hollow; and might be supposed to proceed from some formidable animal, resident at the bottom of deep waters. The bird, however, that utters this terrific noise, which may be heard at the distance of a mile, is not so large as the heron. It has a short pendant crest of a black colour; and the plumage in general is of a pale dull yellow, spotted and barred with black.

The bittern is a solitary bird, concealing itself in the sedge by day, and beginning its call before evening, booming six or eight times; and, after a silence of some minutes, renewing its cries. It is chiefly heard from the commencement of spring till the end of autumn; and however its sound may startle and alarm those who are ignorant whence it proceeds, there is every reason to suppose it the call of courtship, or the expression of pleasure. The vulgar entertain a notion that it thrusts its bill into a reed, which serves as a pipe to swell its notes above the natural pitch; and in some parts a tradition prevails, that it immerses its head into the water, and blows in that position with all its strength.

Though the bittern agrees with the heron tribe in many particulars, in its manners and appetites it is essentially different. It is neither so destructive nor so voracious; is satisfied with frogs, insects, and vegetables; and is retired and timid in all its habits. The flesh is highly esteemed by some epicures; for which reason this bird is as eagerly sought for by the fowler, as it is shunned by the simple peasant.

## THE CURLEW.

This bird frequents our coasts during the winter; and retires from them, at the approach of spring, to the mountainous parts of the country, to breed. It is pretty large, and its colours are diversified with ash and black. The flesh is esteemed delicate by some, while others reprobate it as rank and fishy. There are several distinct species, but all agree in the generic characters; namely, a beak longer than the head, roundish, obtuse at the point; and feet furnished with four toes, the hinder one composed of several joints.

## THE WOODCOCK.

The woodcock is a most delicate bird, the favourite food of dainty palates; and affords particular amusement to the fowler to bring it down. Its colours are a variation of black, grey, and reddish brown; the beak is three inches long, and is formed for probing soft moist ground.

During summer, woodcocks inhabit the Alps, and the northern countries of Europe, where they breed. They subsist wholly on worms and insects, which the extensive forests and lakes of the north produce in abundance: but no sooner does the frost set in, than they wing their flight to more temperate climates, and continue there till the beginning of March, when they regularly disappear, except a small number which occasionally breed with \* us. Before their departure, they flock towards the coast; and, if the wind is favourable, immediately take wing, but otherwise prudently wait for a propitious gale.

## THE SNIPE.

Though the snipe is generally a bird of passage, it sometimes remains here during the whole year, and it certainly breeds in the northern parts of Scotland. It

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\* In the summer of 1817, three young woodcocks were found in the woods of Buscot Park, in Berks, belonging to E. L. Loveden, Esq.

frequents marshy places, where it builds an artless nest among reeds and rushes, and lays four or five eggs of a dirty olive colour, marked with dusky spots.

The breast and belly of the snipe are of a dull white colour; the back is covered with long plumage, variegated with black and reddish brown, a line of reddish white runs along the middle of the head; and the beak is about two inches and a half long.

When the snipe is alarmed, particularly during the season of incubation, it soars to a considerable height, making a peculiar bleating noise: and in its descent falls with vast rapidity. The cock is observed, while his mate sits on the eggs, to poise himself on the wing nearly over the spot, and to make a whistling or a drumming kind of noise; perhaps to apprise her of danger, or to express his joy at her security.

Besides the common snipe, which has just been described, there are jack snipes, and great snipes; the latter, however, are very rarely seen in England. The flesh of all the kinds is extremely delicate; and shooting this bird is a favourite winter-amusement to sportsmen.

#### THE RUFF.

The female of this bird is called the reeve; and is always of a brown colour, and smaller than the male. The ruff has plumage of various colours; but is principally distinguished by a remarkable circle of long feathers surrounding the neck, from which it obtains its name. In the moulting-season these feathers drop off, and do not appear again till the ensuing spring.

These are birds of passage, arriving in this country early in the spring, and disappearing about Michaelmas. They build in some parts of Lincolnshire, Cambridgeshire, and Yorkshire. Soon after their arrival, the males assemble on some dry bank near a pool of water; and each occupies a small track which he perambulates, till the grass is worn away. There they wait till they are joined by the females; the appearance of whom always occasions a battle, as the

males at first are considerably the most numerous. When killed at a proper season these birds are reckoned a delicious treat at the tables of the opulent.

#### THE LAPWING, OR PEEWIT.

This beautiful bird, which frequents the heaths and marshy grounds in almost every part of the British islands, builds a slight artless nest on the ground, and lays four eggs. It is unnecessary to describe a bird so well known, but some of its peculiar habits are worthy of attention. The parental care of lapwings for their young is very remarkable; they practise every possible device to lure men or dogs from their retreats; and in urgent danger will even strike at the passenger or assailant.

These birds become very fat in the winter, when they are taken in the fens by means of nets. In some parts of Britain they are migratory. They arrive in the northern parts of Scotland about April; and, having reared their young, prepare for removal to a more temperate climate, where their food is more plentiful. For ten days before they finally leave the northern parts of this island, they are observed to collect in large flocks, flying backwards and forwards, as if to exercise their young; and, after a variety of convolutions and clamorous exhortations, they disappear at once, directing their flight southward.

#### THE SAND-PIPER.

The common sand-piper (so called from its whistling or piping) is a solitary bird, except in pairing-time. It frequents rivers, lakes, and other fresh waters. Its head is brown, streaked with black lines; the neck an obscure ash colour; the back and coverts of the wings brown, mixed with a glossy green, elegantly marked with transverse dusky lines; and the breast and belly a pure white. The dunling sand-piper is distinguished from the common species, not only by a difference of colours, but also by its being found on the sea-coasts; though it certainly may be considered as a rare bird in this country.

## THE GOLDEN PLOVER.

During the winter, this elegant bird frequents our moors and heaths in small flocks. Its length is eleven inches, and the expansion of its wings twenty-four. The head, back, and coverts of the wings are black, beautifully spotted with light yellowish green; the breast is brown, marked with greenish oblong strokes; and the belly is white. This bird makes a shrill whistling noise, and may be enticed within a shot, by a skilful imitation of its note. It breeds on unfrequented mountains, and is very common in the western islands of Scotland.

## THE LESSER PLOVER, OR DOTREL.

This is one of the smallest among the plover genus, of which there are various species. It inhabits Lincolnshire, Cambridgeshire, and Derbyshire, where it is migratory: appearing in small flocks about the end of April, and remaining till the middle of June; during which period it becomes extremely fat, and is esteemed delicious food. In April and September it is likewise seen on the downs of Wilts and Berks; but its winter-retreat is unknown, as well as its breeding-place.

The dottrel, as it is generally called, is an extremely simple bird: and is sometimes taken in the night by candle-light. If the fowler stretches out an arm, the bird will, in return, expand one of its wings; if he moves a foot, it will do the same; in short, the silly creature imitates its insidious enemy to the utmost of its power, while he is busied in spreading the net for its destruction. However, since the universal introduction of fire-arms, this slow mode of catching dottrels has nearly grown into disuse.

## THE AVOSETTE.

This bird, which is a native of Italy, and occasionally visits the English shores, is somewhat larger than the lapwing. The beak is about two inches long, slender, flatted,



and bent upwards: the head and the upper part of the neck are black; the breast, belly, throat, and tail, are of a snowy whiteness; and the wings and back are variegated with black and white. The legs are long and naked above the knees.

In the act of flying, these birds carry their necks and legs quite extended; and make a shrill noise, expressive of the syllable *twit*, twice repeated, from which circumstance the country people give them the name of yelpers. They feed on worms and insects, which they scoop out of the sand with their bill, leaving alternate semicircular marks on the spot where they have been at work in quest of prey.

#### THE COOT.

This bird has a sharp bill at the point, and is of a whitish colour, with dusky green feet. The three fore toes have scalloped membranes on each side. From the bill almost to the crown of the head is a fleshy excrescence, destitute of feathers. The head and body are entirely black, and the breast and belly are lead-coloured.

The coot is generally seen hovering over streams and rushy margined lakes; where it makes its nest of such weeds as are supplied by the water, so that its eggs float on the surface. When the young are first hatched, they are very deformed, and have their heads covered with a coarse red down. In winter, the coot frequently resorts to the sea, and sometimes in such numbers as apparently to darken the waves. There are several species of this genus.

#### THE WATER-RAIL.

This bird has a long slender body, with short concave wings. The head, neck, back, coverts of the wings, and tail, are edged with an olive brown; the throat, breast, and upper part of the belly are ash-coloured. The legs are placed far beneath; and the toes are very long, and divided

at the origin; nevertheless, the rail swims with great facility, and is often observed to skim along the liquid surface.

The water-rail, indeed, has less ambition to wing the sky than to run along the margin of streams, which it practises with great swiftness. Its flesh is much admired.

#### THE LAND-RAIL

The land-rail is very common in Scotland and the islands, as also in Anglesea; but it is migratory, leaving this kingdom before winter. It has a strong, short, thick bill, long legs, and a singular note, resembling the word *crex* often repeated. The head, neck, and back, are black, edged with bay; the tail is of a deep bay; and the belly is white. This bird is much more frequently heard than seen; as it delights to conceal itself in the growing corn, among which it runs along without mounting into the air.

#### THE BUSTARD.

The bustard is the largest land-bird that is a native of Britain; the expansion of the wings being nine feet, and its length almost four. The male has a tuft of feathers about five inches long on each side of the lower mandible; the head and neck are cinereous, the back is transversely barred with black and rust-colour, the belly is white, and the tail is marked with broad bars of red and black.

The female is about half the size of the male. The crown of the head is of a deep orange colour, traversed with black lines, and the rest of it is brown. The lower part of the neck before is ash-coloured; in other respects it resembles the male.

These birds used to be seen, in small flocks, on Salisbury-plain, and other extensive heaths, as far north as Lothian in Scotland; but either from their presenting such an excellent mark to fowlers, or from the frequent inclosures of commons, the numbers here are much lessened; and it is probable that the breed will, in time, become wholly extinct, at least in this country, notwithstanding all

their cautious policy to avoid danger, by feeding only on spacious plains, where they can command a distant view of the approach of their enemies.

As there are but few places where bustards can at once find food and security, they generally continue near their old haunts. They are capable of great abstinence from drink; but, as a security against drought, nature has furnished the male with a pouch, the entrance of which lies immediately under the tongue, and which is said to be capable of containing seven quarts of water. This is occasionally filled, either to supply the female during the season of incubation, or the young till they are capable of providing for themselves.

The female lays two eggs, in a slight hole made in the earth, sometimes lined with a little hay or straw. She sits about five weeks, and her young are able to run about in the instant of their liberation from the shell.

The bustard seems incapable of being bred in a domestic state, which perhaps arises from the difficulty of supplying it with a sufficiency of its favourite food. Among the various species of this bird to be found in foreign countries are the Arabian, the Indian, and the little bustard; the last of these was formerly a native of this kingdom, and is now common in France.

#### THE OSTRICH.

This singular bird, whose elegant plumage is so often used in the attire of our most fashionable ladies, appears, in some measure, to connect the class of quadrupeds and birds. In its general figure it has some resemblance to the camel, and is almost as tall; it is covered with a plumage more nearly resembling hair than feathers, and even its internal parts bear as great a similitude to those of the quadruped as of the bird.

The ostrich is certainly the largest of all birds, appearing nearly as high as a man on horseback. It is usually seven feet from the top of its head to the ground, but from the back it is only four; consequently the head and

neck are above three feet long. From the top of the head to the rump, when the neck is extended in a right line, it is six feet long, and the tail is about a foot more.

The plumage of the ostrich is generally a mixture of black and white, though in some varieties it is observed to be grey. The largest feathers, which are situated at the extremity of the tail and wings, are commonly white; the next row are black and white; and, of the small feathers on the back and belly, some partake of both colours. There are no feathers on either the sides or the thighs, or under the wings; and the lower part of the neck is covered with still smaller plumage than the belly and back. All the feathers are of a kind peculiar to this bird; being as soft as down, absolutely unfit to help the animal in flight, and still less adapted for defence against external injury.

The upper parts of the head and neck are covered with a very fine clear white hair, shining like the bristles of a hog; and in several places are tufts of the same nature, each consisting of about twelve hairs issuing from a single shaft. At the extremity of the wings is a kind of spur, resembling the quill of a porcupine. The legs are covered with scales, and the bill is short and pointed.

From this brief description, it will be evident that the ostrich bears no great affinity to any other bird; and indeed not only its structure but its habits are peculiar. It inhabits the torrid regions of Africa and Asia only, and has never been known to breed out of the country where it was first produced. It seems perfectly adapted to the sandy and burning deserts of those continents; and delights in wild solitary tracts, where few vegetables adorn the face of nature, and where the rain seldom descends to refresh it. Indeed it is asserted that the ostrich never drinks; and the place of its habitation seems to give a sanction to this opinion.

In these inhospitable regions, ostriches are seen in large flocks. They feed, indiscriminately, on every thing eatable, nor are they likely to be at a loss for provisions, as long as even the sterile sand on which they walk remains. Their

appetites require little selection to gratify them, and their powers of digestion are inconceivable.

The female lays from forty to fifty eggs at a time; and, though in the warm climates which she inhabits it is unnecessary to sit continually on them, she does not leave them to be hatched by the sun's heat, as has been a general tradition in every age. In fact, no birds can take a more affectionate care of their young, or be more assiduous in supplying them with whatever is suitable to their state. Not only the plumage, but also the eggs and the flesh, are held in high estimation: thus the ostrich has numerous enemies to guard against; and, were it not for its prodigious fecundity, the breed would probably have been long ago extinct.

#### THE CASSOWARY.

Next to the ostrich, this is one of the largest and heaviest of the feathered creation. It measures about five feet and a half from the point of the bill to the extremity of the claws. The wings are, in a great measure, concealed under the feathers of the back, and are so small as to be almost imperceptible. Hence it may be concluded that the cassowary does not use them in flight; and indeed all its plumage is of one kind, and externally of the same colour. Each feather is generally double, having two long shafts proceeding from a short socket fixed in the skin. These double feathers are always of unequal length; some being fourteen inches long, and others only three.

The most remarkable part, however, of the cassowary is the head; which is armed with a kind of helmet, of a horny substance, extremely hard, and capable of resisting a violent blow. The eyes are of a bright yellow; and, in short, the whole conformation is strikingly majestic. It has the head of a warrior, the eye of a lion, the defence of a porcupine, and the swiftness of a courser. Yet, though endowed with powers apparently formidable for its own defence, it never attacks other birds; and, when pur-

sued, it either kicks like a horse, or overturns its assailant, by running against him and treading him under foot. It moves with astonishing celerity, but in the most awkward form imaginable ; swallows every thing without distinction that comes within its reach ; and what it cannot digest it voids unaltered, without injury to itself.

The islands of the Indian Archipelago, and New Holland, seem to be the natural climate of this extraordinary bird ; and its domain, as it may be called, begins where that of the ostrich ends. The latter has not been found beyond the Ganges ; while the cassowary is never seen nearer than the islands of Java, Banda, Sumatra, and the Moluccas ; and even there it is scarce, so that it is considered as a curiosity, even in its native country.

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### ORDER V. — GALLINÆ.

THE bills of birds of the poultry kind, the most valuable of all the orders, are somewhat convex, for the purpose of gathering their food, and the upper beak projects over the lower. Their bodies are fat and muscular, and their flesh is white and pure. They live principally on grain ; make simple nests ; and, unlike the other classes of birds, are promiscuous in their attachments, being strangers to connubial fidelity.

#### THE DODO.

This very large and unwieldy bird, of the gallinaceous kind, is perhaps the most inelegant of all the feathered race, nor can any words convey an adequate idea of its singular conformation. Its bill is of an extraordinary length and figure, and its legs resemble pillars. The body is generally covered with greyish feathers ; the wings are too short to assist its flight ; and the tail, which is composed of a few white curled feathers, is awkwardly placed.

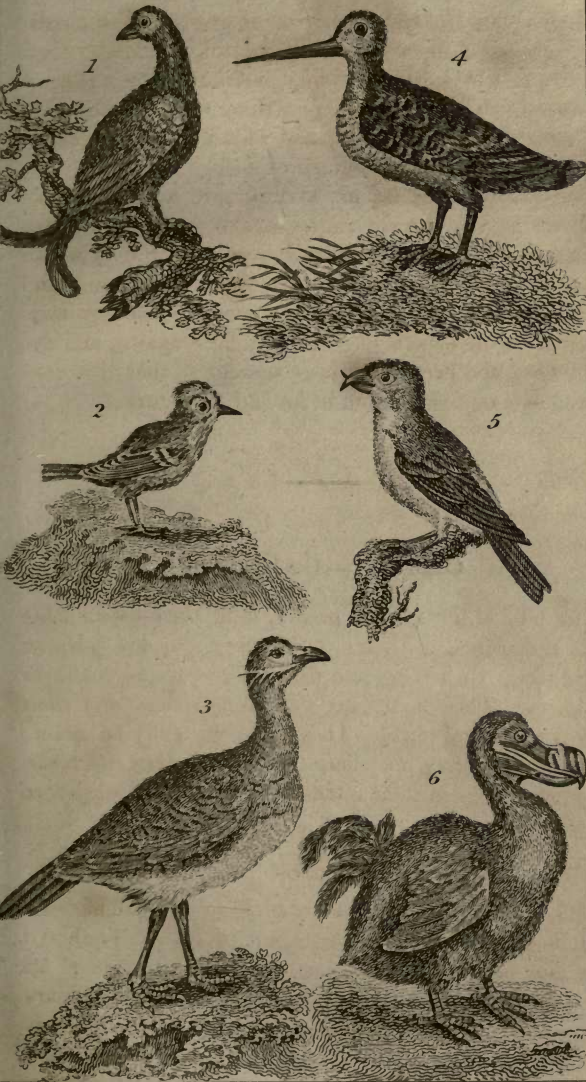


Fig. 1. Black Grouse.

Fig. 2. Golden Crested Wren.

Fig. 3. Bustard.

Fig. 4. Woodcock.

Fig. 5. Cross Bill.

Fig. 6. Dodo.

CROPPER sculp.

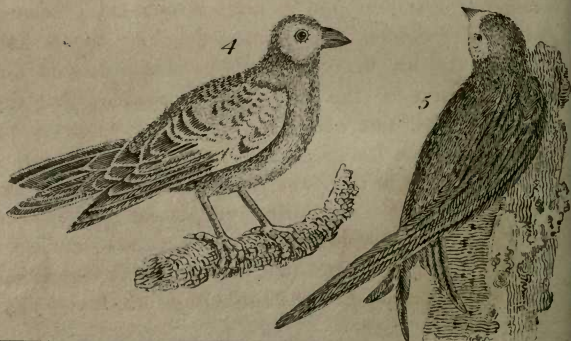


Fig. 1. Pompadour Pigeon. Fig. 3. Wild Peacock.  
 Fig. 2. Turtle Dove. Fig. 4. Snow Bird.  
 Fig. 5. Swift.

Cooper sculp.



In a word, the dodo seems to be pressed down by its own weight; and appears among birds what the sloth is among quadrupeds, — an unresisting creature, equally incapable of defence or flight.

This bird is a native of the Isle of France. Its flesh is said to be good and wholesome; and it appears harmless in all its habits.

#### THE PEACOCK.

No expressions could do justice to the beauty of this bird, were it necessary to enter into a detail of its superb tints; but fortunately it is too well known to require a long description. When it appears with its tail expanded, none of the feathered creation can vie with it in elegance and magnificence; but the harsh scream of its voice diminishes the pleasure received from its brilliance; while its insatiable gluttony and its spirit of depredation, tend still more to alienate our attachment from the only merit which it can claim, — its incomparable beauty.

Peacocks were first introduced into Europe from the Asiatic Indies, and in several parts of those extensive regions they are still found wild in prodigious flocks. So fine a bird, the flesh of which, too, was always esteemed a delicacy at the tables of the luxurious, was not long suffered to continue in its original retreats. Even in the days of Solomon it is mentioned among the articles imported by his fleets. The Greeks also showed a strong predilection for this bird; and it appears that the first exhibition of one was sufficient to induce many persons to travel from Lacedemon to Athens for a sight of it.

Like other birds of the poultry kind, the peacock feeds on corn; but its favourite food is barley. However, it does not reject insects and tender plants; and so capricious are its appetites, that it is not easily restrained from the most unaccountable depredations on the dwelling, the farm, or the garden.

The pea-hen is far less beautiful than the cock: she lays five or six eggs; and studies to hide her nest from

her mate, lest he should interrupt her in the business of sitting, or break her eggs.

#### THE TURKEY.

This fowl, which is now perfectly naturalised among us, was unknown before the discovery of America, to which quarter of the world it was indigenous. It was first imported into France in the reign of Francis the First, and into England under Henry the Eighth. Ælian, indeed, mentions a bird found in India, which is imagined to have been the turkey; but some writers are of opinion that it was either the peacock, or some bird of that genus.

The young of the turkey in this country are among the tenderest of birds, yet, in their wild state, they are capable of enduring a Canadian winter of nine months. In their natural forests they are much larger, as well as more beautiful, than in their state of domestic captivity; their plumage being grey, bordered at the edges with a bright gold colour.

The hunting of this bird constitutes a principal diversion of the American Indian, and its flesh greatly contributes to the support of his family. When he has discovered the retreat of a flock, he takes with him a dog that he has trained to the sport, and which he sends into the midst of them. The turkeys make a precipitate retreat, running with prodigious swiftness; but, being at last tired out, they take shelter in a tree; where they sit till the hunter arrives, who, with a long pole, knocks them down successively.

Turkeys are furious among themselves, but extremely weak and timid among animals of a different species. Even the common cock generally makes the turkey keep his distance; yet the latter is insolent and vain, and, even when baffled, returns to his females strutting in all the pride of victory. The female lays about eighteen or twenty eggs, and is assiduous in providing her young with insects, which they prefer to all other food.

## THE CURASSO-BIRD.

This bird is nearly as large as a hen-turkey. The bill is black at the point, and covered at the base with a yellow skin. Between the nostrils is a round hard knob resembling wax; and on the head there is a crest of long black feathers, which project forward at the points. — The whole body is of a deep shining black, reflecting blue and purple shades; except the lower part of the belly, and the coverts under the tail.

The curasso-bird is frequent in Guinea, and constitutes a considerable portion of the food of the planters. The flesh resembles that of a turkey. It is easily domesticated; and is frequently found in the Dutch settlements of Berbice, Essequibo, and Demerara.

## THE COMMON PHEASANT.

Next to the peacock, the pheasant is the most beautiful of the winged tribes; both for the vivid colour of its plumes, and their delightful mixture and variety. No efforts of the pencil can produce any thing so glossy and brilliant, or so delicately blended. It is reported that Cræsus, king of Lydia, when seated on his throne in all the pomp of eastern splendour, asked Solon if he had ever seen any thing so magnificent. The philosopher, unawed by majesty, and priding himself on his native freedom and simplicity, replied, that, after having seen the plumage of the pheasant, he could be dazzled by no other finery.

The pheasant, however, is not only beautiful to the eye, but is also a peculiar delicacy for the table; but, as if shunning the protection of men, it loves to inhabit the thickest woods, and most unfrequented parts of the forest. Though removed from its native warm and genial climates, it still preserves its innate predilection for freedom; and now lives wild and untamed among us, ornamenting our parks and forests; where it feeds on acorns, berries, and grain.

In a wild state, the hen-pheasant lays from eighteen to twenty eggs in a season, but in captivity she seldom produces more than ten. In a state of nature she hatches and rears her young with resolution, vigilance, and patience; but when kept tame, she becomes remiss in these duties, and a common hen is generally made her substitute.

There are many varieties of the pheasant; some white, some spotted, and others crested.

Of pheasants, which are not naturalised in this kingdom, but only kept in aviaries, there are the black and white Chinese, the painted Chinese, the horned Indian, the Brazilian, and the peacock-pheasant; all eminently distinguished by their beauty and general elegance of form. The most common are known by the names of the gold and the silver pheasants.

#### THE COCK.

Of all birds the cock seems to have been first reclaimed, and earliest taken under the protection of man. Having been long subject to human cultivation, it exhibits a prodigious number of varieties, and has lost almost every trace of its original instincts and independence.

At what period this valuable domestic fowl was first domesticated is wholly unknown: but it is generally supposed to have been introduced into the western part of the world from Persia: whence Aristophanes calls it the Persian bird; and says, metaphorically perhaps, that this fowl enjoyed that empire, before some of its earliest monarchs. Under the druidical government, the cock was forbidden as food among the ancient Britons.

The universality of the domestic state of this bird seems almost to have banished the idea of the wild one; and were it not found occasionally in the woods of India and some of the Oriental Islands, doubts might be entertained as to the form in which it first appeared in a state of nature. However, it is sufficiently known to naturalists,

that, in its original haunts, the cock has black and yellow plumage, and a purple and yellow comb and wattles.

When opposed to its own species, the cock is among the most courageous of animals; and, wherever the refinements of humanity and the polish of good manners have not superseded ferocity and barbarism, cock-fighting seems to have constituted a principal diversion. In India, China, the Philippine Islands, and all over the East, this brutal pastime is, and ever has been, the amusement of kings and princes. Fortunately for our national reputation, this savage sport is approaching to decay in England; and will, it is to be hoped, soon be regarded with abhorrence, even by the lowest classes. The breed of this country is commonly thought to be more bold and hardy than that of any other; but in reality the cocks of China are equal, if not superior, to those of Britain; and, as there are persons who venture large sums on the prowess of a single fowl, it seems extraordinary that no pains have been taken to improve the breed by a foreign mixture. But as cock-fighting is a dastardly, wanton, and ignoble amusement, it should not be attempted to promote barbarity by any new incentives; since he who advises or recommends an art founded in cruelty, can scarcely be considered in any other light than as an accessory to the criminals.

A hen seldom clutches a brood more than once a year; she will lay annually upwards of two hundred eggs, when well supplied with food and water; and this shows her value in domestic economy.

By the ancients the cock was consecrated to Minerva, as the symbol of vigilance; to intimate that genuine wisdom is ever on its guard.

#### THE GUINEA-HEN.

This singular fowl, in some measure, unites the characteristics of the pheasant and the turkey; having the fine delicate shape of the one, and the bare head of the other. It is about the size of the common hen; but its neck and

legs are much longer, and the body is shaped like that of the partridge. The colour is usually of a dark grey, beautifully spotted with small specks of white; and a black ring encircles the neck. The head is reddish, and crowned with a brown horny protuberance; the space under the eyes is blue; and a red fleshy appendage proceeds from the upper chap, somewhat resembling the wattles of a cock.

These birds are partially known in a domestic state all over Europe, but are most common on the coasts of the Mediterranean. Africa appears to be their native country; and they were probably introduced into England from Guinea.

They are naturally gregarious, active, sprightly, and of a restless disposition; and never can be so entirely domesticated as the common gallinaceous kind. They run very swiftly, in the manner of the partridge; but their wings, being short, are ill-adapted for flight. The note is sharp and disagreeable; and a propensity to quarrel seems natural to the kind.

The Guinea-hen, or (as it is frequently called) the pintada, is so common in America, that many have supposed it to be a native of the New World; but this is certainly a mistake. There is little doubt that it was imported into that country in 1508, from Guinea, together with some cargoes of negroes. The Spaniards never attempted to render it domestic; and it is now multiplied so prodigiously as to stock the savannahs, or wild meadows, and otherwise to appear like an indigenous animal.

#### THE COCK OF THE WOOD.

This bird is common to Scandinavia, Germany, France, the Alps, and the Highlands of Scotland: in these last, however, it is rare. The male sometimes weighs fourteen pounds: the female is much less, and the sexes differ likewise much in colour. During winter, the cock of the wood resides in the darkest and most retired parts of the forest; but in summer ventures down from its retreats, to

make short depredations on the growing corn. The delicacy of its flesh makes it an object of some importance to epicures : and, as if sensible of its danger, it appears constantly on its guard. When in the forest, it draws part of its subsistence from the cones of the fir, the thick boughs of which tree commonly serve it for shelter. It feeds also on ant-eggs, and various kinds of berries ; and will complete its meal with gravel.

The female lays her eggs in a dry mossy ground ; and, when she leaves them in quest of food, carefully covers them. As soon as the young are hatched, they run after their mother with great agility ; and soon learn to eat ant-eggs, mountain berries, and other tender food. The brood keep together till the ensuing spring ; when they begin to look upon each other as rivals, contests ensue, and, in conclusion, the victor carries off as many females as he pleases.

#### THE BLACK COCK.

Birds of this species, like the former, are fond of woody and mountainous situations, and prefer the same kind of food. They never pair ; but in spring the male ascends some eminence, where he crows and claps his wings, and on this signal the females resort to him. The hen seldom lays more than six or seven eggs ; and, like the female of the preceding species, covers them up, when she leaves her nest in search of food.

A full-grown black cock, or black grouse, (so called from its colour,) will weigh nearly four pounds. The flesh of this bird is highly esteemed.

#### THE MOOR-FOWL, OR RED-GAME.

The red-game is peculiar to the British islands. The male weighs about nineteen ounces, and the female fifteen. They pair early in the spring, and the latter lays from six to ten eggs. The young brood follow the dam in summer ; and in winter they are seen in flocks of forty or fifty, on

the most sequestered hills. Their food consists of the mountain-berries and the tops of heath.

#### THE WHITE GAME, OR PTARMIGAN.

This species is of nearly the same size as the red-game, and is equally valued for its flesh. In these kingdoms it is found only on the summits of the highest hills in the Highlands of Scotland, in the Hebrides, and the Orkneys, the mountains of Wales, and near Keswick, in Cumberland.

#### THE PARTRIDGE.

Though the partridge is incapable of domestication, it lives no less under the protection of man (at least in this country) than if it were private property. It may change its master indeed; but is always supposed to belong to persons of a certain rank. If any one *not qualified* (that is, a poor man) should kill it, he becomes liable to certain penalties, and even imprisonment; yet the farmer is obliged to maintain it, though he often has not the smallest interest in its preservation!

The partridge is found in every country and climate; as well in the hyperborean regions as under the tropical circles. Wherever it resides, it seems to adapt itself to the nature of the climate. In Greenland it is brown in summer; but in winter it becomes white, and is clothed with a warm down beneath.

The manners and habits of these birds, in many respects, resemble those of the domestic poultry, but their cunning and instincts are much superior. Accustomed to hostile aggression, they practise several little arts of evasion for safety, and frequently with success.

Partridges make no nests, properly speaking, but lay their eggs on any spot of ground adapted to that purpose. A covey generally consists of from ten to fifteen; and it is supposed that a partridge will live about fifteen years, though it is seldom permitted to reach that period. Corn-fields are the principal delight of this much-valued bird,



especially while the grain is standing. Here they not only find shelter, but food ; and, even after the corn is cut down, they prefer stubble-fields to any other.

There are several varieties of the partridge ; as the red-legged, the Hudson's Bay, the mountain partridge of Jamaica, the Brazilian, and the white partridge of the Alps.

#### THE QUAIL

This is the smallest bird of the gallinaceous kind, being little more than half the size of the partridge. In most of its habits it resembles the other tribes ; but it is a bird of passage, however ill adapted it may appear for extensive migration. The fact, however, is certain, that it seeks a warmer climate when winter sets in, or at least shifts its quarters from one province to another ; probably as much allured by the promise of food in greater quantity as of a more temperate sky.

The quail builds its nest on the ground ; and is much less prolific than the partridge, seldom producing more than six or seven young. It is easily caught by a call, which is formed to imitate the voice of the female.

Quail-fighting was a favourite diversion among the Athenians, but they abstained from eating the flesh. Modern manners have reversed the sentiments of mankind in regard to this bird ; and its flesh is now deemed a peculiar delicacy, while its courage is disregarded. There are different species or varieties.

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#### ORDER VI. — PASSERES.

ALL the beautiful and vocal tribes of birds which adorn and enliven our fields and groves are comprehended under the sparrow kind. Their bills resemble a forceps ; their legs are formed for hopping along. and their

bodies, which are tender, are pure in such as feed on grain, but impure in those feeding on insects. Many of them show much skill in the structure of their nests, are remarkable for their fidelity to their mates. and chiefly rest on trees.

#### THE PIGEON.

This bird, in all its beautiful varieties, derives its origin from the stock-dove; but the discriminations are become so numerous, from cultivation, that it is impossible to enumerate or describe them. The domestic pigeon, which is itself the creature of art, has given rise to many elegant varieties, all distinguishable by names expressive of their several properties; as tumblers, carriers, jacobins, croppers, pouters, vents, turbits, owls, nuns, &c.: and bird-fanciers can multiply the families almost infinitely, by coupling a male and a female of different sorts.

The domestic pigeon is wonderfully prolific; it lays two eggs, and usually breeds every month: and, except during severe weather, is in general capable of supplying itself with food. The period of incubation is fifteen days, during which, the male and the female relieve each other. Their turns are generally regulated with great exactitude: the female usually sitting from about four in the evening till nine next morning; at which time she is superseded by the male, who diligently supplies her place till nearly the return of the same hour, while she is busy in searching for food. If the female should prove negligent of her duty, the male will pursue and drive her to the nest; while, on the other hand, should the male not return at the expected time, his mate will treat him with equal severity.

When the young are hatched, they require no food for the first three days, but only to be kept warm. After this the parents feed them for eight days, by discharging into their mouths whatever they have themselves been able to treasure up in their crops. This mode of feeding the young is peculiar to the family of pigeons; and their crop

is a pretty large receptacle for taking in an ample store of provisions. The males commonly supply the young females, and the females perform the same office for the young males. At first the young are furnished with food considerably macerated; but as they grow older the parents gradually diminish the trouble of the preparation, and at length send them forth to shift for themselves. However, when provisions are plentiful, they do not wait for the total dismissal of their young; for it is not uncommon to see a brood almost fit for flight, mixed with a set of young ones in the same nest.

Among domestic pigeons, connubial constancy is seldom long maintained; the males sometimes contend for the same mate, and sometimes a kind of amicable exchange takes place between them.

The fecundity of this bird is so prodigious, that from a single pair nearly *fifteen thousand* may be produced in the space of four years. Hence they will repay the charge of providing them with appropriate dwellings, and occasional distributions of food.

Pigeons are extremely perspicacious, and their powers of hearing are very clear. They are also reckoned swift in flight, and gregarious by nature: they join their bills in their courtship, and utter a mournful or plaintive note.

#### THE STOCK-DOVE.

This species, as already observed, is the parent of a very numerous and beautiful family: but is too well known to require a particular description. It breeds either in the holes of rocks, or in hollow trees in the forest. All other birds of the pigeon kind build their nests in the highest branches, but this species generally resides in artificial cavities; and, from the united allurements of ready sustenance and agreeable society, easily submits to the protection of man. Still, however, it preserves its native hue for several generations; and becomes more variegated only in proportion as it deviates from the original simplicity of its sylvan tints.

## THE RING-DOVE.

This bird receives its appellation from a very regular and beautiful white circle round its neck: the parts above and below this are delightfully variegated with changeable colours, according to the position in which they are viewed by the spectator.

The ring-dove is the largest bird of its kind which is a native of Britain. It seldom flies single, but in large flocks; and subsists on ivy berries, and other vegetable substances. It builds its nest on the branches of trees, and all attempts to tame it have hitherto proved ineffectual. At the commencement of winter, this species desist from cooing; but they pair again about the beginning of March.

## THE TURTLE-DOVE.

This beautiful little bird is found in several parts of England, but particularly in the western countries. It feeds on a variety of vegetable substances; and, being remarkably shy, breeds only in the most retired situations. Its faithful attachment to its mate has been proverbial in every age; and, according to vulgar tradition, when either of them dies, the survivor remains for ever after in a state of disconsolate solitude, and gradually pines away.

## THE LARK.

With this sweet songster, which is universally considered as harbinger of the spring and herald of the morn, so many delightful ideas are connected, that few birds are more universal favourites of mankind. There are various species; as the common sky-lark, the wood-lark, the tit-lark, and the field-lark: but all the family is musical. The sky-lark is too well known to require a particular description of its form. This species and the wood-lark are the on'y birds that sing, as they poise themselves in the air. The former begins its song before the dawn of day; nor can any thing be more agreeable to the lover of nature than

to behold it warbling on the wing, and to hear it raising its notes as it soars, till it is lost to his view in the immense heights above him. And to see it afterwards descending with a swell of its note, and sinking gradually as it approaches its nest, the spot where all its delights are centered, fills the heart of sensibility and intellectual refinement with inexpressible delight.

The lark builds its nest on the ground, lays four or five eggs, and commonly produces its young about the beginning of May. While the female is performing the office of incubation, the male usually entertains her with his song; and, though he rises to a viewless height, never loses his beloved partner. This harmony continues for several months. In winter, however, larks, in common with most other birds, become mute; they then assemble in large flocks, and are caught in great numbers for the sake of their flesh, which is fat and delicate.

Though the music of any bird in captivity must necessarily impress somewhat of a disagreeable sensation on the breast of humanity, both the sky-lark and the wood-lark are frequently kept in cages for the sake of their song. The notes of the latter are by some preferred to those of the nightingale, and it is occasionally mistaken for that supreme mistress of vocal harmony. It is only in a state of nature, however, that they possess all their charming modulations. Imprisonment and slavery, as they lessen the joys, so they detract from the powers of pleasing, in every thing that has life.

#### THE THRUSH.

Of this genus our island affords several species; as the missel-bird, the song-thrush or throstle, the field-fare, the red-wing, and the blackbird.

The missel-bird and song-thrush differ principally in size; the former is the largest of the genus, and sings long before the other; the latter, besides its inferiority in size, is moreover distinguished by having the inner coverts of the wings yellow.

The song-thrush, or throistle, though not one of the most elegant, is certainly one of the sweetest songsters of the grove; and is equally remarkable for the variety and the long continuance of its notes. Like the missel-bird, it pours its melody from the top of some high tree; but, when about to form its nest, it descends to some low bush or thicket.

These birds are migratory in France. They feed on insects, and berries of the holly and misletoe; and during severe snowy weather, when there is a failure of their usual diet, are observed to scratch up the roots of arum, or cuckoo-pint, from the hedges; a plant remarkably warm and pungent, and a salutary viand well adapted for the season.

#### THE FIELDFARE.

This is a bird of passage; spending its summers in the north of Europe, and visiting us about Michaelmas. It is larger than the common thrush, and its flesh is esteemed a peculiar delicacy. Fieldfares fly in flocks, and afford much diversion to the classes of minor sportsmen during the winter. They leave this country about the beginning of March.

#### THE REDWING.

This species is somewhat smaller than the common thrush; which it nearly resembles in the colours of its back, neck, and head; but the sides and under parts of the wings are orange or dusky-red, while the breast and belly are whitish.

Redwings are migratory; generally appearing in this island, and taking their departure with the fieldfare. Their flesh is less esteemed than that of their kindred species. In this country they have a disagreeable piping note; but in Sweden, where they breed, they sing very agreeably, perched on the top of some tree among the forests of maples.

## THE BLACKBIRD.

The plumage of the male blackbird is of a coal-black colour; that of the female is a brown, or dark russet. Though of a retired and solitary disposition, it is a very well-known bird, and the deepest-toned warbler of the woods.

The note indeed of the blackbird, when heard at a proper distance, is perhaps the most cheering of any among the musicians of the grove; but, when confined in a cage, it is loud and deafening. It may be taught, however, to whistle any tune, and even to imitate the human voice.

In some very cold countries, and particularly on the Alps, a variety of this bird is sometimes found of a pure white colour.

## THE CROSSBILL.

This bird is about the size of the lark: and is easily distinguished by the singularity of its bill; both mandibles of which curve opposite ways, and cross each other. The prevailing colour of the male is a dull red, inclining to rose mixed with brown; the female is green, shaded with brown. The crossbill is a native of Germany, and the northern parts of Europe; but sometimes migrates into England. It is also found in North America and Greenland; where it builds its nest on the loftiest pines, fastening it to the branches by means of the resinous matter which exudes from the tree.

## THE HAWFINCH.

This bird is generally reckoned among those which belong to Britain; though it only visits us occasionally, and for the most part in winter. It is common, however, in Italy, Germany, Sweden, and the southern parts of Russia, where it feeds on berries, kernels, and other sylvan fruits. From the great strength of its bill, it is enabled to crack the stones of haws and cherries with the greatest facility.

The hawfinch is about seven inches long, and thirteen broad. The bill is funnel-shaped, strong, and thick. The whole under-side is of a dirty flesh colour; the back and coverts of the wings are of a deep brown, and those of the tail of a yellowish bay. It builds its nest between the partings of the branches, about twelve feet from the ground; forming it with great care and ingenuity.

#### THE BULLFINCH.

This bird is so generally known as almost to supersede the necessity of description. The head, wings, and tail, are black; and the breast and belly red: in the female, however, the under parts are brownish.

The bullfinch is common in most parts of the continent of Europe, and is by no means rare in England. It builds its nest in bushes, and brings forth its young about the end of May. In winter it frequents orchards and gardens, for the sake of the insects that lodge in the tender buds; and on this account may be considered as a benefactor to mankind, though usually destroyed as an enemy.

In a wild state its note is not remarkably pleasing; but when tamed it becomes docile in a great degree, and may be taught to whistle notes in the justest manner. It is also occasionally trained to speak; and, from its great tractability, is frequently confined in cages, the only reward which its agreeable qualities procure it.

#### THE CARDINAL GROSSBEAK.

There are various species of the grossbeak, (so called from the thickness of its bill,) but this has the best claim to attention. The head is adorned with a fine crest, and the rest of the body is of a beautiful red. The female, however, is of a reddish brown.

This species is a native of several parts of North America; and, from the superiority of its song, has obtained the appellation of the nightingale of that continent. During spring and summer, it perches on the top of the loftiest trees; singing early in the morning, and piercing



the air with its loud pipe. It is sometimes kept in cages, and then it continues its music through the greater part of the year.

#### THE SNOW-BIRD.

This bird has obtained various names. By some it is called the pied-mountain-finch; and in Scotland it receives the name of the snow-flake, from its white wings, and its appearance in hard weather and deep snows. About that season it arrives at the Highlands in prodigious flocks, and some few breed there on the summits of the highest hills; but by far the greater part migrate from countries more northerly. Its appearance in temperate latitudes is a certain indication of severe weather in its native haunts. In the flights of these birds they keep very close together, intermingle most confusedly, and roll themselves collectively into the form of a ball, which enables the fowler to bring down numbers of them at a single shot.

#### THE ORTOLAN.

This bird, the flesh of which is reckoned such a delicate morsel by epicures, feeds principally on panic-grass. It is found in most parts of Europe, except Great Britain. The wings are black, the first three feathers of the tail are white on their edges, and the head is greenish.

In its migrations from one country to another, numbers are caught, and artificially fattened for the table. The song of the ortolan is not unpleasant, and it is sometimes preserved in cages on that account.

#### THE RICE-BUNTING.

The head and whole under-side of this bird are black: the held part of the neck a whitish yellow; and the coverts of the wings and the primaries are black; as is also the back, with some tints of white and yellow.

These birds inhabit the island of Cuba in prodigious numbers, where they commit vast depredations on the

early crops of rice. They then migrate to Carolina, and shift their quarters according to the maturity of the crops on which they feed. Their flesh is reckoned very delicate; nor is the song of the male contemptible.

The bunting, the yellow-hammer, and many others, belong to the same genus: but, in proportion as we approach the more diminutive tribes of animated nature, the greater is the difficulty of enumerating all the species, and the less interesting would it prove to the juvenile class of readers, for whom this elementary treatise is intended.

#### THE GOLDFINCH.

This beautiful little songster is too well known in this country to require any description of its form or colours. Its note, even in captivity, is uncommonly sweet; nor is the bird that utters it less estimable for its docility and the cheerfulness or patience with which it submits to confinement.

Towards winter, goldfinches assemble in large flocks, and feed on different kinds of seeds, particularly those of thistles. They are fond of orchards; in which they frequently build their nests, and sometimes produce two broods in the year. They live to a considerable age; and are natives of most parts of the Old Continent, but are most numerous in Europe.

#### THE CHAFFINCH.

This bird has received its name from its partiality for chaff as a food. It regales us very agreeably with its song early in the year, but, towards the end of summer, emits a chirping note. The chaffinch is stationary in England; but, in Sweden, the females migrate into Holland about September, leaving their mates behind them; and the late ingenious Mr. White of Shelbourne, observed large flocks in Hampshire, with few or no males among them. This is a very singular fact in the eco-

mony of nature, for which it is totally impossible to account.

#### THE COMMON SPARROW.

This bird, from its frequenting only the abodes of men, and places adjacent, may be said to be fed chiefly from human industry; for, in spite of every precaution, it will share the food of the domestic pigeons and poultry, and consumes a considerable quantity of grain. On this account it has been long proscribed, and a reward set on its destruction; but still the species continues undiminished.

In autumn, sparrows assemble in flocks, and roost on trees near houses; and at this time they may be shot by dozens. The flesh is not very well flavoured, and the note is still less alluring. Nevertheless the sparrow, by its vivacity and frequent appearance, affords some amusement to the lover of nature. It is a familiar but crafty bird; and, though it seems to evince little fear, it exercises a necessary caution for its own security.

#### THE LINNET.

The breast of this little bird is of a fine blood-red, which heightens as the season advances. It is much and deservedly esteemed for its song, which frequently subjects it to captivity. It feeds on all kinds of seed, but seems to prefer that of flax.

#### THE CANARY-BIRD.

This beautiful little creature was originally a native of the Canary islands, from which it receives its name; but has been domesticated in Europe for at least two centuries, and is a frequent ornament of the parlour or the hall. Though it will breed in captivity, and even intermix with other birds of the same genus, it is too delicate to endure our climate in a state of nature. It will live in a cage from ten to fifteen years.

## THE FLY-CATCHER.

This is a very numerous genus ; but it will be sufficient here to describe only one species, the spotted fly-catcher, which will convey a tolerable idea of the whole family. This bird is little more than five inches long ; the head is large, and of a brownish hue, obscurely spotted with black ; the back is of a mouse-colour ; the wings and tail are dusky, and the breast and belly white. It is a bird of passage, appearing in Britain (where it breeds) in the spring, and departing from our shores in September. It builds its nest against any part of a tree that will support it, and is found to return almost invariably to the same place in successive years.

The fly-catcher feeds on insects, which it collects on the wing. When the young can fly, the old ones withdraw with them into thick woods, where they frolic among the top branches ; dropping almost perpendicularly on the flies that sport beneath, and rising again in the same direction.

## THE NIGHTINGALE.

The nightingale has been so long celebrated for the delightful melody with which it charms the ear, that its very name seems to embellish poetical description, and to convey to the mind a sort of pleasure which words cannot easily depict. Almost every modern versifier mentions it with rapture ; and the ancient bards, who so closely painted from nature, have exerted themselves to fix its reputation.

But sweet as is the music of Philomel (its poetical name) she has little external beauty to attract the eye, and charms most when unseen. The head and back are of a pale tawny colour, dashed with olive ; the throat, breast, and the upper part of the belly, are of a light glossy ash colour ; and the lower part of the belly is almost white. The exterior webs of the quill-feathers are of a reddish

brown; the tail is of a deep tawny red; and the eyes are remarkably large and animated.

This bird (the most celebrated of the feathered tribe for the variety, length, and sweetness of its notes) visits England about the beginning of April, and leaves it in August. It is found only in some of the southern and midland counties, and is said to be unknown in Scotland, Ireland, and North Wales. It commences its song in the evening, when other birds are generally at roost, as if it disdained to waste its music in the throng; and continues it by intervals during the whole night. If undisturbed, it will sit for weeks together almost on the same tree. It builds its nest near the bottom of some hedge, in such artful concealment, that it generally eludes the inquisitive eye of the school-boy; and surely to rob it or other birds of their eggs and young, especially without any intention to rear them, is a pitiful gratification, when the pain thus inflicted is considered. A poet of nature thus paints the feelings, and pleads the cause, of this injured songster:

But let not chief the NIGHTINGALE lament  
 Her ruin'd care, too delicately form'd  
 To brook the harsh confinement of the cage.  
 Oft, when returning with her loaded bill,  
 The astonish'd mother finds a vacant nest,  
 By the hard hand of unrelenting clowns  
 Robb'd; to the ground the vain provision falls:  
 Her pinions muffle; and, low-drooping, scarce  
 Can bear the mourner to the poplar shade,  
 Where, all abandon'd to despair, she sings  
 Her sorrows through the night; and, on the bough  
 Sole sitting, still at every dying fall  
 Takes up again her lamentable strain  
 Of winding woe; till, wide around, the woods  
 Sigh to her song, and with her wail resound.

THOMSON'S SPENCE.

#### THE GOLDEN-CRESTED WREN.

This is the smallest of all British birds, weighing no more than twenty-six grains. It is easily distinguished

from other birds of its kind ; not only by its size, but also by the beautiful scarlet mark on its head, bounded on each side by a fine yellow line. This elegant little creature frequents woods and coverts, and is usually seen perched on the oak. Its note does not differ materially from that of the common wren. It continues with us the whole year, and seems capable of enduring the rigour of our severest winters.

#### THE BLACK-CAP.

The crown of the head of this small bird is black, and thence it derives its name. The hind part of the neck is of a light ash-colour, the back and coverts of the wings are of a greyish green, and the breast and upper part of the belly are of a pale ash-colour.

The black-cap is a bird of passage, and quits the British islands before the commencement of winter ; however, during its stay, it gratifies us with its song, which is so sweet, that in Norfolk it has obtained the name of the mock-nightingale. In fact, its notes are full, sweet, deep, and loud ; and inferior only to those of the bird with which it has been thus compared.

#### THE RED-BREAST.

Of all birds this is the most familiar, and therefore it is in a manner consecrated to the domestic affections. The beauty of its form, the vivacity of its motions, and the confidence it seems to repose in man, all unite to secure it from annoyance. Added to this, several popular prejudices operate in its favour, and seem to prevail in every country where it is known. It feeds on insects ; eats crumbs of bread when its usual food fails ; and, while other birds are ready to perish with cold and hunger, seeks the shelter of a house or cottage, in which it is generally a welcome guest.

The song of the red-breast is remarkably soft and sweet ; and the more to be valued, as we enjoy it during the greater part of the winter, when the other feathered

choristers are silent. In summer, indeed, it is equally musical, but at that time its modest notes are undistinguished in the general warble of the choir.

Thomson marks, by a just and elegant description, the domestic habits of this bird during winter ; but it is, perhaps, as much indebted to the ballad of the Babes in the Wood for its universal favour and esteem with us, as to any combination of other causes whatsoever. Indeed, not only our poets, but our painters, have exerted their talents, in recommending this innocent songster to our attention : and, surely, where genius labours to improve our sensibilities, and to awaken our most generous passions, it demands our love and respect.

#### THE WHEATEAR.

This bird is seen in most countries of Europe, either as naturalised or as a visitor. The top of its head, the hind part of the neck, and the back, are of a bluish grey ; the under part of the body, yellowish white ; the breast is tinged with red, and the legs are black.

The wheatear visits England annually in March, and leaves us in September. In some of the eastern counties, particularly Sussex, it is astonishingly numerous ; being caught almost by thousands, and sent up to the London poulterers. Its flesh, when potted, is as much esteemed in England as that of the ortolan on the continent.

#### THE SWALLOW KIND.

Of this genus, which is pretty numerous, four species are natives of England ; the house-swallow, the martin, the sand-martin, and the swift ; and of each a cursory description shall be here given, after premising the general history of the family, which is somewhat extraordinary.

The swallow tribe are remarkable for the wideness of their mouths, which are always open when flying ; the

shortness and slenderness of their feet; and the immoderate length of their wings. These qualities are indeed essential to the kind of life which they lead, and enable them to provide the means of ready subsistence. Insects are their principal food; and no sooner does spring awaken that class of animated nature from their state of torpidity than the swallow makes its appearance. At first it flies heavily and feebly, as if wearied with its journey; but, as the weather grows warmer, and the number of insects increases, it acquires additional strength and activity.

The changes of the weather may be generally predicted from the swallow's flying high or low in pursuit of its prey; but it is rather the insect, which is the object of its chase, than the bird itself, that appears to have this quality of foresight.

A defect of its usual food on the approach of winter naturally warns the swallow to meditate its departure; but whither the tribe retire, and how they dispose of themselves, during that season, is a question which still continues to puzzle the scientific, and to amuse the speculative.\*

#### THE COMMON OR HOUSE SWALLOW.

This species is distinguished by the extreme forkedness of its tail, and a red spot on the forehead and under its chin. It builds its nest on the top of chimneys with great industry and art, and sometimes breeds twice a year.

The common swallow arrives in Great Britain about twenty days before the other species of the same genus which visit us, and leaves us about the end of September. Its note is not disagreeable.

#### THE MARTIN.

This bird is inferior to the common swallow in size, and its tail is forked. The head and the upper part of the body, except the rump, are black glossed with blue; the

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\* See note p. 141.



breast, belly, and rump, are white; and the feet are covered with a short white down. It constructs its nest under the eaves of houses in a very curious manner, leaving only a small hole for its admission. During the period when the young continue in the nest, the old one feeds them, adhering by her claws to the outside; but as soon as they quit it, she feeds them while on the wing, with a very rapid and almost imperceptible motion.

#### THE SAND-MARTIN.

This species receives its name from building its nests in the chinks of sand-pits, and the banks of rivers. It is the last of the swallow tribe that frequents this island. The head and the whole upper part of the body are mouse-coloured; the throat is white, encircled with a mouse-coloured ring; the belly is white, and the feet are smooth and black.

#### THE SWIFT.

The swift measures about eight inches in length, and in the expansion of the wings eighteen, though it does not weigh above an ounce. It is entirely of a glossy dark sooty colour, except the chin, which is marked with a white spot. Its feet are small, and it rises from the ground with difficulty; but, when on the wing, its flight is rapid and long-continued. It breeds under the eaves of houses, and in steeples and other lofty buildings; arrives after the house-swallow, and invariably disappears some weeks before its kindred species.

#### THE GOAT-SUCKER, OR CHURN-OWL.

This bird, which some naturalists place in the family of swallows, is about ten inches long, and twenty-two broad. Its colours are plain, but they have a beautiful effect from the elegance of their arrangement; consisting of black, brown, grey, white, and ferruginous, disposed in streaks, spots, and bars. The male is distinguished from the female

by an oval spot near the end of each of the first three quill-feathers, and another on the two exterior feathers of the tail.

The goat-sucker flies chiefly by night, and continues but a short time in this island; appearing about the end of May, and retiring from every part of Britain by the end of September. Its notes resemble the noise of a large spinning-wheel, and the sound is very shrill and loud. It receives its name from its fancied property of sucking the teats of goats; a vulgar error, as ancient as the days of Aristotle, and to which some writers among the moderns seem to give countenance.

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### CLASS III.—AMPHIBIA, OR AMPHIBIOUS ANIMALS.

THIS class, though certainly the least valuable and extensive of any, contains animals very dissimilar in their habits and conformations; and some of the most formidable enemies of man, the objects of his constant dread, and frequently the cause of his destruction. Against their efforts caution cannot always protect them, and both strength and dexterity are frequently unavailing.

The essential characters of the animals which are thrown together under amphibia are, that they have either a naked or scaly body; that they are destitute of grinders, and have all their teeth sharp or pointed; that they have no radiated fins; or that the heart has only one ventricle, and that they respire through the lungs.

In the Linnæan arrangement they constitute four orders:—

I. REPTILES, including the tortoise, lizard, and frog kinds.

II. SERPENTS, or animals that proceed by an undulatory motion; many of which are poisonous.

III. MEANTES, or gliders; of which there is only the siren.

IV. NANTES, or swimming amphibia; which are pinnated, and respire by lateral branchiæ, or gills, including the ray, lamprey, and others.

Of animals so very different in their nature and habits, it is impossible to give any general uniform account. In the order of reptiles are placed the harmless frog, so tenacious of life, the valuable tortoise, and the formidable alligator, or crocodile; which last is the largest of the lizard genus, and abounds in the Nile, the Niger, the La Plata, the Ganges, and other spacious rivers within the torrid zone. The general food of these monsters is fish, which they devour in astonishing quantities; but, when their supplies in the water are too scanty to satisfy their voracious appetites, they conceal themselves in the sedge, or reeds, by the side of their native streams, till an opportunity presents itself of attacking some other animal, man himself not excepted.

In our happy quarter of the globe, we have few among the order of serpents that are noxious; and the bite of all operates in a similar manner, by exciting a burning pain; for which we have various antidotes, but none more efficacious and safe than olive oil.

Within the torrid zone, however, where the fields are at once fertile and uncultivated, and the climate warm and humid, this terrible race reigns in all its malignity; and some species are equally tremendous by their magnitude, and fatal from their bite.

In the early ages of the world, when mankind were few, and these animals continued the undisputed tyrants of a country through a succession of years, it is very probable that they grew to a size of which we have no modern examples. History, indeed, records several instances of this kind; and, when we contemplate the liboya, which is well known to be capable of killing an ox by its mere strength, and has been found thirty or forty feet long, we must not incredulously reject, as fabulous, every

thing that has not been confirmed by the testimony of our senses, at later periods.

It is recorded, that, while Regulus led his army along the banks of the Bagrada, in Africa, an enormous serpent disputed his passage. Pliny, who saw its skin, affirms that it measured a hundred and twenty feet in length, and that it killed a number of men before it was destroyed. At last, however, the battering engines were directed against it, which soon dispatched this singular enemy. Its spoils were carried to Rome, and the General was decreed an ovation (or inferior kind of triumph) on account of his success.

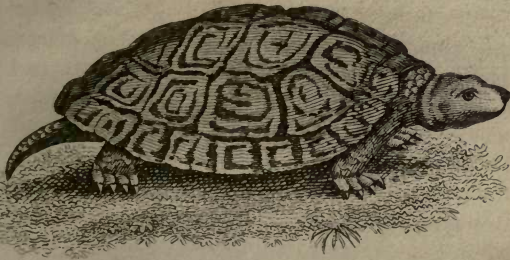
In Java, on the continent of India, in Africa, and in Surinam, and other parts of America, serpents are still found of enormous magnitude; but these are chiefly formidable for their strength, Providence having mercifully denied them any venomous qualities.

Lo! the green serpent, from his dark abode,  
Which ev'n imagination fears to tread,  
At noon forth issuing, gathers up his train  
In orbs immense: then darting out anew,  
Seeks the refreshing font; by which, diffus'd,  
He throws his folds; and, while with threat'ning tongue  
And deathful jaws erect, the monster curls  
His flaming crest, all other thirst, appall'd,  
Or shivering flies, or check'd at distance stands,  
Nor dares approach.

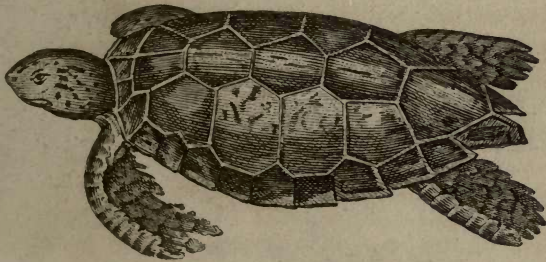
THOMSON.

The smaller serpents are the most fatal and the most dangerous, because they cannot always be seen and avoided. Various are the ways in which their poison operates: and, though it is probable that an antidote exists for each, death is almost inevitable, if this is either unknown or too tardily applied. But, as if mankind were not sufficiently exposed to the natural malignity of the serpent race, many barbarous tribes, both in the Old and the New Continent, dip their arrows in the poison, or with it prepare their vengeful potions.

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Fig. 1. Land Tortoise.

Fig. 2. Green Turtle.

Fig. 3. Common Frog.

Cooper sculp.

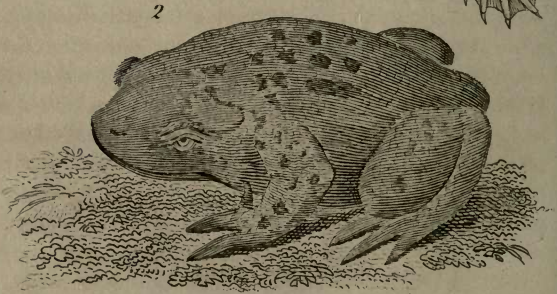


Fig. 1. Bull Frog.  
Fig. 2. Common Toad.  
Fig. 3. Horned Toad.

*Casper sculp.*

Though there is a general similarity in the external conformation of this noxious and disgusting tribe, the venomous class are distinguished by two large teeth, or fangs, issuing from the upper jaw, and projecting beyond the lower. The innoxious kind is generally thought to be destitute of these instruments of destruction, and this deprivation constitutes the difference between them. A bag under the fang is the reservoir of the poison, and the fang itself is furnished with an aperture for injecting it into the wound.

But, though serpents are almost universally disgusting from their appearance, or tremendous from their bite, superstition has converted some of them into divinities; and a few, besides, are taken under human protection for their inoffensive qualities, or their service in destroying vermin. It is difficult, however, for most persons not to feel a sensation of horror at the sight of even such as are known to be harmless; and this antipathy was probably planted in our nature as a guard and preservative against the dangerous powers of the tribe.

#### THE TORTOISE.

The characters of the tortoise genus are, that the body is defended by a thick shell, and furnished with a tail; that the mouth has naked mandibles, without teeth; and that there are four feet.

Such as subsist principally in the water are usually called turtles, while those that frequent the land bear exclusively the appellation of tortoises; but in their external conformation there is little difference.

The land-tortoise is found from one to five feet in length, from the end of the snout to the extremity of the tail; and from five to eighteen inches across the back. The head is small, somewhat like that of the serpent kind; and may be either protruded or concealed under the shell at pleasure: the eye has no upper lid; the tail is long and scaly, like that of the lizard; and the exterior covering is composed of several pieces of shell, united in the firmest and most compact manner.

Though this animal is of the most pacific disposition, it is admirably formed for defence, and seems to be almost endowed with immortality. Scarcely any violence can deprive it of life: it will retain the vital principle after it is deprived of the brain, and even of the head. It is remarkable for its longevity; and, though it is difficult to ascertain its precise duration, there is an instance recorded of one kept in the garden of Lambeth-Palace which was known to have lived above a hundred and twenty years.

During winter, the tortoise lies torpid in some cavern three or four feet under ground; and from this state it does not awake till the genial heat of spring returns. Its strength is so considerable, that a child has been known to get on the back of one, without retarding its pace.

The turtle, or sea-tortoise, is of various species, most of which are highly celebrated in the annals of epicurism. The green turtle, in particular, forms an important article of commerce, and our West-India ships are generally supplied with conveniences for importing it alive; yet whoever wishes to eat the flesh in its highest perfection should make a voyage to its native shores. A common-sized green turtle will weigh two hundred weight, and some have been caught that exceeded eight hundred.

The turtle seldom quits the sea, except to deposit its eggs in the sand; which are hatched, in about twenty-five days, by the heat of the sun. The young, as soon as they burst from the sand, guided by instinct, run towards the sea. The Mediterranean furnishes a species of turtle of considerable magnitude; but, though it is extremely fat, the flesh is coarse and unwholesome. Animals of this kind are sometimes caught on the British shores.

#### THE COMMON FROG.

To describe an animal so well and generally known is needless; but some of its habits and properties are too interesting to the naturalist to be left wholly unnoticed. Its spring, or power of leaping, compared with its bulk, is



remarkably great; and it is by far the most expert swimmer of all quadrupeds. While in a tadpole state, it is wholly an inhabitant of the water, and it is also produced in that element: but, as soon as the young animal is transformed into its mature state, it immediately takes to the land; and if after hot weather, refreshing showers fall, the whole ground is sometimes seen covered with these little creatures,—a circumstance which has probably given rise to the vulgar notion of frogs being rained from the clouds. A single female is capable of producing a thousand eggs at a time, and therefore the immensity of their numbers will not excite admiration. They subsist on insects, and are themselves devoured by a variety of other animals.

The frog is remarkably tenacious of life, and will leap about, even after its head has been cut off. Many cruel experiments indeed have been made on this inoffending race: and Galvani, the Italian naturalist, from his observations on them, has given rise to that branch of electric science which goes by his name; which, though it certainly teems with curious speculations, does not appear hitherto to have produced any useful results.

The croaking of frogs is a certain indication of approaching rain; and is sometimes so loud in marshy countries, such as Holland, as to be stunning and unpleasant to the hearer. In very dry weather, however, they become mute from a deficiency of moisture, and consequently of the food in which they delight.

#### THE EDIBLE FROG.

This creature differs from the common frog, in having a high protuberance on the middle of its back, which forms a very sharp angle. Its colours also are more vivid, and its mark more distinct. Both this and the common species are eaten in some countries. “In the markets of Paris,” says Pennant, “we have seen whole hampers full; which the venders were preparing for the table by skinning and cutting off the fore-parts, the loins and legs only being

## THE BULL-FROG.

These animals are very large, and are capable of springing three yards at a single leap, by which means they can keep pace with a horse going full speed. The noise they make resembles the roaring of a bull, but it is somewhat more hoarse ; and, when numbers unite in the horrid concert, few persons can listen to it without disagreeable sensations.

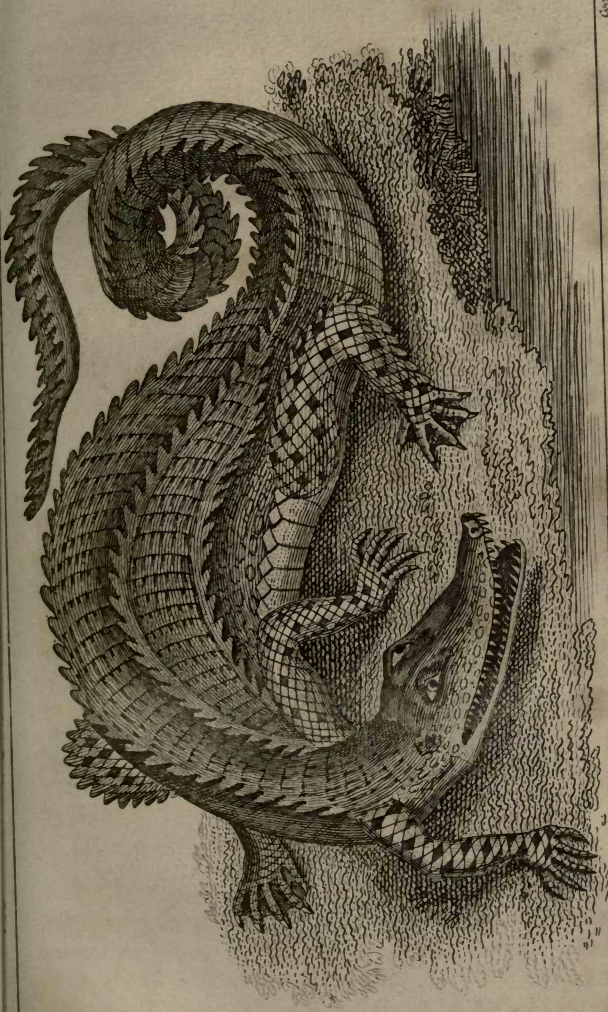
Bull-frogs will kill and eat the young of the poultry kind, and, if hurt, utter a plaintive note much like the crying of children. As soon as the air begins to cool in autumn, they plunge into the mud of stagnant waters, and lie torpid during winter ; but on the approach of spring, they issue forth, and again exercise their native activity. They are supposed, by the people of Virginia, in which country they abound, to be purifiers of water ; and, for that reason, are respected as the genii of fountains.

## THE COMMON TOAD.

The toad bears a general resemblance to the frog ; but is much more unsightly in its appearance, and seldom can be viewed without disgust. Yet it is said by those who have resolution to examine it with attention, to have very fine eyes ; to which Shakspeare alludes when he makes Juliet remark,

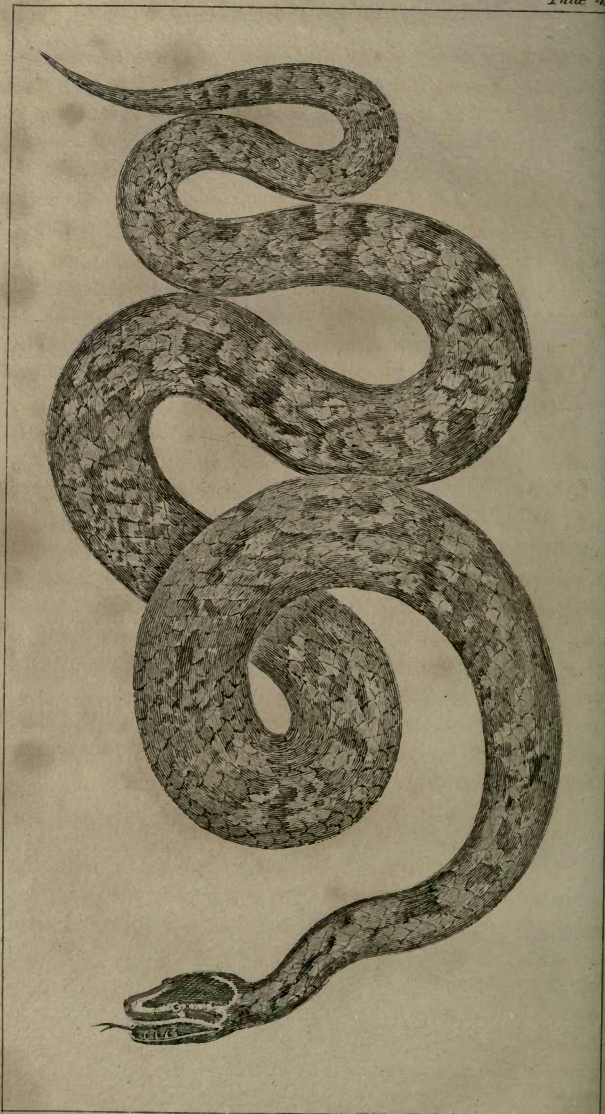
Some say the lark and loathed toad change eyes.

Its natural deformity, and the abhorrence with which mankind generally regard it, have given rise to many fictitious qualities that confirm the prejudices conceived against it. Its very look has been supposed fatal ; of its entrails, fancied poisonous potions have been composed ; and it has been deemed a principal ingredient in administering the incantations of nocturnal hags. On the other hand, some old writers have believed that its head



The Alligator.

... .. in Louisiana, Florida, West, Texas & Brazil.



*Boa Constrictor.*

Cuypers sculp.

contained a stone possessing many medical as well as magical virtues ; but all these fables have been long exploded ; and, if it cannot be allowed to be agreeable, it has at least been proved to be innocuous. Indeed, instead of possessing venomous, it has of late been thought to have beneficial qualities ; and, according to some authors has been successfully applied to cure by its suction that most dreadful of human maladies, — the cancer.

Like the frog it is amphibious, and lives on worms and insects, which it seizes by darting out its tongue. It crawls about chiefly towards the close of day, in moist weather ; and the young undergo the same changes as the tadpole of the frog.

During the severity of winter, like all the frog kind, it becomes torpid. It is also endowed with great longevity, and is extremely tenacious of life. Wonderful stories are told of its having been occasionally found inclosed in solid blocks of marble and stone, where it must have lain for centuries, and yet when disengaged showing every sign of life. To dispute every recorded circumstance of this kind, would evince excessive incredulity ; yet, if true, it must be allowed that the common laws of nature are palpably violated in such instances.

There are several varieties of the toad, both the land and the water ; it will be sufficient, however, to particularise the following very curious species.

#### THE PIPAL, OR TOAD OF SURINAM.

This creature is more hideous in its shape than the common toad. The head is flat and broad, the eyes are small, the jaws extended, and the back is covered with a number of little prominences resembling eyes ; which, in fact, are the eggs, from which the young are produced by a very singular process. These eggs are in different states of maturity ; and the pipal is seen moving about with her progeny on her back ; some peeping forth from their cells, others just assuming their form, and without life.

The male pipal is considerably larger than the female. — Hideous as these creatures are, they are, probably, entirely harmless; though we are told of very malignant effects resulting from their powder, when calcined.

#### THE CROCODILE.

This is the largest and most formidable animal of the lizard genus; frequently exceeding twenty feet in length, and five feet in circumference. The fore-legs have the same parts and conformation as the arms of a man, but are somewhat shorter than those behind; the head is long, and the eyes are small. The general colour is a dark brown on the upper part, and a whitish citron below; with large spots of both colours on the sides. The skin is defended by a suit of armour, almost impenetrable to a musket-ball. The female deposits her eggs in the sand, and leaves them to be hatched by the heat of the sun.

The crocodile is a very dangerous and terrible animal. It abounds in the Nile, the Niger, the Ganges, and other great rivers of Asia, Africa, and America. In Upper Egypt it is extremely destructive; lying in wait near the brink of the Nile for animals that come to drink; and sparing neither man nor the fiercest quadrupeds that come within its reach. It seizes the victim with a spring; and draws it into the water, where it devours it at leisure. Sometimes the wounded captive makes its escape, when the crocodile pursues with much greater celerity than might be expected from its unweildy form. It is capable of mastering even the tiger, which often struggles in vain against such a potent adversary.

The natives of some countries, however, pursue the crocodile for the sake of its flesh, of which they are extremely fond; nor are its eggs reckoned a less delicious treat by some palates. This helps to diminish its numbers; but all the arts of annoyance which man is master of would be ineffectual, did not every beast and bird of prey, particularly the ichneumon and the ibis, conspire to devour the eggs and young with unremitting assiduity.

Even the parent herself is said to co-operate in the deliverance of the human race from such a pest, by destroying her offspring; in which she is assisted by the male, as soon as they take to the water.

Of this family there are several varieties; as the open-bellied crocodile; the alligator, or American crocodile; and the cayman, or Antilles crocodile. They all agree, however, in strength, size, and ferocity; and are justly the object of terror in every country where they are found.

#### THE IGUANA.

This is one of the largest of land-lizards; and certainly the most valuable, as its flesh is esteemed delicious food, not only in Africa but America. The sportsmen of those countries hunt the iguana as eagerly as the Europeans do the pheasant or the hare; and, notwithstanding its disgusting and formidable appearance, it is rather a mild than a ferocious animal, though it will bite severely when attacked.

This species is about five feet long, and as thick as a man's thigh; the skin is covered with small scales, and the back is furnished with a row of erect spines, or prickles. The male has a loose skin depending from the breast, which it puffs up when provoked. The female is considerably less, and of an ash-colour, while the former is green. They generally live among trees that border the streams in tropical climates, and lead an inoffensive kind of life.

#### THE SALAMANDER.

Many fictions have been invented concerning this animal, all of which vanish, when brought to the test of accurate investigation and experience. It was long believed to be capable of living in fire, and its bite was said to be highly poisonous: both these attributes, however, are unreal. All the lizard family, from a certain similarity which they bear to serpents, are the

objects of terror, disgust, or suspicion ; but it does not appear that any of them are really noxious farther than their mere bite, which may be easily cured like any other wound.

That species of the salamander which is best known in Europe, is from eight to eleven inches thick, usually black, spotted with yellow ; and when taken in the hand feels cold to a high degree. When thrown into the fire, in which it has been supposed capable of existing, it bursts and ejects its fluids, which may serve indeed to quench the flames partially, but the animal loses its life at the very instant. Salamanders are all amphibious, are capable of enduring great abstinence, and bring forth their young alive.

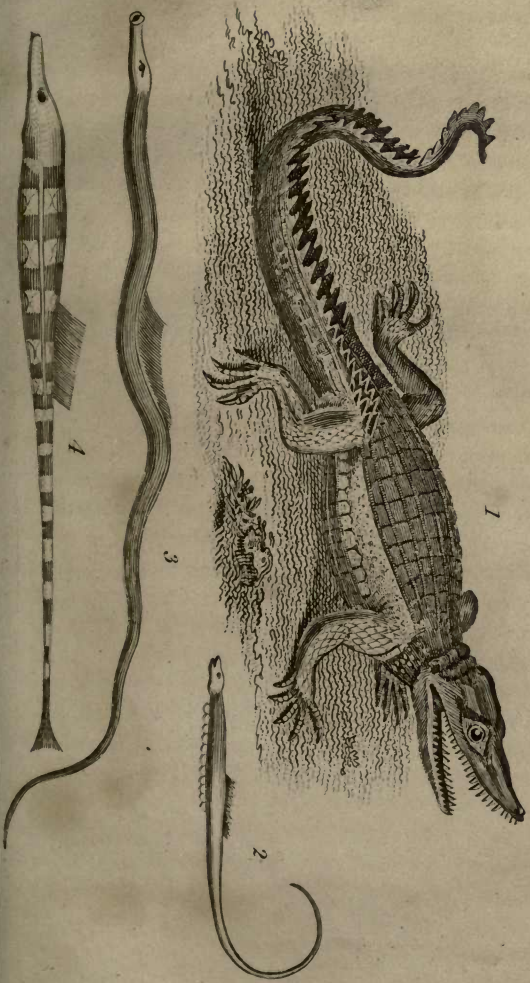
#### THE CAMELEON.

This animal has a crooked cylindrical tail ; and including this appendage, measures about a foot in length. Its thickness varies at different seasons, as it possesses the faculty of contracting or expanding itself at pleasure. The skin is very unequal, but soft. When the creature is at rest, the eminences on its surface appear of a bluish grey, and the spaces between them of a pale red and yellow : but viewed in different lights, it assumes every tint of colouring, and no two individuals can agree as to the exact shades it presents to the eye ; hence it has been in all ages alluded to as the emblem of a fickle unsettled mind, which varies with every turn of opinion, and is constant in nothing but perpetual change.

#### THE SCALY LIZARD.

So numerous is the family of lizards, and at the same time so uninteresting, that this species will be a sufficient specimen of the rest. Its length, including the tail, is about seven inches. A black list runs along the back, and a brown one on each side : the belly is yellow ; and the scales, which are large and even, are varied with





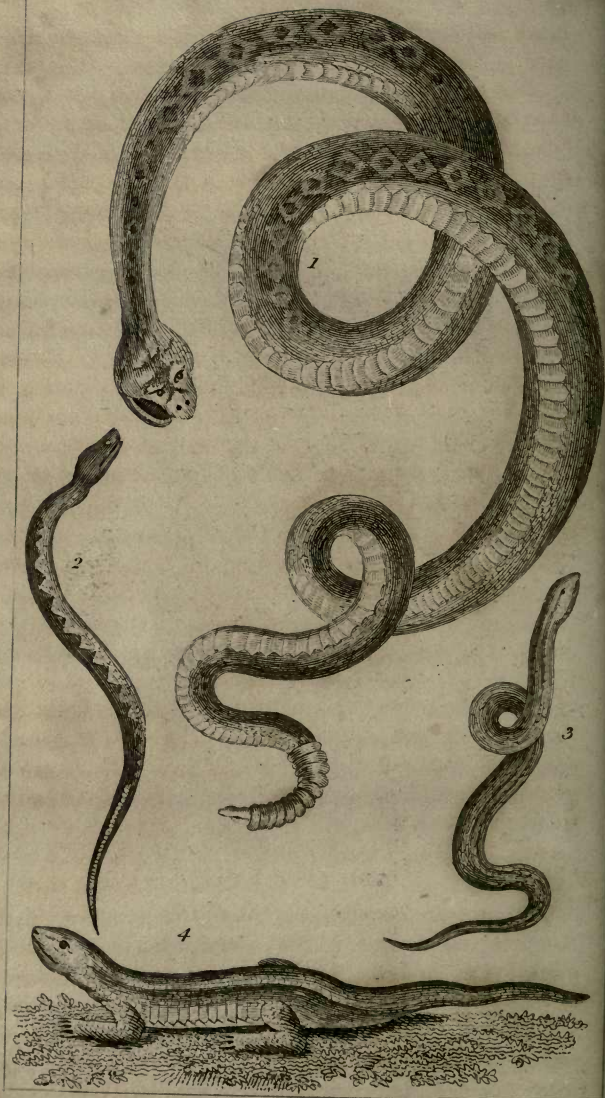


Fig. 1. Rattle Snake.  
Fig. 2. Viper.

Fig. 3. Blind Worm.  
Fig. 4. Scaly Lizard.

Cooper sculp.

black and brown. The legs and feet are dusky; and on each foot are five toes furnished with claws.

This animal is extremely nimble, and in hot weather may be seen basking on the sides of dry banks or old trees; but, on finding itself observed, it quickly retreats to its hole. It feeds, as indeed do all the species found in England, on insects: and in its turn becomes the prey of birds. All the British lizards are perfectly innoxious; it is their figure alone that excites our aversion, and has occasioned their representation in an unpleasing point of view. Indeed, few can divest themselves of a certain horror at the sight of even the smallest of them: for with us they possess neither beauty of colouring nor elegance of form to attract the eye; but in the former quality there are some species, natives of warmer climates, which might justly challenge our attention and admiration.

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## ORDER II. — SERPENTES.

THE distinguished characteristics of serpents are, that they breathe through the mouth, by means of lungs only; and are destitute of feet, ears, and fins. There are six genera in the Linnæan arrangement, which shall be here treated of in order.

### THE RATTLE-SNAKE.

This dreadfully-poisonous reptile is a native of the American continent. It is sometimes found as thick as a man's leg, and six feet long. In most particulars it resembles the viper. Like that animal, it has a large head and a small neck, and its colours are nearly the same; but it differs in having a large pendulous scale over each eye, and a nictitating membrane; besides that

singular mark of distinction, the rattle in the tail. With this instrument it makes a very loud noise; and it appears to have been assigned by Providence for the purpose of warning other animals of its approach, and thereby enabling them to avoid the danger. This rattle is composed of several thin, hard, hollow bones, linked together, and which sound on the least motion of the animal. It has been supposed, and perhaps not without reason, that the rattle-snake acquires an additional bone every year, from which circumstance its age may be indicated; at least, it is certain, that the young are totally destitute of this appendage.

No sooner is this harsh and alarming rattle heard, than the other classes of animals testify their fear by speedy flight. The almost inevitable death that ensues from the bite of this terrible reptile creates a kind of solitude around its haunts. It is, however, very inactive and indolent, unless when provoked; and, conscious of its superior powers of annoyance, is seldom the aggressor, except when impelled by hunger to attack its natural prey.

Various antidotes have been recommended for the bite; but such is the malignity of the venom, that it has been doubted whether the recoveries which have been recorded have not been more owing to the slightness of the wound and the strength of constitution, than to any medicaments that have been prescribed. The pain soon grows insupportable, and some have expired under it in five or six hours, while others have survived the agony a little longer; but only to yield at last to a mortification, which gradually, yet rapidly, overspreads the whole frame.

#### THE BOA, OR OX-SERPENT.

There are several species of this enormous reptile, distinguished by the number of their abdominal and caudal scuta. They are all terrible for their magnitude and bite, but destitute of venom. The boa constrictor, to which

the following observations shall be confined, has two hundred and forty scuta on the belly, and sixty on the tail. Its length often exceeds thirty feet, and its thickness is in proportion. The colour is a dusky white, sprinkled with spots of various colours. The scales are small, roundish, and smooth; and the Oriental Indians, Malays, Ceylonese, &c. who adore this monstrous production of nature, use the skin for clothes. They do not even reject the flesh, which by some writers is said to be not unwholesome.

The boa frequents caves and thick forests: where it conceals itself, sometimes rolled round the body of a tree, till its prey comes within its reach. When it seizes animals, especially of the larger kind, it perfectly twists itself round them, so as effectually to involve their body and impede their motions; while by the vast force of its circular muscles it breaks and bruises all their bones. After having destroyed life, it licks the skin all over to facilitate deglutition: this process reduces its victim to a shapeless shining mass; when, beginning at the lower extremity, it gradually sucks in the body. The boa has been observed for a long time with the horns of a stag sticking out of its mouth; these being too large and complicated for it to swallow, as well as too hard to digest.

For some days after it has swallowed a stag or a tiger, it is fixed to the spot, being disabled to move by repletion; and then the natives easily kill it. When exasperated, it makes a loud hissing noise.

#### THE VIPER.

The genus coluber, to which the viper belongs, contains, at least, ninety-seven species; distinguished by the number of the scuta, or hard crusts, upon the belly, and scutellæ, or small crusts, on the tail. Many of them are poisonous: but others may be even placed in the bosom without danger; and sometimes are so, from their beauty and innoxious habits. It has not been ascertained, with precision, that more than one venomous serpent, the viper, is found in the British islands; to be able to distinguish

which from the harmless snake, is a matter of essential concern.

The viper is found in many parts of this island, but abounds most in the Hebrides; and in general, prefers dry, stony, and chalky soils. Its usual length is about two feet: the ground colour of the male is a dirty yellow; that of the female is deeper. The back is marked along the whole length with a series of rhomboidal black spots, touching each other at the points; the sides with triangular spots; and the belly is entirely black. It is chiefly distinguished from the common black snake by the colour, which in the latter is more beautifully mottled, as well as by the head, which is thicker than the body; and still more distinctly by the tail, which does not run tapering to so great a length as that of the other.

This reptile is slower in its motions than the snake, and brings forth its young alive. "We have often been assured," says Pennant, "that the young of a viper, when terrified, will run down the throat of the parent for shelter: and hence some have imagined that she is so unnatural as to devour her own young. But this deserves no credit, as these animals live on frogs, toads, lizards, and young birds, which they swallow entire; though the morsel is often three times as thick as their own body."

The viper is capable of supporting abstinence for a considerable length of time. One of them has been known to be confined in a box for six months without any visible food, and yet lose nothing of its wonted vivacity. The bite is attended with sudden inflammation and swelling, but its ill effects may be obviated by free use of salad-oil applied to the wound, as well as taken inwardly. There are various other specifics, which seldom fail when speedily administered. The flesh of the viper was formerly reckoned a sovereign restorative, but has now lost much of its reputation; a circumstance which, for the sake of humanity, may be reasonably regretted, as viper-catchers considerably lessened the number of these dangerous reptiles, when stimulated by the allurements of gain.

## THE SNAKE.

This is the largest of British serpents, sometimes exceeding four feet in length. The neck is slender; the body swells in the middle; the back and sides are covered with small scales, and the belly with oblong, narrow, transverse plates. The colour of the back and sides is dusky or brown; along the middle of the back run two rows of small black spots, reaching from the head to the tail, and from them proceed numerous lines or spots crossing the sides. The plates on the belly are dusky; those on the sides of a bluish white. On each side of the neck is a spot of pale yellow, at the base of which is a triangular black spot.

This creature is perfectly harmless. It feeds on frogs, insects, worms, and mice; and lodges among bushes in moist situations. It deposits its eggs in dunghills; the heat of which, aided by that of the sun, promotes the exclusion of the young. During winter, the snake, like the rest of its kind, continues torpid in the banks of hedges, and under old trees.

## THE SLOW, OR BLIND WORM.

This is the smallest of all the serpent kind, indigenous in Britain. Its tail extends a considerable length, yet is blunted and pretty thick at the extremity. The back is cinereous, marked with small lines, composed of minute black specks. The sides are reddish; and the belly is dusky, but marked like the back. The tongue is broad and forked, the teeth are numerous but minute, and the scales are small. These creatures are slow in their motions, and perfectly harmless. They lie torpid during the winter; and numbers of them have been sometimes found at that season twisted together.

## THE AMPHISBÆNA.

This reptile is remarkable for moving backwards or forwards with equal facility; and hence it has been thought

to have two heads. The thickness of its tail probably gave rise to this error; but on a minute inspection, it is found not to deviate from the usual course of nature in this respect.

Some have affirmed that its bite is dangerous; but this is evidently a mistake; as it is destitute of fangs, and consequently wants the means of preparing venom. Linnæus notices two species of amphisbæna, by the names of the fuliginous and the white, both of which are natives of America.

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### ORDER III.—MEANTES.

THE distinguishing character of this singular order is, that the animals have both gills and lungs. There is only one species known.

#### THE SIREN.

This animal was discovered by Dr. Garden in Carolina; and Linnæus considered it so extraordinary that he established a new order for its reception. The body is biped, naked, and furnished with a tail; and the feet are branched with claws. It is found in swampy and muddy situations, under the trunks of old trees; and measures from thirty to forty inches in length.

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### ORDER IV.—NANTES.

THESE creatures breathe indifferently through their lungs and gills, and their fins are composed of cartilaginous rays.



## THE LAMPREY.

This animal bears a strong resemblance to the eel ; but is of a lighter colour, and a clumsier shape. The mouth likewise is round, and placed rather obliquely below the end of the nose. It has an aperture at the top of the head, through which it spouts water like the cetaceous fishes. On each side are seven apertures for respiration; and the fins are rather formed by a prolongation of the skin than by any peculiar bones or spines.

The lamprey possesses the singular property of adhering, by suction, to any substance to which it is applied. It sticks to stones so closely, that it is with difficulty removed. This wonderful power of suction is supposed to arise from the animal's exhausting the air within its body, while the mouth is so entirely attached to the object as to exclude any from entering.

This animal usually quits the sea about the beginning of spring, for the purpose of spawning; and, after an absence of a few months, returns to its original abode. It deposits its spawn in the gravelly bottom of some river, and waits till the young have acquired sufficient strength to proceed towards the salt water.

Its flesh is variously esteemed, according to the season in which it is caught. In April or May, it is thought to be in the greatest perfection. The lampreys of the Severn are preferable to any caught in other English rivers. Among the ancients they were still more highly esteemed than with us; but it is uncertain whether the fish called *muræna* was actually that which is now under consideration.

There are several species, as the lesser and the Pride. The latter is very common in the Isis, near Oxford; but is by no means peculiar to that river.

## THE TORPEDO, OR ELECTRIC RAY.

The narcotic, or benumbing qualities of this animal have been celebrated in all ages. The body is almost cir-

cular, and thicker than any of the ray kind; the skin is soft, smooth, and yellowish, marked with large annular spots; the tail tapers to a point; and the whole weight is sometimes eighty pounds.

The shock given by the torpedo greatly resembles that produced by the stroke of electricity. Even if any one steps on it, or touches it with a stick, the effects are sudden and irresistible. The shock produces likewise a universal tremor, a sickness of stomach, a general convulsion, and a temporary suspension of the mental faculties. The negroes, however, are said to handle it without feeling any inconvenience; but the means by which they effect this is merely by holding their breath during the time.

This quality of the torpedo, however, by no means affects its flesh, which is frequently eaten by the French and other nations. It is a native of the Mediterranean and many other seas, and it is not unfrequently found on the British coasts.

The following experiment was made by Mr. Walsh, in the presence of the Rochelle academicians, for tracing and ascertaining the circuit of the electric matter issuing from this fish.

A living torpedo being laid on a table in a wet napkin, five persons stood insulated round another table; and two brass wires, each thirteen feet long, were suspended from the ceiling by silk strings. One of the wires rested by one end on the wet napkin, and the other was immersed in a basin full of water, placed on the second table, on which stood also four other basins of water. The first person put a finger of one hand into the water in which the wire was immersed, and a finger of the other hand into the second, and so on successively, till all the five persons communicated with each other by the water in the basins. One end of the second wire was dipped in the last basin, and with the other end Mr. Walsh touched the back of the torpedo; on which the five persons felt an instant shock, differing in no respect from that of the Leyden

phial, except in its being weaker. This was several times repeated, even with eight persons, and the effects were the same.

There seems to be a double end answered by this strange faculty, with which the torpedo is endowed. It is exerted as a means of defence against voracious fishes, which are instantly deprived of the means of annoyance by a single touch; and by concealing itself in the mud, and benumbing such marine animals as are carelessly swimming round, it makes them readily its prey.

#### THE FIRE-FLAIRE, OR STING-RAY.

This is a very singular species of ray; it is armed with a barbed weapon about five inches long, concerning the formidable powers of which many fables have descended to us, from the time of the ancients. Some of the old naturalists ascribed to it a kind of venom affecting even the inanimate creation; and affirm, that trees touched by it instantly lose their verdure, and rocks themselves are unable to resist this very malignant poison. The enchantress Circe is said to have armed her son with a spear, headed with the spine of this fish, as the most irresistible weapon which she could supply; and, indeed, this bone was not only used by the ancients, but the modern American Indians still use it instead of iron to barb their arrows.

But, though the fire-flaire is capable of inflicting a very terrible wound, attended with dangerous symptoms, there is no reason to believe it possessed of all the deleterious qualities ascribed to it. It certainly contains no poison, as it is destitute of glands necessary to concoct the noxious fluid. In short, the sting, which is so terrible to the apprehension of the boldest and most experienced fishermen, seems bestowed on it merely for its own preservation.

Though the torpedo and the fire-flaire are the two most remarkable species of ray, there are several others which are caught and used for food. They have all

broad, flat, thin bodies; five apertures on each side, placed beneath; a mouth situated quite below; and a tail small in proportion to their size. The external figure of them all has a great resemblance; and hence it is difficult to distinguish the species. In fact, a stranger to natural history, when he imagines he is only handling a skate, may be instantly benumbed by a torpedo; and may be stung by the fire-flaire while he thinks he has caught a thornback.

#### THE SHARK.

The characters of the shark kind consist in a slender body, decreasing towards the tail, two dorsal fins, a rough skin, five apertures on the side of the neck, and a mouth generally placed at some distance beneath the extremity of the nose.

Sharks are the fiercest and most voracious of all the inhabitants of the deep. Even the smallest species of them are dreaded by much their superiors in size, and with just reason. Indeed, no fish is half so ferocious in its disposition, or can swim with a velocity comparable to that of the shark. It outstrips the swiftest ships, plays round them, darts out before them, returns, and seems to gaze at the mariners, without manifesting the least symptoms of dismay. Such amazing powers, joined with such ravenous appetites, would speedily depopulate the ocean, did not the upper jaw of the shark project far beyond the lower, so that it is obliged to turn on one side before it can seize its prey. As this act requires some time, the animal pursued profits by the delay, and frequently makes its escape. Still, however, the depredations which it commits are frequent and formidable: it is the terror of sailors in climates where it abounds; and bathing in the sea, so delicious and salutary in hot countries, is on this account attended with extreme danger.

Many melancholy instances are recorded of persons who have lost their lives by these monsters; from acci-

dentially falling overboard, or imprudently exposing themselves to their attacks.

The shark seems to prefer human flesh to any other, but nothing comes amiss to it; and it frequently becomes the victim of its own rapacity, from swallowing hooks baited with flesh, which have been let down to entrap it.

The flesh of the shark is scarcely digestible but by the strongest stomachs: nevertheless it is eaten by the negroes; and that of one species, the dog-fish, is used by the poor on some of our own coasts. The principal species are the angel, the long-tailed, the spotted, the smooth, the Beaumaris, the basking, the white, the blue, and the picked-dog or hound-fish. The basking-shark has been known to measure upwards of twelve yards in length.

#### THE FISHING-FROG, OR SEA-DEVIL.

The head of this disgusting animal is equal in size to all the rest of the body. It is sometimes seen four or five feet long; and Mr. Pennant mentions one taken near Scarborough, the mouth of which was a yard wide. To increase its deformity, the under jaw is much longer than the upper; and immediately above the nose are two long tough filaments, and on the back three others, which seem like lines hung out to attract fishes. The body grows slender towards the tail. The colour of the upper part of the body is dusky, the lower part is white, and the skin smooth.

The fishermen entertain a sort of veneration for this ugly fish; conceiving it to be hostile to the dog-fish, from the body of that fierce and voracious creature being frequently found in its stomach: on this account, when they catch the fishing-frog, they generally restore it alive to its native element.

#### THE STURGEON.

This fish sometimes grows to the prodigious length of eighteen feet, and the weight of five hundred pounds.

Its body is long, pentagonal, and covered with five rows of long bony tubercles. The upper part of the body is of a dirty olive colour, the lower is silvery, and the middle of the tubercles is white.

Sturgeons visit every country of Europe, at different seasons. They annually ascend the large rivers, in order to spawn. The inhabitants of the banks of the Po, the Danube, and the Wolga, derive considerable profit from the incursions of these fishes up their respective streams, and place nets ready for their reception. The flesh is, in its season, daily exposed for sale in the markets of Rome and Venice. It was formerly much esteemed in England; but is now fallen into disrepute here, though it is sometimes seen on the sideboards of the wealthy. The roes, however, form a very lucrative branch of trade, under the name of caviar.

#### THE ISINGLASS-FISH.

This fish is distinguished from others of the sturgeon kind, by being destitute of tubercles. It is caught in great numbers in the river Danube, and weighs from fifty to upwards of four hundred pounds. The flesh is soft, glutinous, and flabby; but, when salted, is reckoned tolerably good eating. However, this fish is principally caught for the sake of that valuable commodity, isinglass, which is prepared in the following manner:—The skin, the entrails, the fins, and tail, are cut into small pieces, and, after being macerated for some time in a sufficient quantity of warm water, are boiled over a slow fire, till they are dissolved and reduced to a jelly. This jelly is spread on plates made on purpose, like parchment; and when dry is rolled up into that form in which it appears in the shops.

#### THE BALISTES.

This genus of the amphibia nantes, consisting of eight species, has a flat head, a flat body, scales joined together by the skin, and the belly carinated, or keeled. Imme-

diately above the pectoral fins is an aperture which supplies the place of gills. They are all natives of the Indian and American seas.

The most remarkable fish of this family is the unicorn.

The entrails of this kind are full of small shells and coralline substances; which, by the strength and hardness of its jaws, it is able to grind very small.

The flesh is accounted poisonous. It is very common in the seas round the Bahama islands.

#### THE SUN-FISH.

This is the most remarkable species in the genus tetrodon. The body is broad and short; and its hinder extremity is terminated by a circular fin, which supplies the place of a tail. The whole animal appears like the head of a large fish separated from its body. It is destitute of scales, but covered with a hard rough skin. The back is black, the belly white, and the sides are of an intermediate colour. The mouth is very small in proportion to the size; and the head has no projection from the rest of the body. The weight sometimes amounts to two hundred pounds.

The flesh of this animal is very soft, and all its bones are gristly and tender. It is caught in the Mediterranean, and sometimes in the British seas.

Pennant has described the sun-fish of Mount-bay in Cornwall, under the appellation of the oblong diodon. In form, he says, it resembles the bream, or some deep fish, cut off in the middle; the mouth is very minute; the eyes are small, having before each a semilunar aperture; the pectoral fins are also very small, and placed behind them; the dorsal and anal fins are situated at the extremity of the body; and the tail, which is narrow, occupies all that abrupt space which lies between those two fins. The colour of the back is dusky and dappled, and the belly is silvery. The skin is destitute of scales, and the flesh is uncommonly rank.

Much confusion prevails respecting the history of the sun-fish, the name having been applied to two animals of a different genus. One of these fishes, which weighed five hundred pounds, was taken about the beginning of the present century near Plymouth; and, on boiling a piece of it, to try how it would taste, it was found in a few minutes to be wholly converted into a jelly; which had very little of a fishy flavour, and proved extremely glutinous when applied to leather or paper. It is probable that the ancients made their glue from this fish.

#### THE LUMP-FISH.

This singular animal, which belongs to the family of sucking-fish, sometimes measures nineteen inches in length, and weighs about seven pounds. The body is very thick and deep, the back sharp and elevated, and the belly flat and broad. Along the ridge of the back is a row of large bony tubercles; from above the eye almost to the rise of the tail is another row, and below it a third; and on each side of the belly is another, consisting of five tubercles like the rest. The whole skin is rough, and beset with small tubercles. The belly is of a vivid crimson. The pectoral fins, which almost unite at their bases, are large and broad; and beneath these is situated a member, by which the fish adheres to the rocks, a faculty which it possesses in an extraordinary degree. This member consists of an oval aperture, surrounded by a fleshy, muscular, and obtuse, spongy substance; fringed with small filiform appendages, which concur like so many clasps to fix it to any object. Indeed, such is the tenacity of this fish, that one of them has been known to be thrown into a pail of water, and to unite itself so closely to the bottom, that it was not forced away, even when lifted by the tail with the pail and its contents.

The lump-fish is caught in many parts of the British seas, and is sometimes eaten; but the flesh is flabby and insipid. During spring, it is very common on the northern



coasts of Scotland, where it affords subsistence to seals and other predaceous inhabitants of the deep. In the Greenland seas it resorts to the shores in vast numbers for spawning, about April and May; at which time its roe is very large, and furnishes a delicious dish to the people of that country.

#### THE PIPE-FISH.

Of this kind there are several species; the characters of which are, that the nose is long and tubular, that there is no orifice to the gills, that the breathing-aperture is on the hind-part of the head, and that the body is covered with a strong crust. The long pipe-fish, the largest of the genus, is sometimes found measuring two feet from head to tail. The nose is compressed laterally, and reverted at the extremity of the lower mandible. The body at the thickest part does not exceed the size of a swan's quill; and is hexangular from the extremity of the dorsal fin, and thence to the tail quadrangular. The belly is slightly carinated; and under the tail is a groove covered by two longitudinal valves, which at the proper season conceal a multitude of small fish. The general colour is an olive brown; but the sides are marked with a number of bluish lines, pointing from the back to the belly.

When the fish is dried, it appears as if covered with a number of angular crusts, finely radiated from their centre.

#### THE HORSE-CATERPILLAR, OR HIPPOCAMPUS.

This singular fish, which is found in the Mediterranean, is usually about three inches long, and as thick as the fore-finger. The snout is long and tubular; and the body has seven sides down to the vent, but afterwards only three or four. Under the belly are two apertures; one of which serves for an excretory duct, and by the other the female deposits her eggs. Some varieties of this fish have a mane, but in general they are destitute of that

appendage. However, they are all hairy in many parts of the body, and particularly about the head.

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#### CLASS IV. — PISCES, OR FISHES.

IN proportion as animals are minute, or concealed from human observation, they must consequently be less known. The ocean being the great receptacle of fishes, from which only a few of them migrate up the rivers to deposit their spawn, it is probable that thousands of living creatures reside there whose manners and very form are, and ever have been, among the secrets of nature. The curiosity of man has indeed drawn many from their depths, and his wants more: with the figures at least of these he is acquainted; but their pursuits, habits, and various other interesting qualities, are wholly enveloped in the deep and turbulent element that surrounds them.

The number of fishes with whose names and figures naturalists are in some degree acquainted does not amount to five hundred; but in regard to the particular history even of these they must confess their ignorance. Most fishes present the same external form; sharp at the extremities, and swelling in the middle: which figure, as before observed in speaking of birds, enables them with more facility and celerity to cleave the element, which they are destined to inhabit. That peculiar shape which is impressed on fishes by the hand of nature, human art has endeavoured to imitate in ships; but the progress of such machines must be rated as very inferior in comparison with the swiftness of the finny tribes. Most of the larger fishes can outstrip the best-rigged vessel; and, as if to show their superiority, will play round it, and dart again before it at pleasure. Indeed, every part of a fish is adapted to accelerate its motion: the fins, the tail, the undulation of the spine, all tend to assist progression;

and the flexibility of their members gives them a velocity superior to that of any product of human ingenuity.

Fins are the principal auxiliaries of motion; and a fish completely equipped is furnished with two pair, and three single fins, — two above and one below. Thus provided, it moves with the utmost rapidity, and can undertake the longest voyages; but those fishes which have the greatest number of fins are not always the swiftest; as is evident in the shark, which is destitute of ventral fins.

Not only is progression forwarded by these appendages, but they likewise assist in the action of rising and sinking, turning, or even leaping out of the water; and it is curious to observe how every pair of fins, and even every single fin, contributes to some appropriate end. The pectoral fins serve to balance the head of the animal, the dorsal to keep it in equilibrium, and the anal to preserve the upright or vertical situation. The size of these members is also wonderfully adapted to the conformation of the body, and to facilitate all its actions.

Terraqueous animals, as has been shown before, are generally furnished with coverings to keep off the injuries of the weather; and for the tenants of the deep there is a no less advantageous provision. They are covered in the first place with a slimy glutinous fluid; which defends their bodies from immediate contact with the surrounding water, and lubricates their passage. Beneath this, in many kinds, is found a strong covering of scales; and under that an oily substance is lodged, which supplies the requisite warmth and vigour.

Thus, in comparing their respective situations, we find the fish as well furnished with the means of happiness as the quadruped; but if we regard their faculties, the former is certainly much inferior. The sense of feeling, so exquisite in men and quadrupeds, can be but imperfect in the fish. The sense of smell they enjoy in a very limited degree; in that of taste they appear very defective; and their hearing is still more imperfect, if it exists at all. Indeed this last sense would be useless to creatures that

have no voice by which they can communicate with their kind. Mr. Cowan, who kept some gold fishes in a vase, says, that no noise he could make was capable of disturbing them. It may therefore be presumed, that, when they show signs of alarm at any noise, it is only from the vibrations of sound affecting the water.

Fishes, however, possess the sense of sight in tolerable perfection, because this is essentially necessary to their preservation. Yet on comparing their eyes with those of terrestrial animals, we shall find that, even in this respect, they are very inferior.

Hence it may be concluded, from a survey of their respective powers, that fishes are far behind quadrupeds, and even birds, in their sensations, and consequently in their enjoyments. Nature, generous to all her children, has fitted them all indeed with wonderful propriety to their particular spheres of action; but, to fishes she has given passive rather than active joys. To preserve their own existence, and to transmit it to posterity, fill up the whole circle of their pursuits and their pleasures; and to these they appear as much impelled by necessity as by choice.— Their appetites are, in a manner, incapable of making distinctions; and they range in pursuit of whatever they can swallow, conquer, or enjoy.

A craving desire for food seems to be the ruling principle of all their actions or motions. No indulgence can gratify their rapacity, and, in catering for a fresh meal, they frequently risk their lives. Even when expiring, they will greedily swallow the bait that lured them to destruction. Their digestive faculties seem in some measure to increase with the quantity of food which they consume; though it has long puzzled the ablest physiologists to account for such rapid powers of concoction in the cold maws of fishes.

Insatiable, however, as the appetites of fishes are, no other animals, except serpents, can endure the want of food for such a length of time. Gold and silver fishes have been kept in vases for months successively, without

any apparent sustenance; and even the pike, the most voracious, will exist in a pond wholly by itself.

Fishes that have small mouths feed on worms, and the spawn of their own tribes; but those which have large mouths pursue any thing which they are capable of overpowering, and frequently meet each other in fierce opposition. Indeed the life of fishes, from the smallest to the greatest, is but one continual scene of hostility, violence, and evasion. Some make annual migrations from one part of the ocean to another, in pursuit of food, or to find a situation more congenial to their nature. In general they seem averse to very cold water; and either seek a warmer atmosphere or the shallows on their native coasts, which are susceptible of the influence of the sun.

Though all the various tribes live in water, yet they all require the assistance of air. When a fish is in the water, it is easy to observe the motion of its lips and gills, which is unquestionably analagous to our breathing. They have also a receptacle called the air-bladder, or swim; which, though it assists the animal in rising or sinking, is also the storehouse of air, from which it draws supplies according to its exigencies.

“Most of the disorders,” says Bacon, “to which mankind are subject, arise from the changes and alterations of the atmosphere;” and if fishes are limited in their other enjoyments, they reside in an element little liable to variation, and therefore are exempted from numerous maladies. They indeed pass a uniform existence; their movements are without effort, and their lives without labour. If they escape the dangers of their situation, it is impossible to say what bounds are placed to their size or age. Various methods have been imagined to ascertain their duration, but none that can be altogether relied upon. It is highly probable that they reach extraordinary longevity; but still their fecundity is more astonishing. Some produce their young alive, and others only eggs; the former are the least prolific, yet the viviparous blenny will bring forth two or three hundred at a time. Such as exclude their progeny in eggs are obliged to leave them to chance at

the bottom of shallow water, or on the surface; and consequently few of them, comparatively speaking, are ever brought into life. Were it otherwise, the seas and rivers would be overstocked. A single cod is said to produce as many eggs in one season as there are inhabitants in England, and other species are not less prolific.

As an article of food, the value of fishes is well known; though all of them are not proper to be eaten. This kind of aliment, however, it has been contended, is less nutritive than flesh, as it has fewer volatile particles; while some think it more salutary, and not less substantial,

Fishes are divided into four orders, namely:

I. *APODES*, or such as are destitute of ventral fins; as the eel, conger, &c.

II. *JUGULARES*, having the ventral fins placed before the pectoral; as the cod, &c.

III. *THORACICI*, or fishes which respire by the gills only, with the ventral fins under the pectoral; as the perch, &c.

IV. *ABDOMINALES*, with the ventral fins placed behind the pectoral in the abdomen; as salmon, pike, &c.

These comprehend forty-seven genera, and upwards of four hundred species; but recent discoveries in the Oriental regions and the South Seas, have considerably increased the catalogue, and an extensive field is still open to future investigators. It is extremely probable, that, in the deep bosom of the ocean, many species of fish (particularly of the larger kinds) reside, which have never yet visited the shores, or shallow water; and, if so, will probably remain for ever hidden from human observation.

As the system of Artedi has attracted much notice, and the terms which he employs are frequently used, it may not be improper to subjoin the outlines of his arrangement.—He distributes fishes into five orders: the *mala-copterygii*, or soft-finned; the *acanthopterygii*, or prickly-finned; the *brancheostegii*, or fishes without bones in the membranes over the gills; the *chondropterygii*, or fishes with cartilaginous rays in the fins; and the *plagiuri*, or fishes with horizontal tails.

## ORDER I. — APODES.

THE principal distinctive character of this order is, that the fishes belonging to it have no ventral fins. It comprises eight genera, some of which are neither very remarkable nor interesting.

## THE COMMON EEL.

This may be considered as among the most universal of all fishes. It frequents fresh waters, ponds, ditches, and rivers; where it sometimes reaches a very considerable size. The head is smooth, the eyes are covered with a common skin, there are ten rays in the membranes of the gills, and the body is cylindrical and slimy.

Many particulars in the natural history of the eel are very singular, and in some respects it approaches the reptile tribe. During the night it frequently quits the water to wander in meadow grounds, in quest of snails or frogs; and in winter it buries itself deep in the mud, where it lies in a state of torpidity, like the snake.

There is scarcely any creature which has so much puzzled naturalists to account for its generation. The prevailing idea now, and perhaps the most just is, that they propagate in the natural way; though it is not clearly ascertained whether they are oviparous or viviparous. The latter seems most probable.

The eel is extremely voracious, as well as destructive to the young fry of fishes. No other fish is capable of living so long out of the water, nor is any so tenacious of life. — Its parts will move a considerable time, after it is skinned and cut to pieces.

Eels vary much in their colour; from a sooty hue to a light-olive green. There are also some denominated silver eels, with a clear white belly. A variety called grigs is found in the Isis, near Oxford; which have a larger head, a blunter nose, a thicker skin, and are less fat, than the common sort. The flesh of such as inhabit clear running

water is reckoned the most delicious; but they are in general a favourite viand. The ancient Romans, it seems, held eels in very little estimation, perhaps on account of their resemblance to snakes; while, on the contrary, the luxurious Sybarites were so fond of them, that the persons who sold them were, by law, exempted from paying tribute.

#### THE CONGER-EEL.

This species differs from the common in the deepness of its colours, in living in the ocean, and in its superior magnitude. Some of them have been caught near Scarborough, which measured ten feet and a half in length, and near eighteen inches in circumference towards the middle.

Though the conger is a fish of the ocean, it is thought to generate like the fresh-water species. Innumerable quantities of their supposed fry annually ascend the Severn about the month of April, when they are called elvers. They precede the shad, which is supposed to follow their course, for the sake of preying on them. During this season they swarm in such abundance, that they are taken in a kind of sieve made of hair-cloth, fixed to a long pole, and let down into the water. The flesh of the elvers is esteemed very delicate.

Congers are prodigiously voracious; preying on all kinds of fish without exception, and not rejecting carcasses which accidentally fall in their way. In this latter respect they resemble the common eel. In Cornwall they form a lucrative branch of commerce; great numbers being caught on that coast, and exported to Spain and Portugal when cured. They are caught by various means; but the large ones sometimes prove dangerous to the fisherman when taken, from being apt to entwine themselves round his limbs; on which account they are despatched as quickly as possible. They are very common among the Hebrides; and, according to Mr. Pennant, the establishment of a conger-fishery would be of singular advantage to the natives of those islands: but in many parts of Scotland



there appears to be a whimsical repugnance to the eel kind, from the similitude which they bear to serpents.

#### THE ELECTRIC EEL.

Except the torpedo, no animal in nature possesses such remarkable qualities as this. Naturalists are indebted for the most important particulars in its history to the accurate account of Dr. Garden, of South Carolina, communicated to the Royal Society. This gentleman had an opportunity of inspecting no less than five at once, which had been brought from Surinam by an English mariner. The largest measured about three feet eight inches in length; and from ten to fourteen inches in circumference, in the thickest part of the body. The head was large, broad, and flat; and the mouth compressed here and there with holes, as if perforated with a blunt needle. There were two nostrils on each side; the first large, tubular, and elevated above the surface; the other small, and level with the skin. The eyes were small, and of a bluish colour; and the whole body, from about four inches below the head, was clearly distinguished into four longitudinal parts or divisions. Across the body were a number of small bands, annular divisions, or rather wrinkles of the skin; by means of which the fish had the power of lengthening or shortening itself like a worm, and could swim backwards as well as forwards. There were two pectoral fins situated just behind the head, scarcely an inch long: these the fish seemed to use principally as a means of raising his head out of the water, which it frequently did for the sake of breathing.

The electric eel gives a shock to any person or any number of persons who join hands, touching it, to a very violent degree; and hence it has been found difficult to examine it when alive. Mr. John Hunter, who dissected one of them, found that the nerves of this fish appropriated to the exercise of its electric powers, and which arise particularly from the spinal marrow, are considerably larger than those which are bestowed on any other part for the

purposes of action and sensation. Its shock is attended with all the phenomena and effects of the electric fluid of our atmosphere when collected; as far, at least, as has been discovered from the experiments hitherto made.

#### THE SEA-WOLF.

This fish seems to be chiefly confined to the northern parts of the globe. It is found in the seas of Greenland, Iceland, and Norway, as well as on the coasts of Scotland, Yorkshire, Germany, and Holland; but has seldom or never been caught farther southward.

The sea-wolf grows to a very large size, measuring from four to seven feet. The head is small, the body long, and a little compressed sideways; and the skin smooth and slippery. It is a very ravenous and fierce fish, and when taken will fasten on any thing within its reach. The fishermen, dreading its bite, endeavour, as speedily as possible, to strike out its fore-teeth, which are so strong, that they are capable of leaving an impression on an anchor. Indeed its teeth, which are sometimes found in a fossil state, under the name of buffonites, or toad-stones, are excellently adapted to its way of life. It feeds almost entirely on crustaceous and testaceous animals, which it grinds to pieces with astonishing facility. On account, probably, of the disagreeable and horrid appearance of this fish, its flesh is not much esteemed; but the fishermen, after cutting off the head, and skinning it, sometimes make a meal of it.

#### THE LAUNCE, OR SAND-EEL.

The launce resembles the common eel in shape; being long and round, and generally measuring nine or ten inches in length. The back is blue, varying with green; and the sides are of a silvery white colour. A long narrow fin extends almost the whole length of the back; and there are also a pair of fins at the gills, but none under the belly. The body is destitute of scales.

These fishes abound on the sandy shores of Great Bri-

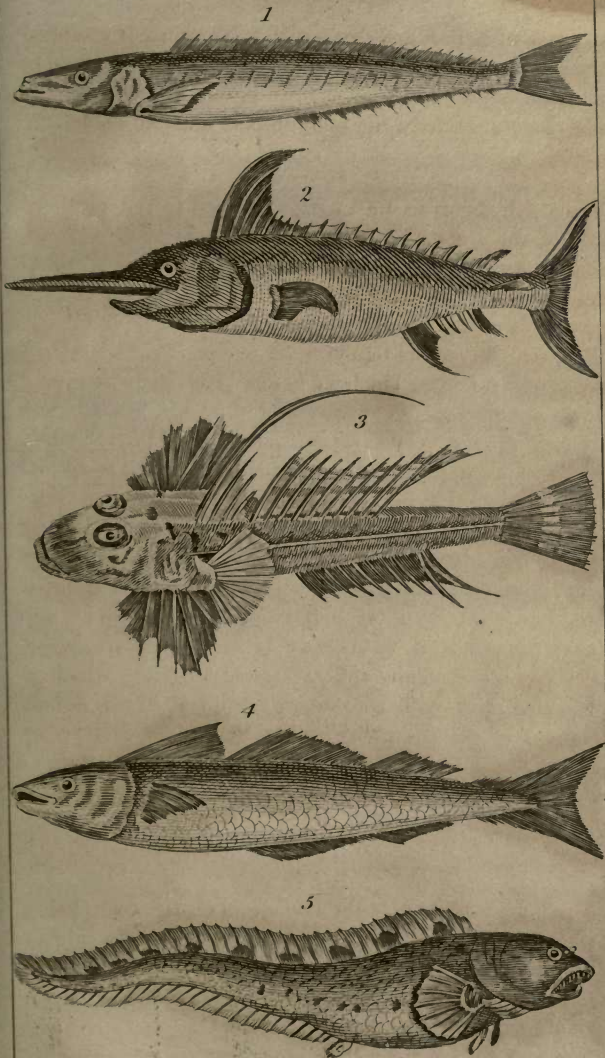


Fig. 1. Lancee.                      Fig. 3. Dragonet.  
Fig. 2. Sword Fish.              Fig. 4. Coal Fish.  
Fig. 5. Vamparoust Blenny.

Cooper sculp.

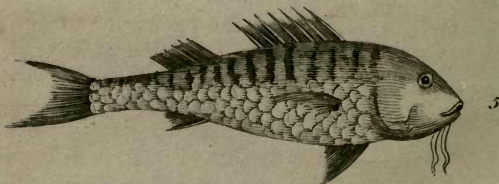
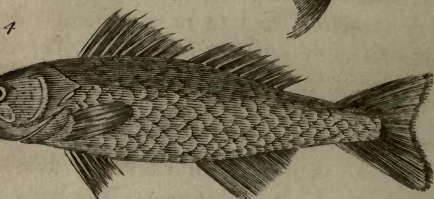
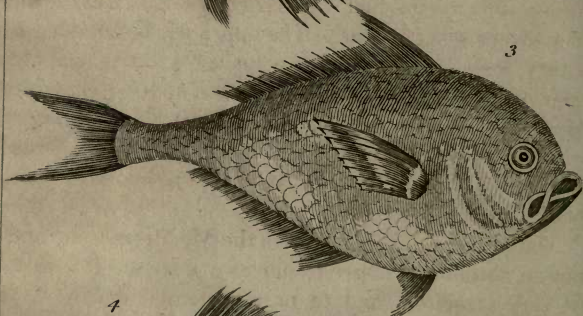
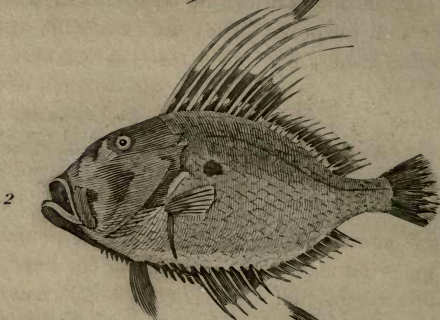


Fig. 1. Armed Bull Head.

Fig. 2. Dorre.

Fig. 3. Gilt Head.

Fig. 4. Perch.

Fig. 5. Mullet.

Cooper sculp.

tain, during some of the summer months. On the recess of the tides, they conceal themselves about half a foot under the surface of the mud or sand; and, in some places are dug out, in others drawn up by means of a hook contrived for that purpose. They are commonly used as a bait for other fishes, but of themselves are very delicate eating. They have been found in the stomach of the porpoise; which is a proof that the latter uses its nose to turn up the sand.

#### THE SWORD-FISH.

This fish sometimes weighs a hundred pounds. The body is long and rounded; largest near the head, and tapering towards the tail. The back is black, and the belly of a silvery white colour. The upper jaw is extended into a very long and depressed point, of a bony substance, resembling a sword; the under one is much shorter, and terminates in a sharp point. The dorsal fin runs along the whole length of the body; the tail is remarkably forked; and there are a pair of fins at the gills, but none on the belly.

The sword-fish is common in the Mediterranean, and is not an absolute stranger to our own coasts. It is said to be very voracious, and to be a particular enemy to the funny. Its flesh is highly esteemed. The ancient mode of catching it, as described by Strabo, entirely agrees with the modern. One person ascends a cliff that overhangs the sea; and, as soon as he spies the fish, he gives notice of the course which it takes to another stationed in a boat at some little distance. The latter immediately climbs the mast, and directs the rowers towards it. When within reach, he descends; and taking a spear in his hand, strikes it into the fish; which, after fruitlessly wearying itself with agitation, is at length seized, and dragged into the boat.

## ORDER II.—JUGULARES.

THE general character of this order consists in the ventral fins being placed before the pectoral ones. It contains five genera, and about thirty-five species.

## THE DRAGONET.

The common dragonet (for there are three species) is sometimes found a foot long. The body is slender, round, and smooth; the head large, and depressed at the top; and in the hind part are two orifices through which it breathes, and ejects the water received by its mouth in the manner of cetaceous fishes. The apertures of the gills are closed; and on the extremity of each of the bones which covers them is a very singular trifurcated spine. The upper jaw projects much farther than the lower; and the teeth are very minute, though the mouth is extremely large.

The colours of this fish exhibit a delightful variety of yellow, blue, and white; the blue, in particular, is inconceivably beautiful, and glows with a lustre little inferior to that of the diamond. Some writers call this species the flying fish; but whether it makes use of its fins as the means of elevating itself out of the water is a circumstance, which has not yet been satisfactorily ascertained. The dragonet is found in different latitudes, as far north as Spitzbergen, and as far south as the Mediterranean. It is frequently caught on the Yorkshire coast.

## THE COMMON WEEVER, OR SEA-DRAGON.

This fish grows to the length of twelve inches. The under jaw is much longer than the upper; the back is straight, the sides are flat, and the belly prominent. The covers of the gills are armed with a very strong spine; the first dorsal fin consists of five very strong spines, and the second of several soft rays.

The weever seems to have been well known to the an-

cients; who relate, that the wounds inflicted by its spines are extremely painful, attended with a violent burning, a pungent shooting, and sometimes with inflammation. It is generally thought that these symptoms arise from a sort of venom infused into the wound; at least the first dorsal fin, which is black, has an appearance which favours that opinion. This fish buries itself in the sand, leaving only its nose exposed; and if trod on, strikes with great force: but, notwithstanding its noxious qualities, the flesh is excellent food.

Another species, called the great weever, is frequently found in the sea near Scarborough. It differs from the former principally in size.

#### THE URANOSCOPE, OR STAR-GAZER.

This singularly-formed fish is about seven or eight inches long: the head is large, rough, bony, and squarish; and the body is long and rounded. The upper part is ash-coloured, and the lower whitish. The face is flat, and appears to turn upwards; and the eyes are directed the same way, from which latter circumstance the animal has obtained its name. Providence, indeed, seems wisely to have ordained that the eyes of the uranoscope should be thus situated; for the fish, remaining always at the bottom of the sea, must necessarily look up when searching for food. However, it is not the only inhabitant of the deep whose organs of sight are disposed in this manner; for the rana piscatrix, as well as some others, has the same habits, and possesses similar advantages. This fish is found in the Mediterranean.

#### THE COMMON COD.

This fish forms a valuable article both of luxury and of commerce, and in both characters it is well and generally known. It is short in proportion to its bulk, and the belly is very large and prominent. The back and sides are cinereous, spotted with yellow, and the belly is white; but the cod varies considerably not only in colour but also in

shape; though all are distinguished by having a small beard at the extremity of the lower jaw, and an unfurcated tail.

These fishes are peculiar to the northern parts of the world, and appear confined nearly between the latitudes of fifty and sixty-six. On the banks of Newfoundland, the coasts of Cape Breton, Nova Scotia, and New England, they abound in an extraordinary degree: lured thither by the quantities of worms and small fish which the bottom supplies, and the vicinity to the polar seas, whither they resort to spawn.

The cod-banks of Newfoundland are a sort of submarine mountains; and of more real and beneficial value to Great Britain than the mines of Potosi to Spain. The fishing-season generally commences in February, and ends in May; the fish being then in the highest perfection, and, from the state of the atmosphere, most capable of being properly cured. The cargoes are chiefly disposed of in the catholic countries of Europe during Lent; but from the decline of papal influence, or other causes, the trade has somewhat fallen off. Great numbers, however, are used in Great Britain, particularly fresh; but these are principally caught on our own coasts. Indeed, previously to the discovery of Newfoundland, the seas of Iceland and the Hebrides supplied the principal or only fisheries of cod; and in that view were the grand resort of ships from all commercial nations. They are found also in abundance on the coasts of Norway, in the Baltic, and in most parts of the British seas; but never farther south than the straits of Gibraltar. They subsist on worms, small fish, testaceous and crustaceous animals; and their powers of digestion are so strong as to dissolve the greatest part of the shells which they swallow.

Providence has bountifully ordained that this fish, so beneficial to mankind, should, by its astonishing fecundity, keep pace with the annual depredations that are made among its race. By the help of a microscope, nine millions three hundred and eighty-four thousand eggs have



been counted in a cod of only a middling size. In our seas they begin to spawn in January; and deposit their eggs in rough ground, among rocks and shelves. The general weight of such as these parts supply, is from fourteen to forty pounds; though occasionally they are found much larger. A cod was caught at Scarborough, in 1755, which measured five feet eight inches, and the girth round the shoulders was five feet; it weighed seventy-eight pounds: this fish was sold at the very low price of a shilling.

#### THE HADDOCK.

This fish affords delicate eating during some of the winter months, and is much esteemed for the table. The weight is, in general, about two or three pounds, but some have been found occasionally upwards of twelve. The body is long and slender; the head slopes down to the nose; the space between the head part of the dorsal fin is ridged; the chin is furnished with a small beard; and on each side of the gills is a large black spot, which superstition has long attributed to the impression of St. Peter's finger and thumb, when he took the tribute-money from the mouth of a fish. The upper part of the body is dusky or brown; the belly and the lower part of the sides are silvery, and the tail is bifid.

Vast shoals of haddocks arrive periodically on the Yorkshire coast; and are so regular in their annual returns, that for some years successively they have been observed to appear exactly on the same day of the month. These shoals frequently extend three miles in breadth; and in length comprehend all the space from Flamborough-head to Tinnmouth-castle, and perhaps farther. They are incessantly harassed by the dog-fish, whose pursuit confines them, like a barrier, within certain limits.

According to the fishermen, haddocks sink to the bottom of the sea during stormy weather, where they shelter themselves in the sand and ooze till the tempests have subsided; after which, when taken, they have commonly mud on their

backs. In summer they feed principally on young herrings, and in winter they seek a species of serpula, thence called haddock-meat.

#### THE COAL-FISH.

This animal is common on the British coasts; and swarms about the Orkneys, where its fry is a principal article of sustenance for the poor. About the beginning of July it arrives in shoals on the coast of Yorkshire, at which time it is about an inch and a half long; and, till it is a year old, is reckoned delicate eating. About that age it begins to assume a black colour near the gills and on the back, which increases in proportion to its years. The flesh then becomes coarse, and is little regarded in a fresh state; but when salted and dried, forms a respectable article of commerce.

The coal-fish is not inelegantly shaped; and, when full-grown, measures about two feet and a half in length, and weighs nearly thirty pounds. Its colours vary considerably; but the prevailing hue is black, from which circumstance it has received its name.

#### POLLACK.

The under jaw of this fish is longer than the upper, and the head and body are pretty prominent as far as the first dorsal fin. The colour of the back is dusky, sometimes inclining to green: the sides beneath the lateral line are marked with yellow streaks, and the belly is white.

This fish is common on many of the rocky coasts of our island. During summer, large shoals of them are seen sporting on the surface of the water, and throwing themselves into a thousand different attitudes. At that time they usually bite at any thing floating on the water, and are often taken with only a goose-quill, fixed to the hook. The flesh is reckoned excellent food. Some have been caught that weighed twenty-eight pounds; but they generally do not exceed six or seven.

## THE WHITING.

This is an elegantly shaped fish, seldom exceeding twelve inches in length. The eyes are large, the nose is sharp, and the teeth of the upper jaw are so long, that they appear above the lower jaw when closed. The head and back are of a pale brown colour, the lateral line is white and crooked, and the belly and sides are silvery.

Shoals of whiting visit the British seas during the spring; seldom approaching the shore nearer than half a mile, or retiring from it above three miles. As an article of food, they are more delicate and wholesome than any other of the genus to which they belong; and at the proper season, add not a little to the comforts of our tables.

By act of parliament, no whiting of less than six inches in length is allowed to be taken in the Thames or the Medway, nor full-sized ones at any season, except from Michaelmas to Ember-week.

## THE HAKE.

Though the hake is found in prodigious numbers on many of our coasts, and particularly on those of Ireland, its flesh is little esteemed, either fresh or salted. When cured, it is known by the name of Poor John. It grows from a foot and a half to nearly twice that length. The body is slender, the back pale ash-coloured, and the belly a dirty white.

Formerly there was a vast fishery of hake on the Nymph-bank off the south-east coast of Ireland, where they appeared twice a year. It was not unusual for six men with hooks and lines to take a thousand in a night, besides a considerable quantity of other fish. These were salted, and shipped for Spain. It seems, however, that this fishery is on the decline, from the hakes having deserted their former station. Many of the gregarious fishes leave their accustomed haunts for a period, and afterwards return to them. This probably arises either from a deficiency of

their favourite food, or from the number of enemies which their regular presence has attracted.

#### THE LING.

The body of this fish is very long and slender, measuring from four to seven feet. The head is flat, the upper jaw is the longest, and on the chin is a small beard. The colours vary; some being of an olive hue on the sides and back, and others cinereous, but the belly is always whitish.

The ling, so called from a corruption of *long*, is abundant about the Scilly islands, and also on the coasts of Yorkshire, Scotland, and Ireland; and forms no inconsiderable article of commerce. In the Yorkshire seas it is in perfection from the beginning of February to May. In June it spawns, depositing its eggs in soft oozy ground. Vast quantities of ling are salted for exportation, as well as for home-consumption. When it is cut or split for curing, it must measure twenty-six inches or upwards from the shoulder to the tail. When the fish is in perfection, a large quantity of oil may be procured from the liver by a slow fire; but if a violent heat is applied, the quantity will be diminished in proportion. The oil which nature hoards up so abundantly in the cellular membrane of some fishes is intended to support them in the spawning season, when they neglect their ordinary food.

#### THE BURBOT.

The body of this fish has some resemblance to that of an eel, and its motions are somewhat similar. The head is flat and ill-shapen; and on the extremity of the nose are two small beards, and another on the chin. The colours vary considerably: some are dusky, others of a dirty green spotted with black or yellow, and the belly is sometimes white; but the real colours are frequently concealed by the skin that covers the body.

The burbot abounds in the lake of Geneva. In our own country it is found in the Trent, the Witham, and the great

East Lincolnshire fen. The flesh is very delicate. The largest with us do not exceed the weight of two or three pounds. This is a very voracious fish, and its appearance is extremely forbidding.

#### THE BLENNY.

There are several species of this genus; all distinguished by having six bones in the membrane of the gills, the forepart of the head sloping, the body smooth and slippery, and the ventral fins generally consisting of two united rays. It will be sufficient here to notice only two, the gattorugine and the viviparous.

#### THE GATTORUGINE BLENNY.

This curious species is about seven inches and a half long: the body is smooth, and compressed on the sides; the belly is a little prominent; and the teeth are so small and thick-set that they appear almost setaceous. Between the eyes is a slight depression; and above each, exactly in the summit, a narrow loose membrane, trifurcated at the top. The colour is dusky, marked across with wavy lines; the belly is of a light cinereous hue; and the lower part of the pectoral fins, as well as the extremities of the ventral, is of a fine orange colour. This fish is found in several of the European seas.

#### THE VIVIPAROUS BLENNY.

This singular species generally brings forth two or three hundred at a time, early in the spring; which before Midsummer quit the bays and shores, and retire to the deep. The flesh is very coarse, and eaten only by the poor.

Viviparous blennies are common in the river Esk, as well as at Whitby, in Yorkshire, and some other parts of England. They are sometimes caught about a foot long. Their form is slender, and the backbone is green.

## ORDER III. — THORACICI.

THE distinguishing character of this order is, that the ventral fins are placed beneath the pectoral. There are seventeen genera, and upwards of two hundred and twenty species; the most curious and valuable of which shall be here noticed in their order.

## THE REMORA, OR SUCKING-FISH.

This creature, which bears some resemblance to the hering, is the *echeneis* of the Greeks; and has been celebrated from remote antiquity for its singular faculty of adhesion. The head is thick, depressed, naked, and marked on the upper side with transverse rough striæ. The body, which is of a hoary colour, is oblong, roundish, and naked; and the tail is bifid.

The ancients, who ascribed marvellous qualities to every object which they could not clearly comprehend, uniformly believed and reported that the sucking-fish was capable of stopping a vessel in full sail, or a whale in swimming. It is, however, very justly remarked, that even several of these fishes together possess no more efficacy to interrupt bodies moving in the sea than shells and corals, which, by adhesion, occasion a slight incumbrance only; and several of them have in fact been taken from the body of a shark.

## THE PARROT-FISH.

This fish, which has received its name from the beautiful variety of its tints, is found only about the coasts of St. Domingo, Cuba, and the Bahamas. It has a large mouth, filled, and almost paved as it were, with blunt teeth closely connected. The body is covered with large green scales; the eyes are red and yellow; the upper part of the head is brown, the lower part of the gills blue, bordered with a dusky red; and a streak of red extends from the throat behind the gills, at the upper end

of which is a bright yellow spot. The fins are ornamented with the most lively and diversified colours: the tail is large, forked, and green; with a curved red line running through the middle, and a large yellow spot on each side of the base. In a word, Nature seems to have exerted her skill to produce a fish that might vie with the most beautiful of the feathered tribes; but if the parrot-fish may lay claim to external advantages, it has little farther to boast of; for it is in no estimation as an article of food.

#### THE BULL-HEAD, OR MILLER'S THUMB.

This deformed and disgusting little fish is common in our gravelly brooks and rivers, where it lodges under stones or in holes. During the summer, it bites at a red worm, and is so remarkably stupid, that the most unexperienced angler may catch it without trouble. The head is roundish, large, broad, and depressed; the mouth wide, and the body about four or five inches long: the back is yellow, with three or four black stripes; and the belly is whitish. When young, the bull-head forms a most desirable bait for trout. — Another species, called the armed bull-head, or pogge, is very common on the British coasts. It is distinguished by having four short upright spines at the extremity of the nose.

#### THE FATHER-LASHER.

The length of this fish seldom exceeds eight or nine inches. It is commonly found on the rocky coasts of our island, lurking under stones. On the shores of Greenland it is so numerous as to constitute a principal resource of food for the natives; and, when made into soup, is nutritive and wholesome.

The head, which is very large, has a formidable appearance; being armed, as it were, with vast spines, by which the creature combats every enemy that attacks it, inflating its cheeks and gill-covers to an extraordinary size. The colour of the body is a dusky brown, marbled

with white, and sometimes stained with red ; the fins and tail are transparent, and the belly is a silvery white.

#### THE DOREE.

The familiar appellation of this fish is the John Dory, corrupted from *jaune dorée* (or yellow gilt), its French name. Superstition has exalted the doree into a rivalry with the haddock, for the honour of having been the fish out of whose mouth St. Peter took the tribute-money, leaving on its sides the impression of his finger and thumb. According to some old writers of the church, the doree has an additional title to our notice. St. Christopher, it seems, in wading through an arm of the sea, caught a fish of this kind ; and, as an eternal memorial of the fact, stamped the impression on its sides, to be transmitted to all posterity.

The figure of the doree is very uninviting. The body is oval, and greatly compressed on the sides ; the head is large ; the snout projects considerably ; and the mouth is wide. Its colours, however, when alive, are very beautiful, and have a brilliant appearance ; whence it receives its French name.

In Britain, it was long before this fish was regarded as edible. The celebrated comedian Mr. Quin first introduced it to our tables ; ever since which time it has constantly maintained the reputation of being a delicious viand, notwithstanding its forbidding form and aspect. It was formerly supposed to be confined to the southern seas of this kingdom, but it has been found likewise on the coast of Anglesea. Some individuals have been taken weighing twelve pounds, and still larger are found in the Bay of Biscay and in the Mediterranean.

#### THE HOLIBUT.

This is the largest fish of the flounder genus. In the British seas some have been caught weighing from two to three hundred pounds ; and in those of Newfoundland, Greenland, and Iceland, they are found much larger. —



Indeed the holibut constitutes no inconsiderable part of the provisions of a Greenlander, after being cut into large slices and dried in the sun.

It is frequently exposed in pieces for sale in the London markets : but its flesh is coarse for eating, except the part which adheres to the side-fins, which is extremely fat and delicious, though at the same time rather surfeiting. It is excessively voracious ; and, in respect to length, the narrowest of all the genus except the sole. The body is perfectly smooth, and free from spines : the colour of the upper part is dusky ; the under is a pure white. Both eyes, as is common in flat fish, are placed on one side of the head ; and it swims sideways.

#### THE PLAISE.

The body of this species is extremely flat ; and behind the left eye is a row of six tubercles, reaching to the commencement of the lateral line. The upper part of the body and fins is of a clear brown, marked with large bright orange-coloured spots ; and the belly is white.

These fishes are very common on most of the British coasts. Some of them have been known to weigh fifteen pounds ; however, they are in general considerably smaller. The best and largest are caught near Rye, in Sussex, and on the Dutch coasts. They spawn about the beginning of February.

#### THE FLOUNDER.

Flounders frequent every part of the British seas ; and even enter our rivers, which they ascend to a great distance from the salt water. In size they are inferior to the plaise, seldom exceeding the weight of six pounds. The distinguishing character of this species is a row of sharp small spines that surround its upper sides, and are placed just at the junction of the fins with the body. Another row marks the side-line, and runs half-way down the back. The upper part of the body is a pale brown, sometimes marked with a few obscure spots of dirty yellow.

low: the belly is white. This fish is tolerably good eating, both fresh and dried.

#### THE DAB.

The dab is of a better flavour than several other of the flat fishes, though inferior in size. It is covered with small scales, very rough at their extremities. The eyes, which are placed on the right side, are very near each other. It is commonly of an uniform brown colour on the upper side, and the lower is white.

The dab is found in company with the other species of flat fish, but is less common. It is eaten in the highest perfection during the spring months, and afterwards remains flabby and watery till the return of that season. Another species, called the smear-dab, resembles the former pretty nearly; except that it is spotted obscurely with yellow on the upper parts, and with dusky marks on the belly.

#### THE SOLE.

This is one of the most delicate of our British fishes, whence it is sometimes called the queen of the sea. It is common on all our coasts: those on the western shores, however, attain the largest size. They usually keep much at the bottom of the deep; where they feed on small shell-fish, and are drawn up with a hawl-net.

The irides of the sole are yellow, the pupils of a bright sapphirine colour, and the scales small and very rough.— The upper part of the body is of a deep brown hue, and the under part is white. The lateral line is straight, and the tail rounded at the extremity.

Though the flesh is delicious and white, that of the middling-sized fishes is by far the best. The chief fishery for soles is at Brixham in Torbay. By an ancient law of the Cinque-ports, no one was to take them from the first of November to the fifteenth of March; neither were they to be molested from sun-rising to sun-setting, that they might enjoy their night-food.

## THE TURBOT.

This well-known valuable fish is of a square figure. The colour of the upper part of the body is cinereous, marked with numerous black spots of different sizes; the belly is white; and the skin is destitute of scales, but much wrinkled, and mixed with small short spines irregularly disposed.

The turbot grows to a very considerable size, frequently weighing from twenty to thirty pounds. It is chiefly taken off the north coast of England, and on those of Scotland and Ireland. It generally keeps in deep water, and is commonly drawn up by hooks and lines. Turbots, as well as all other flat-fish, are extremely delicate in their choice of baits, but show a predilection for fresh herrings. The fishery for them requires to be conducted with skill and regularity: the Dogger-bank is one of the best known stations.

## THE CHÆTODON, OR SHOOTING-FISH.

This fish has a hollow cylindrical beak, which it uses in a very singular manner. It is a native of the East Indies, where it frequents the margin of the seas or rivers in search of food. When it spies a fly sitting on the plants that grow in shallow water, it swims towards it, and at the distance of some feet, ejects a single drop of water from its tubular mouth, which never fails of striking the fly into the water, where it soon becomes the prey of its foe. There are several species of the same genus, but none so remarkable as this.

## THE GILT-HEAD.

This fish is of a broad figure, compressed on the sides; and somewhat similar to the bream. It grows to the weight of ten pounds, and is caught in great plenty in the Mediterranean. The back is sharp, and of a dusky green colour. Between the eyes is an arched stripe, of a gold colour, resembling a crescent, the horns of which point towards the

head; from which gold-coloured mark the fish receives its name.

The gilt-head frequents deep waters, or bold rocky shores. It feeds principally on shell-fish, which it breaks to pieces with its teeth before it swallows them. The flesh is reckoned coarse eating; but among the ancient Romans it appears to have been held in some estimation when fed on the Lucrine oyster.

There are various species of this fish, three of which are found on the British coasts.

#### THE WRASSE, OR OLD WIFE.

The wrasse bears some resemblance in its figure to the carp, and is covered with large scales. Its colours are very variable: red, yellow, and brown, being frequently intermixed in the scales; and there are five or six longitudinal lines, alternately of a pale yellow, an olive colour, and dusky red. The nose is long, and incurvated upwards, and the lips are thick and fleshy. In the throat, just over the gullet, are three bones; two above of an oblong form, and one below of a triangular shape, with the surface of each rising into roundish protuberances: these are of singular use to assist the animal in crushing its shelly food previous to mastication. The tail is rounded at the extremity, and is formed of fourteen soft branching rays. The membranes of the fins and tail are variegated with red and blue spots, and the anterior rays of the back-fin are prickly.

The wrasse abounds on the English shores, where it grows to the weight of four or five pounds. The poor in Cornwall and Wales eat it; but it is by no means a delicate fish. It is found in deep water, adjacent to rocks; where it preys on shell-fish, and the smaller crustaceous animals. There are a considerable number of different species in this genus; as the bimaculated, the trimaculated, the striped, the gibbous, and the Ballan wrasse; several of which are natives of our seas.

## THE COMMON PERCH.

The perch is a gregarious fish, commonly taking up its residence in deep holes and gently-flowing streams. It is extremely voracious; and bites with such avidity, that, if the angler chances to find a shoal, he seldom fails to catch numbers. It has been commonly supposed that the pike will not attack this fish, for fear of its thorny spines, which it erects on the approach of danger; but, though this may be true with respect to the larger individuals, it is well known that small ones offer the most alluring bait that can be laid for the pike.

The body of the perch is deep, the scales are extremely rough, and the back is much arched. The colours are exquisitely beautiful; the back and part of the sides being of a deep green, marked with five broad black bars, pointing downwards; the belly white, tinged with red; the ventral fins of a rich scarlet; and the anal fin and the tail of the same hue, but somewhat fainter.

There is a singular variety of this fish, the back of which is quite hunched, and the lower part of the back-bone strongly distorted; but in other respects exactly resembling the common kind. This variety has been caught in a lake of Merionethshire, and also in the Thames, near Marlow.

The perch is extremely tenacious of life; having been frequently carried fifty or sixty miles in dry straw, and survived the journey. It seldom exceeds three pounds in weight, but some few have been caught of more than six pounds. It affords a most excellent diversion for the angler, between the beginning of spring and midsummer. It bites best when the weather is cloudy, but may be caught at any time of the day.

The perch was much admired by the ancient Romans, nor is it in less estimation at present, as a firm and delicate fish. The Dutch are particularly fond of it, when made into a dish called water-soucy, which is now introduced into this country.

## THE RUFF.

This fish is distinguished from others of the perch kind, by having only one dorsal fin, and a cavernous head. The dorsal fin extends along the greater part of its back, the tail is slightly bifurcated, and the body is covered with rough scales. The back and sides are of a dirty green colour, the last inclining to yellow, and both spotted with black: the dorsal fin is also spotted in the same manner, and the tail is marked with transverse bars.

The ruff breeds in ponds, and several English streams; and assembles in large shoals in deep waters. It may be kept a considerable time in a glass jar, provided the water is frequently changed; where it will become tame and very familiar. No fish is more vivacious; for it can even exist out of its native element for half an hour, without sustaining any sensible injury.

## THE BASSE.

This is a vivacious, strong, and active fish, and hence has obtained also the name of the sea-wolf. It weighs about fifteen pounds; and resembles a trout in its shape, except that the head is proportionably larger. The back is of a dusky colour tinged with blue, the belly is white, and the tail slightly forked. The flesh is extremely well-tasted and salubrious.

It is found in the seas surrounding the British islands; but seldom enters our rivers, though it is evidently a species of perch.

## THE SEA-PERCH.

In shape, size, and colour, this fish strongly resembles the fresh-water perch; but it is somewhat thinner in proportion to its length, and more variegated. The back is marked with six or seven blackish transverse lines; and the intermediate space inclines to reddish, particularly towards the head. The whole head, and part of the belly, are elegantly varied with red and blue streaks; the

mouth is extremely wide ; and the eyes are very large. The sea-perch is common in the Mediterranean, and its flesh is held in great estimation.

#### THE COMMON STICKLEBACK.

This fish is distinguished by having three spines on its back, in which character it differs from the rest of the genus. It grows to about the length of two inches, and is very common, particularly in new-made ditches ; where its origin cannot easily be traced. The colour of the back and sides is an olive-green ; and the belly is white ; but in some the lower jaw and belly are of a bright crimson.

These fishes are very numerous in the fens of Lincolnshire, and some of the rivers that issue from them. Once in seven or eight years, countless myriads of them appear in the Welland, near Spalding, ascending the river in the form of a column. These are supposed to be the multitudes that have been washed out of the fens by the floods of several years ; and collected in some subterranean retreat, till, overcharged with numbers, they are obliged to seek a change of place. On these occasions, they are caught in such prodigious quantities, that they are used by the country people as a manure for the land.

#### THE PILOT-FISH.

This creature is found in the Mediterranean and Atlantic, chiefly towards the equator. It has been variously described by different naturalists ; but it appears that the body is shaped like that of a mackerel, the head is long and smooth, and the snout advances some distance beyond the mouth. It has two small fins near the head ; another running along the back from the head to the tail ; and one under the belly, a similar length. The colour is brownish, changing into gold ; and there are several transverse black belts.

Mariners observe, that this fish frequently accompanies

their vessels ; and, as they see it generally towards the fore part of the ship, they imagine that it is employed in guiding and tracing out the course ; whence it has received its name. It sometimes attends the dog-fish and the shark. It swims at the height of a foot and a half from the snout of the latter ; imitates all its movements ; and seizes with address any part of the spoil which the shark allows to escape, and which is light enough to buoy up to the surface of the water. When the shark turns to snatch its prey, the pilot-fish starts aside ; but immediately recovers its former station. In the gulf of Guinea, it follows vessels for the sake of offals and other filth. Though so small as not to exceed six inches, it will keep pace with ships in their swiftest course.

#### THE COMMON MACKEREL.

The nose of this fish is taper and sharp-pointed ; the body is slightly compressed on the sides, but towards the tail grows very slender and somewhat angular. The colour of the back, and the sides above the lateral line, is a fine green, varied with blue, interspersed with black lines pointing downwards ; and, below that line, the sides and belly are silvery. In short, the mackerel is a beautiful fish when alive, and all its colours are brilliant ; but no sooner is it removed from its native element than its lustre begins to fade.

In the spring, its eyes are almost covered with a white film, but it recovers its perfect sight about the beginning of summer.

Mackerel visit the British shores in large shoals during the summer ; and, though they cannot be preserved fresh in distant carriage, they furnish a rich nutriment to the inhabitants of the sea-coasts, and to such as can receive them by a speedy conveyance.

In Cornwall they are pickled and salted, and thus preserved as a resource against winter. They are easily caught with a bait ; for which purpose sometimes a piece of writing-paper is used, and at other times a red rag.



The best time for catching them is during a fresh gale of wind. The mackerel furnished the precious *garum* of the Romans, and consequently was highly esteemed among that people. This *garum* was a sort of pickle which gave a high relish to sauces, and besides was supposed to possess some medical powers.

A particular species, called the horse-mackerel, and generally known in Cornwall by the name of the scad, is distinguished by having the lateral line aculeated. It grows to the length of about sixteen inches, and possesses the flavour of the common kind.

#### THE TUNNY.

This fish is common in the Mediterranean and some other seas; and is also sometimes caught on the coasts of our own island, particularly in the lakes on the western side of Scotland. It sometimes grows to the length of seven or eight feet; and one caught in Inverary, in 1769, weighed four hundred and sixty pounds. It has a rounded and thick body, becoming gradually slender towards the tail. The skin on the back is smooth, thick, and black, with a tinge of blue or green; the belly and half the sides are of a silvery whiteness, shaded with cerulean or pale purple. The scales are very minute, and the tail is shaped like a crescent.

The tunnies caught on our coasts are either sold fresh, or salted and preserved in casks. When fresh, the pieces have the appearance of raw beef; but when boiled turn pale, and acquire something like the flavour of salmon. They appear to have been well known to the ancients, and to have constituted an important branch of commerce among them. At present there are considerable fisheries of them on the Sicilian coast, and in other parts of the Mediterranean, where they are cured, and supply the inhabitants with a valuable article of provision.

#### THE MULLET.

The head of this fish is almost square, and flat on the top, the nose is blunt, the form of the body is pretty thick,

and the scales are large and deciduous. The back is dusky, varied with blue and green; the sides are silvery, marked with broad dusky parallel lines reaching from the head to the tail; and the belly also is silvery.

This is an excellent fish for the table, though at present not fashionable. It is correctly ranged by Aristotle among such fishes as prefer the shores to the ocean. It is found in great abundance among several sandy coasts of our island, and particularly in small bays, which have an influx of fresh water. They arrive in large shoals, and are extremely cunning and active; for, when surrounded by a net, they will often effect their escape, to the last individual, by leaping over it. In the south of France, abundance of mullets are taken in weirs made of reeds, placed in the shallows. From the milts of the males and the roes of the females botargo is made.

#### THE SURMULLET.

That this fish was highly valued by the Roman epicures, may be learnt from both Horace and Juvenal; who, when they inveigh against the luxury and extravagance of the age in which they respectively lived, quote this circumstance in proof of their assertions. It resembles the mullet in many respects, but is twice as large. The fins are yellowish, slightly tinged with red; the scales are large, broad, thick, and very firmly united to the flesh; and three or four straight yellow lines run down the sides, parallel to each other.

The surmullet is caught in the Mediterranean; and in the British seas, especially on the Cornish coast; and is universally esteemed a great delicacy.

#### THE COMMON OR GREY GURNARD.

This fish is frequent in the British seas, and its flesh is much valued. It eagerly bites at a red rag, and is usually taken by a hook. Its figure is long and slender, frequently measuring thirty inches. The back is of a dusky green colour, marked with black, yellow, and white spots; the lateral lines are dotted and rough, and under

these the sides are of a pale hue, variegated with numerous white spots. The belly is white; the nose is pretty long and sloping, with the end divided; and each side is armed with three short spines. Near the extremity of the gill-covers is a long, sharp, strong spine; and exactly above the dorsal fins is another.

There are several species of gurnards; as the red, the sapphirine, the streaked, and the yellow. Another, called the king of the gurnards, receives its name from its superior size. It is destitute of barbs, has large scales, and the body wholly red. This fish is found on the coasts in the island of Malta.

#### THE PIPER.

The piper is frequently caught on the western coasts of our island: it weighs upwards of three pounds, and its flesh is greatly admired. The head and the upper part of the body are very thick; the nose is divided into two broad plates, each terminated with three spines; and on the inner angle of each eye is also a strong spine. The scales are small, hard, and rough.

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### ORDER IV. — ABDOMINALES.

THIS order is distinguished by having the ventral fins placed behind the pectoral in the abdomen. It comprehends seventeen genera, and about one hundred and thirty species.

#### THE LOACH, OR GROUNDLING.

The loach is found in several English rivulets, particularly near Amesbury, in Wiltshire. It keeps close to the bottom, and seldom exceeds four inches in length. Sportsmen sometimes swallow it, for a whim, in a glass of white wine. The mouth is small and destitute of teeth, and the

upper jaw is adorned with six small beards. The body is smooth and slippery; the colour of the head, back, and sides, is sometimes white, at others a dirty yellow, elegantly marked with large spots; the belly and ventral fins are white; all the other fins are spotted.

#### THE SKEAT,

This fish has sometimes been caught in the Vistula, measuring sixteen feet in length and twenty-seven inches in breadth. It is found likewise in several lakes and rivers of Germany, usually keeping close to the bottom. It is extremely voracious, but its flesh is held in considerable estimation. The back is dusky, like that of an eel; and the belly and sides are variegated with white and black spaces, or large spots. The body is slimy, thick, and roundish; the head broad and flat; and the mouth extremely wide. In the upper jaw, before the eyes, are two very long and hard barbs; and four more depend from the lower lip, but more short and slender. The flesh is dressed in the same manner as the eel.

#### THE SALMON.

This very valuable fish is chiefly, if not altogether, confined to the northern latitudes. It is unknown in the Mediterranean, but extends as far north as Greenland. In some countries it constitutes a principal resource of the inhabitants as an article of food and commerce. There are stationary fisheries of salmon in Iceland, Norway, and the Baltic; at Coleraine, in Ireland; at Berwick-upon-Tweed; at Aberdeen, in Scotland; and various other places. In all parts of Europe the size of these fishes is nearly the same; the largest weighing from thirty to forty pounds; though some have been caught of much greater magnitude, weighing seventy pounds.

The salmon is so generally known, that a brief description of its figure and colours may suffice in this place. The body is longish, and covered with small thin scales; the head small in proportion to the size, the snout sharp,

and the tail forked. The back is of a bluish colour; and the other parts are generally white, intermixed with blackish or reddish spots very beautifully arranged. The female is distinguished from the male by having a large and more hooked snout, duskier scales, and by being more speckled all over with dark-brown spots.

The flesh of the salmon, when fresh killed, is not so red as when boiled or salted: it is tender, luscious, and flaked; and is generally preferred to that of any other fish. About the time of spawning, however, it becomes somewhat insipid, and the fish loses much of its beautiful colouring.

The salmon inhabits salt and fresh water alike; it quits the sea at certain seasons, in order to deposit its spawn with security in the gravelly beds of rivers, at a distance from their mouths. It is often taken in the Rhine as high as Basle: it gains the source of the Lapland rivers in spite of their rapidity; and passes along by leaping the perpendicular falls of the Leixlip, Kennerth and Pont Aberglaslyn.

These fishes live many years, and receive distinct appellations according to their age. As a viand, the salmon abounds with volatile salt and oily balsamic particles, which render it nutritive, strengthening, and invigorating: but, if eaten too freely, it sometimes occasions vomiting and indigestion. It ought to be kept a few days before it is dressed; for which reason it is commonly better when it has reached London than when fresh caught in the Mersey, or other rivers at an equal distance from the metropolis.

Nothing is more remarkable in the history of salmon than their instinctive agility in surmounting every natural obstacle, which opposes their passage to and from the sea.

They are frequently seen to throw themselves up cataracts and precipices, many yards above the level of the water; and if foiled at the first easy, never desist till they have accomplished their purpose. On the river Tivy, in Pembrokeshire, there is a remarkable cataract, where the

surrounding inhabitants often assemble to admire the strength and agility of these creatures, while endeavouring to reach the river from the sea. On the river Wear, near Durham, there is another salmon-leap (as it is called); and a third near Don, at old Aberdeen; but none of these is equal to the famous salmon-leap at Leixlip, in Ireland.

All fishermen agree that no food is ever found in the stomach of the salmon. It is probable that during the spawning season they neglect their aliment, like some other fish; and it is observed that they always return to the sea lean, though they left it in good condition. It is evident that they vary their food; for anglers use both fish and worms with good success; and sometimes an artificial fly proves a tempting bait.

#### THE SALMON-TROUT.

This fish, like the true salmon, migrates from the sea up several of our rivers; and after it has spawned, returns to the salt-water. It differs, however, from that fish, in having its tail less forked, and in seldom exceeding the length of twenty inches. Its flesh also is whiter and less delicate.

Salmon-trout delight in deep holes, and usually shelter themselves under the roots of trees. They continue in season during the whole summer, and may be angled for successfully in the morning and evening.

#### THE COMMON TROUT.

The colours of this fish, as well as the flavour of its flesh, vary extremely in different waters; in every place the latter is much esteemed. The body is long, the head short and roundish, the tail very broad, and the mouth large.

The trout is extremely voracious, and affords excellent diversion to the angler. It changes its quarters when about to spawn, and makes towards the head of rivers. Some varieties are remarkable for the thickness of their stomachs, which have a slight resemblance to the organs of digestion in birds, called gizzards.

This fish seldom exceeds four pounds in weight, and in general is much smaller. Though it is universally diffused, and its flesh so extremely delicate, it is not mentioned by any of the ancients, except Ausonius. There is a species called the white trout, found in the river Esk and some other streams, the flesh of which, when dressed, becomes red, and is more valued than that of the common kind.

#### THE SAMLET.

This is the least of the trout kind, and by some has been imagined to be the fry of the salmon. It is found in the Wye, the Severn, and several rivers in the north of England and Wales, as well as Scotland, where it is called the par. It has a great resemblance to the trout, but differs from it in several specific characters.

#### THE CHAR.

The body of the char is larger and more slender than that of the trout; the back is olive, spotted with white; the belly is generally red; the scales are very small; and the lateral lines are straight. This fish inhabits the lakes of the north, as well as those of the most mountainous parts of Europe. It shows a strong predilection for clear and pure waters; and is seldom known to deviate into running streams, unless their bottom is similar to that of its native lakes. It is found in Winander-mere, and some other lakes of Westmoreland and Cumberland and Wales, as well as in the lochs of Scotland. Mention has been made by naturalists of the case char, the red char, the silver or gilt char, and the gelt char; but, on a close examination of each variety, it seems impossible to establish any real specific difference between these.

#### THE SMELT.

This fish inhabits the seas of the northern parts of Europe, and has even been caught so far south as the Mediterranean. The smelt varies greatly in size, but the

largest mentioned has never exceeded half a pound. It is of a very beautiful form and colour: the head is transparent; and the skin is so thin, that, with a good microscope, the circulation of the blood may be perceived. The colour of the back is whitish, with a cast of green: below which it is varied with blue; and then succeeds a beautiful silvery gloss. The flesh has a peculiar scent, but, in general, is agreeable to the palate.

#### THE GUINIAD.

This fish is an inhabitant of several lakes in the Alpine parts of Europe. It is likewise found in Bala lake in Wales, but must be fished with nets. In Scotland there is a tradition that it was first introduced into that country by the unfortunate queen Mary Stuart. It is a gregarious fish; and approaches the shores in vast shoals both in spring and summer, which proves in many places of great relief to the poor of the vicinity. Its flesh, however, is rather insipid; and it must be eaten soon after it is caught, or preserved in salt. In weight it sometimes reaches three or four pounds. The head is small, smooth, and of a dusky hue: the back is a little arched, and glossed with deep blue and purple; but towards the lateral lines assumes a silvery cast, tinged with gold. The tail is much forked, and the scales are large and closely adherent.

#### THE PIKE.

This is a well-known fish, and in some places is called the jack. The head is very flat, the upper jaw is broad and shorter than the lower, and the teeth are sharp. It has been sometimes caught of the weight of thirty pounds: but this is rare, its general size being only about four or five pounds; and the flesh of such as are of the latter description is most esteemed.

Pikes spawn in March or April, according to the mildness of the season. When in perfection, their colours are very fine; being green spotted with a bright yellow, and the gills of a vivid full red. When out of season, the green



changes to grey, and the yellow spots assume a palish hue.

These fishes are common in most of the European lakes, rivers, and artificial pieces of water, but the finest are found in Lapland. In that country they are taken in great abundance; and, when dried, form an article of commerce.

According to common report, pike were first introduced into England about the year 1537. They were then so rare, that a single fish was sold for double the price of a house-lamb. All writers who treat of this fish describe it as the most active and voracious among the inhabitants of fresh waters; and indeed the depredations which it commits on smaller fish are immense. It will even devour rats and aquatic fowls, and contend with the otter. A famished pike once seized a mule by the nose while drinking, and was not disengaged till the animal flung it on shore.

The longevity of the pike is no less remarkable than its voracity. A pike was taken at Hailbrun, in Suabia, in 1497, with a brazen ring affixed to it, on which were engraved these words: "I am the fish that was first of all put into this lake; by the hands of the Governor of the Universe, Frederic II. the 5th of October, 1230." It must, therefore, have lived two hundred and sixty-seven years, besides its age when it was put into that piece of water.

#### THE SEA-NEEDLE, OR GAR-PIKE.

This fish arrives in shoals on the British coasts about the beginning of summer; preceding the mackerel, which it resembles in taste. It sometimes grows to the length of three feet and upwards. The jaws are long, slender, and sharp-pointed; and the under extends considerably farther than the upper. The body is slender, the belly is quite flat, and the lateral lines are rough.

When this fish remains in the water, its colours are extremely beautiful; the back is of a fine green, beneath

which appears a rich variable blue and purple ; and the sides and belly are of a silvery hue.

#### THE FLYING-FISH.

The head of this fish is scaly ; the belly is angular, and the pectoral fins, the instruments of flight, are very large. When pursued by any other marine animal, it raises itself from the water by means of these long fins, and can support itself in the air till they become dry, when it again drops into its native element. It seems to lead a wretched life, being constantly pursued by fishes of prey ; and, when it has recourse to flight, it frequently meets its fate from the gull or the albatross, or perhaps drops down again into the mouth of its original pursuer. Between the tropics it is common, and there its enemies are the most numerous. In those climates it is seen springing out of the deep by hundreds ; and sometimes it throws itself on board of ships, in order to escape its various assailants. It is about a foot long, of a whitish colour, and the flesh is reported to be palatable and nourishing.

#### THE HERRING.

Herrings differ greatly in size, but the usual length is from nine to twelve inches. The back and sides are varied with green and blue, and the belly is silvery. The gill-covers are extremely loose and patulous, which occasions the immediate death of the fish when taken out of the water ; and hence the common saying, “ As dead as a herring.”

This fish is found in the greatest abundance through all the high northern latitudes. In those unnavigable seas, which are covered with ice the greatest part of the year, they find a quiet and secure retreat from all their numerous enemies. Insects, on which they subsist, are also extremely plentiful there ; from which favourable circumstance their increase is beyond conception, which obliges them to migrate in quest of new settlements. The great colony of herrings sets out from the polar seas about the middle of winter, but soon separates into two shoals : one

body of which moves westward, and pours along the coasts of America as far as Carolina; while the other directs its course to Europe, and first appears off the Shetland islands in the month of April. From these islands this great army again divides; one squadron taking the western coasts of Britain towards Ireland, and another the eastern towards the Land's End. During their progress, they are pursued by millions of enemies of all descriptions, and among others, by man; their approach being carefully watched by the fishermen, who catch them in numbers beyond calculation.

Considered as an aliment, fresh herrings are not unwholesome; but, when cured, (as myriads are annually,) they indeed supply the poor with cheap food, but are not considered as particularly nutritive, or easy of digestion. The Dutch are most expert in pickling these fishes; but the British fisheries have of late years been much improved, and meet with considerable national encouragement; which indeed they well deserve, both in an economical and political point of view.

#### THE SPRAT.

The sprat has been generally, though erroneously, supposed to be a herring not arrived at its full growth, its usual length being only four or five inches. The body, however, is much deeper than that of a young herring of equal magnitude; and the dorsal fin is placed more remote from the nose. There is also another and more distinctive character; the herring having fifty-six vertebræ, but this fish only forty-eight.

Sprats visit our coasts, and continue with us, when the herrings have generally disappeared. They usually arrive in the river Thames about the beginning of November, and quit it in March. They are rather a fat and oily food; but, when fried, furnish a cheap and not unpleasant meal to the poor, at the most inclement season of the year. They are sometimes prepared as a substitute for anchovy; but their bones dissolve less easily than those of that fish.

## THE PILCHARD.

This fish has a general resemblance to the herring ; but its body is less compressed, thicker, and rounder ; the nose and under jaw are also shorter, the back more elevated, and the belly less sharp. The scales of the pilchard likewise adhere very closely, whereas those of the herring easily drop off ; and the former is the smaller fish, though fatter and fuller of oil.

Pilchards arrive in vast shoals off the coast of Cornwall towards the middle of July, and retire about the commencement of winter. Their motives for migration are the same as those of the herring, but they are partial to a warmer summer situation ; for, excepting on the coast of Cornwall, where they are caught in prodigious quantities, they are not numerous on any of the British shores.

The pilchard-fishery, in Cornwall, is uncertain, but sometimes immensely lucrative. The numbers taken at one shooting of the nets has indeed been astonishingly great. On the fifth of October, 1767, there were at one time inclosed and caught in St. Ives' bay, seven thousand hogshheads, each containing thirty-five thousand fishes.

## THE ANCHOVY.

This well-known fish, so generally used in sauces, is about a finger's length, with a pointed snout and a wide mouth. It is caught in prodigious quantities in the Mediterranean, particularly at Gorgona ; and is brought over to our country, pickled.

## THE SHAD.

The shad has a forked snout, and black spots on the sides. It is very common in the Mediterranean ; particularly in the river Nile, up which it annually migrates. The best shads in the British islands are found in the Severn ; in which river this fish appears in April or May, and continues about two months. In the Thames it is seldom seen before the beginning of June, and its flesh is less delicate in that river than in the Severn.

## THE CARP.

This fish, though now so well known, was not introduced into this island till about the year 1514. It is the most suitable for stocking ponds, on account of its quick growth and prodigious increase. The body is thick; the scales are very large, the jaws of equal length; and on each side of the mouth is a single beard, and above these are two shorter. The average weight is about five pounds, but some have reached twenty. Carps are long-lived, and one has been known to attain a hundred years. They are capable of existing a considerable time out of their native element, and have even been regularly fed, by a particular process, after being taken from the pond. They are excessively cunning, and shy of taking a bait; though during spawning-time they will suffer themselves to be tickled, handled, and caught with facility.

## THE BARBEL.

This is a very coarse fish, and seldom eaten but by the poor, who sometimes boil a little bacon with it, in order to heighten its relish. The roe is very unwholesome.

Barbels frequent the still and deep parts of rivers; and live in society, rooting, like swine, with their noses in the soft banks. They are very tame, and easily caught by the hand. They are commonly about three feet long, and will weigh twenty-five pounds. The belly is white, and the dorsal fin is armed with a remarkably strong spine, sharply serrated, with which the fish inflicts a severe and dangerous wound.

## THE TENCH.

Though this fish was anciently in as little repute as the barbel, its flesh is now in much estimation. In this country, at least, it is reckoned a wholesome and delicious food. Its usual weight is about four pounds; but some have been known to weigh ten, or even more. It loves still waters; and is simple and easily caught.

The tench is thick, and short in proportion to its breadth. The colour of the back is dusky; but the head, sides, and belly are of a greenish cast, charmingly blended with a golden hue, particularly when the fish is in its highest perfection.

#### THE GUDGEON.

The gudgeon is generally found in gentle streams; and seldom reaches half a pound in weight, or measures more than six inches in length. The body is round, the scales are small, the back is brown or olive-coloured, and the belly is whitish. Its flesh is highly esteemed; and, as it bites very eagerly, (from which circumstance its name has long been used as a term expressive of stupidity,) it may be caught with a variety of baits. It is usual to rake the bed of a river to raise the mud, by which means the gudgeons may be drawn to any particular spot.

#### THE BREAM.

This fish is found in lakes, and the deepest parts of still rivers. The body is deep, and thin in proportion to its length; the back is much elevated; and during spring, the animal is sometimes covered with abundance of minute whitish tubercles. The back and fins are of a dusky hue, the sides yellowish, and the tail represents a crescent. Its flesh is little valued.

#### THE ROACH.

In some parts of the world the roach is found only in stagnant waters; but in Britain it thrives equally in ponds, and still deep rivers. It is a gregarious fish; and is remarkably prolific, as well as vivacious and active; and hence the proverb, "As sound as a roach."

This fish is deep, but thin; the back is much elevated, and sharply ridged; the scales are large and deciduous; and the lateral line is considerably incurvated. It seldom reaches any considerable size, though some have been found weighing two pounds.

## THE DACE.

This fish, like the roach, is gregarious, haunts the same places, is a great breeder, very lively, and during summer, is fond of frolicking on the surface of the water. It seldom exceeds a pound in weight, and the flesh is not much esteemed; however, it affords great diversion to the expert angler, as it will bite at any fly. The back is dusky with a yellowish cast of green, and the sides and belly are silvery.

## THE CHUB.

The chub is a very coarse fish, and extremely full of bones. The body is oblong and rather round, and the head is short and thick. The upper part is of a dusky-green colour, the sides are silvery, and the belly is white.

This fish frequents the deep holes of rivers; and during summer, commonly lies on the surface of the water, beneath the shade of some tree or bush. It is very timid, darting to the bottom on the least alarm; but soon resumes its former situation. The flesh is in little esteem, and the weight seldom exceeds five pounds.

## THE BLEAK.

These fishes are very common in many of our rivers, and keep together in large shoals. They seldom exceed five or six inches in length, and from their scales, artificial pearls are made, as well as from the perch.

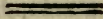
## THE GOLD-FISH.

Though natives of China, these beautiful fishes are quite naturalized in this kingdom, where they breed as freely in the open air as carp. They were little known here before the year 1728, when a number of individuals were imported, and circulated round the vicinity of London; whence they have been gradually distributed to the remotest parts of the island.

The gold-fish bears a great resemblance to the carp,

and grows to the length of about eight inches. Its colours are liable to great variations; some are marked with a fine blue brown, or bright silver; but the predominant colour is that of gold, of a most brilliant appearance.

In China they are every where kept in the families of the opulent, for amusement, in porcelain vessels. The extreme beauty of their colours and their lively motions afford great entertainment; and on this account we frequently see them here confined in glass vases, where they will live for many months without any visible nutriment, provided the water be occasionally changed.



#### CLASS V.—INSECTA, OR INSECTS.

THE farther we extend our views into nature, the more wonders will attract our notice, and the greater difficulties we shall experience in the research. The larger animals and plants are sufficiently distinguished, and are capable of easy enumeration; but, when we descend to the inferior classes of nature, in either the animal or vegetable kingdom, we find beings multiplying so fast upon us, that the most industrious and inquisitive must be contented to arrange in masses, rather than attempt to describe in detail.

The distinguishing characters of insects are, that their bodies are without blood, bones, or cartilages; that they are covered with a sort of bony substance instead of skin; that they generally breathe through lateral lungs; and that their heads are commonly furnished with antennæ, or horns.

Though insects are the smallest in the scale of existence, they are certainly not the least interesting. Their minuteness indeed may at first view sanction an idea of their unimportance; and the ignorant and untutored may thence be led to regard them as the result of chance, and the dregs of nature; but whoever considers them with due attention,



and reflects on the art and mechanism of their structure, where such a number of vessels, fluids, and movements, are collected into a point frequently invisible to the naked eye, must acknowledge that they display the same wisdom and power as fabricated the stately elephant and the enormous whale.

The insects, however, which by their visible size or beauty attract our notice, are but the smallest part of the class to which they belong: the whole earth teems with animated matter; every plant, every leaf, every grain, supports creatures, which even the assistance of the microscope can scarcely render apparent to our eyes.

In the higher ranks of existence, two animals nearly resembling each other in form will be found to have a similar history; but insects, however much alike, will often be found perfectly dissimilar; as well in their manner of bringing forth and subsisting, as in the changes which they undergo in their very limited lives. Thus, as this class is wonderfully prolific, so its varieties are multiplied beyond the power of enumeration. Almost every species has its own peculiar habits, manners, appetites, and modes of propagation; and the inquiries of ages directed to this single point would barely be sufficient to furnish an outline of entomology.

An exact plan, therefore, of nature's operations in these minute tribes is not to be expected; yet such a general picture may be given as is sufficient to evince the care which Providence has manifested in the production of its meanest creatures; and to display that admirable economy of nature, by which one kind of beings find subsistence from the destruction of another, and life is perpetuated without a pause, through every department of creation.

Comparatively insignificant as insects must be deemed when estimated on the scale of utility to man, nature has been liberal in her embellishment of some of the orders. Butterflies, cantharides, and all the shining flies, are attractive by their beauty; and the same wisdom that has rendered some insects the objects of admiration for the

brilliancy of colouring, has also given to others a certain share of strength and armour for their necessary defence, or for the means of procuring their food. The wasp and the bee have formidable stings; the beetle kind have generally a strong shelly covering; and ants, particularly the termites, have powerful teeth. The most delicate insects, such as caterpillars, are furnished with hairs which serve to break the force of shocks which they are liable to receive, as well as to weaken the effects of external annoyance. The generality of insects are likewise quick in flight to avoid impending danger: some by the assistance of their wings; others by means of threads which they can throw out, and by which they suspend themselves till the danger is past; and others still, as the grasshopper, are able to leap a considerable distance. Thus every species, however minute, is furnished with certain appropriate means for self-preservation.

But, if we examine the various organs with which insects are supplied, and the instruments which they use, our admiration will be still more excited. The silkworm (the most valuable of all the class) is so completely formed for spinning, by its two distaffs and fingers for drawing out the thread, that the utmost efforts of art to accomplish the same end are only an imitation of nature. The spider fabricates nets and webs, and is, therefore, provided with implements for that purpose; the wasp, by means of two small saws which spring from the angles of the mouth, procures what materials are necessary for the construction of its cell; while bees are furnished with a variety of tools or instruments, indispensably necessary to the formation of their combs, and the collection of their honey. Nothing, indeed, can be more wonderfully constructed than the trunk of the bee; by means of which the animal is fitted for extracting the honied balsam, even from herbs of the most deleterious quality.

In a variety of respects, the structure of the eye in insects is different from that of other creatures; its own rigidity protects it against external injuries; and its

cornea is all over divided into lenticular facets, which, through the microscope, appear like a beautiful piece of lattice-work, each section presenting objects inverted. This mechanism sufficiently supplies the place of the crystalline humour, which is never found in insects. Spiders have generally eight eyes; and flies may be said to have as many organs of sight as there are perforations in the cornea, or external covering of the eye. To contemplate objects, animals in general are obliged to turn their eyes different ways; but those of flies are so contrived as to embrace every neighbouring object at one view.

The mechanism of the feet of insects is no less worthy of attention. The hind legs of amphibious insects, such as water-beetles, which are sometimes obliged to live on land as well as water, are formed with commodious flat joints; while gristles, which are placed at the extremity of the limb on each side, supply the place of oars. In those insects which are formed for leaping, such as the grasshopper and the cricket, the legs are strong and brawny; those, on the contrary, which use their claws for perforating the earth, have these members peculiarly fitted for that purpose. There are even some tribes of insects which transport themselves from one place to another, in a manner not yet understood; for those generated in stagnant waters are often found in new pits or ponds; and spiders frequently soar with their webs to the summits of the most lofty towers.

Winged insects are provided with tendons to expand and strengthen the instruments of flight. Those that are furnished with four wings, as the ephemeron, or day-fly, use the outermost pair rather as cases to defend the interior, than as auxiliaries in flight. When the insect is at rest, the inner wings are generally closed up; nor is it without some effort that the little animal is capable of unfolding them. Such insects, on the contrary, as have only two wings, are supplied with little balls, or poisers, united to the body under the hinder part of each wing, which serve

to keep them steady, and, in some measure, counteract the changes of the air, which otherwise might waft them along in its current. If one of those balances is cut off, the insect loses its equipoise, and falls to the ground; if both are removed, it will still continue to fly, though subject to the direction of every breeze.

Insects, as far as is yet known, are generated, like the larger animals, from eggs; and these are at first inclosed in a single or double covering, which opens when the nascent animal has arrived at a proper stage of maturity. When the young break their shell at once, as the millipedes, the parents are said to be viviparous; but, when the embryo is wrapped up in a covering, in which it is destined to remain for some time, as the silk-worm, they are called oviparous.

The instinct displayed by the oviparous kinds, in depositing their eggs in a suitable situation, where they may meet with the requisite heat, or the young animal, when first produced, may find the most appropriate nourishment, is not the least extraordinary circumstance attending them. No insects abandon their eggs to chance; nor do they ever err in respect to the situation to be chosen for the purpose of bringing them to life. Caterpillars, which eat oleraceous plants, are never found on willows; nor such as eat willows, on cabbages. Moths delight to lodge among woollen stuffs or papers, but none take up their residence on plants or in mud. Thus, instinct in insects is as powerful as reason in man, as far as self-preservation, and the care for posterity, are concerned.

When the eggs of some kinds are hatched, the young appear in their perfect and permanent shape; but the greater number of insects pass through different stages of existence, and successively assume the figure of two or three animals, which bear no resemblance to each other. From the eggs of the gnat proceed animalcules which first live in the water, then become amphibious, and are at last inhabitants of the air.

Summer which develops, in the most powerful manner,

the energies of every thing that lives or grows, is the season of pleasure and activity to insects. Few of them live beyond a single season ; and some of them only a day, or even a few hours. Such, however, as are long-lived, take the necessary precautions to provide for their safety and subsistence during the winter ; fixing on the most convenient situation for spending that dreary interval, and laying up a sufficient stock of food. But the greater number become torpid during the cold weather ; and, therefore, are exempted from the necessity of accumulating provisions. Some caterpillars, for instance, having fed during the summer, retire to places of security at the approach of winter ; when, spinning threads like cobwebs, they suspend themselves, covered with a factitious vesture, which at once keeps them warm, and protects them from external injuries. In this dormant state, they continue, till the returning sun calls them to new life ; when they become invigorated by his influence, expand their wings, and immediately exercise all the functions of life.

Of the animals which lay up stores for winter, the hive-bee and the ant of warmer climates are remarkable instances. The wasp, the hornet, and the wild-bee, are no less assiduous in providing commodious apartments, and furnishing them with provisions ; but this is done wholly for the sake of their young ; for, in this climate, after taking care of their progeny, they desert their nests in winter, and seek other situations, where they probably repose in total insensibility.

But, after all the admirable habits and instincts which may be observed in this class of animated nature, it must be confessed, that they are much inferior to many of the preceding. As, in mechanics, the most complicated machines are required to perform the nicest operations ; so, in anatomy, the noblest animals are most variously and wonderfully made. Of all living creatures, man exhibits the most astonishing variety, and adaptation of parts in his internal structure ; quadrupeds next succeed ; and other animals follow, in proportion to their powers and

excellences. Insects seem to be the most imperfectly organized: many of them will live a considerable time after they are deprived of the parts which, in the higher ranks of nature, are essential to life; and the caterpillar will exist, when stripped even of its heart and lungs.

It is not, however, in their conformation only, but also in their instincts, that insects are inferior to other animals. It is true, the ant and the bee present us with very striking instances of assiduity and foresight; but they fall very short of those proofs of sagacity displayed by the hound or the horse. A bee, when detached from the swarm, is totally inactive, and incapable of giving the smallest variation to its instincts; it has but a single mode of operation; and, if it be prevented from the exercise of that, it can have recourse to no other. In the pursuits of the dog, there appears something like choice, and a promptitude for expedients; but in the labours of the bee, all has the semblance of compulsion, or inevitable necessity.

Another observation, tending to show the imperfection and inferiority of insects, may be suggested from their amazing numbers. It is a rule which universally prevails, that the nobler animals are slowly produced; and that, in regard to them, nature acts with a kind of dignified economy; while the meaner births are lavished in a sort of sportive profusion, and thousands are produced, merely to supply the necessities of the more favoured classes. The higher subjects of animation are all capable of some degree of education, and evince different portions of docility; their instincts may be suppressed or altered: the dog may be taught to fetch and carry, the bird to whistle the notes of a tune, and the serpent to dance; but the insect cannot be taught; no arts can enlarge its narrow instincts, nor any attention conciliate its regard.

If insects are considered as bearing a relation to man, and as promoting his pleasures or relieving his necessities, they will even in this respect sink below the level of the animals before described. The bee, the silk-worm, the cochineal-fly, and the cantharides, are indeed of essential

service in trade and domestic economy ; but how many of this class are noxious, or at best useless ! Even in populous and cultivated countries, where injurious animals have been repressed, or reduced within moderate bounds, insects still maintain their ground without diminution, and are often unwelcome intruders on the fruits of human industry. But in wilder and less peopled regions, their annoyances and devastations are inconceivable. What a miserable idea must we form respecting the life of a Laplander, as well as of the natives of several parts of America and Africa, where a candle is no sooner lighted than the insect tribes instantly extinguish it ; where meat is no sooner produced than it is immediately covered with them ; where the inhabitants, to defend their persons, are obliged to use the most disgusting unguents ; and where, though millions are destroyed, millions constantly succeed, and increase the vexations of those unpropitious climates.

While it must be confessed that insects are generally of little value or use, in regard to the wants or conveniences of man, yet, as partakers of the life in which he shares, and as part among the works of the beneficent FATHER of ALL, they are surely entitled to consideration and humanity. To destroy a large animal wantonly is a species of cruelty, at which the feeling, well-instructed mind would revolt ; but we see insects, not really noxious, destroyed without the least check of compunction. This practice seems to arise from the gross error of supposing that every thing is really in itself contemptible, which happens to have a body infinitely disproportionate to our own ; not considering that *great* and *little* are merely relative terms, and that

— the poor beetle that we tread upon,  
In corporal sufferance feels a pang as great  
As when a giant dies.

Indeed there is every reason to believe, that the sensations of many insects are as exquisite as those in animals

of far greater dimensions ; perhaps more so. Why then should the life of the most ignoble being be sported with, when there is neither provocation nor justifiable temptation? Montaigne remarks, that there is a certain claim of kindness and benevolence which every species of animals has a right to expect from man. This principle should be pressed upon tender minds in its fullest extent. Children ought to be early warned against the most distant approaches to cruelty ; a disposition to torture insects may take its rise from an over-active temperament, or be attributed to want of reflection ; but if indulged, it may settle into a habit, and render its possessor callous to every kind of suffering, except his own. The supreme court of judicature at Athens, punished a boy for putting out the eyes of a poor bird that unfortunately fell into his hands ; and parents and masters should never overlook an instance of cruelty to any thing that has life, however minute and contemptible the object may be. In the microscopic insect, as well as in the enormous whale, we find evident marks of the same wisdom and the same paternal goodness ; every creature is furnished with all that is necessary both for its preservation and its happiness, in that sphere to which Providence has consigned it ; and we certainly violate the laws of nature and of nature's God when we wantonly inflict pain, and lessen or prevent enjoyment.

To obtain even a moderate acquaintance with the history of insects, would require years of sedulous attention ; and at last the knowledge would be curious perhaps, rather than useful. It cannot, therefore, be wished that life should be spent in such inferior pursuits ; yet every lover of nature will derive gratification and improvement in a general acquaintance with this class of beings, by studying the outlines of systematic arrangement, and acquiring the terms of art used in the science of entomology.

The first thing to which the young student should attend is, to be able to distinguish insects accurately from



worms or amphibia ; with both which, before the time of Linnæus, they were frequently blended and confused, though they differ as essentially as mammalious animals from birds. Every insect is furnished with a head, antennæ or horns, and feet ; of all which the vermes (or worms) are destitute. All insects likewise have six or more feet ; they respire through pores on the sides, called spiracles ; and their skin is extremely hard, and serves them instead of bones, of which latter they have internally none. The antennæ, however, placed on the forepart of the head, constitute the principal distinctions of insects from worms and amphibia. These organs are jointed and moveable in every part, in which they differ from the horns of other animals ; and they are supposed to convey some kind of sense : but we have as little correct knowledge of what nature this sense is, as a man, blind from his birth, can be supposed to have of the action of light on the eye, or of the impression which is made from this cause on the mind. But that they are the organs of a particular sense, is apparent from their perpetual motion ; yet the hard crust with which they are invested, and their shortness, in flies and other insects, would induce us to believe them not to be the organs of touch ; and accordingly a naturalist, who has written a learned treatise on the science, supposes them to constitute or contain the organs of hearing.

Besides the antennæ, the head also, the trunk, the proboscis, the feelers, the breast, the belly, the limbs, the tail, and the wings, are particularly to be regarded by the entomologist. Various terms of art are likewise to be learnt which are used to express the differences and positions of the wings ; but, as they are all borrowed from the Latin, they would afford little information to common readers ; and the learned will readily find them in the works of Linnæus. Indeed, in our language, or at least in our dictionaries, are very few English names for insects themselves. The figures of many of them are familiar to us ; but we have only a few distinctive names,

such as beetles, moths, flies, bees, and wasps, by which they are known to us. To enumerate the immense variety, therefore, of genera and species, would be in a great measure useless to the juvenile reader. It will be sufficient, on this account, to exhibit a summary view of the different orders; and notice some of the most remarkable insects under each, with their respective haunts or habitations.

The class of insects is divided into seven orders, viz.

1. COLEOPTERA, or insects having four wings; the two superior ones being crustaceous, and furnished with a straight suture.

2. HEMIPTERA; insects smaller than the preceding, with four wings; the two superior semi-crustaceous, and incumbent, (that is, the interior edges lying one upon the other.)

3. LEPIDOPTERA; insects with four wings, all of them imbricated with scales.

4. NEUROPTERA; insects having four wings, interwoven with veins like a piece of network, and no sting.

5. HYMENOPTERA; insects agreeing in their characteristics with the preceding, excepting that these are armed with a sting.

6. DIPTERA; insects having two wings, and two clavated halteres (or balances) behind each.

7. APTERA; insects destitute of wings. \*



## ORDER I. — COLEOPTERA.

THE distinguishing character of coleopterous insects is, that they have four wings; the two superior ones being crustaceous, and furnished with a straight suture.

Many of these (as the chaffer, the leather-eater, and the

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\* These definitions should be committed to memory.

rove-beetle) are found in the dung of quadrupeds; especially of cows, sheep, and horses. Some, as the stag-beetle, and the capricorn beetle, lodge in rotten wood, and under the decayed bark of trees. Others, as the carrion-beetle, are seen in putrid carcasses, on bones that have been gnawed by dogs, on flowers of a fetid smell, and on fungous stinking substances. The weevil, the seed-beetle, and others, in the early part of the day frequent the bottoms of perpendicular rocks and sand-banks, the flowers of trees, and herbaceous plants. Many kinds, as the whirl-beetle and the water-beetle, may be caught in rivers, lakes, and standing pools, by means of a small thread-net fixed to a long pole. About noon, when the sun shines in his full splendour, some kinds, as the lady-fly, the burn-cow, the golden honey-beetle, the soft-winged beetle, the spring-beetle, and the clipt-winged beetle, may be seen on plants and flowers, blighted trees and shrubs. Others, as the glow-worm, whose pale light adorns the tranquil summer evening, frequent moist meadows, or hedge-banks, and are best discovered by the lustre which they emit. A great number sit close on the leaves of plants; particularly of burdock, coltsfoot; and the like: in such situations the tortoise-beetle is found, while the blister-beetle and others feed on different kinds of tender herbs. The stinking beetle may be found in houses, cellars, pits, and subterranean passages; and numbers on the trunks as well as on the leaves of trees, in timber-yards, and in the holes of decayed wood. Some, as the wood-beetle and the glossy beetle, inhabit wild commons, the margins of pools, marshes, and rivulets; and are likewise seen creeping on flags, reeds, and other aquatic plants. Multitudes, as the ground-beetle, live under stones, moss, and rubbish, and the fragments of wrecks, near the shores of lakes and rivers; they are also found in bogs, marshes, and moist places, in pits, and in holes of the earth; and in the evening they frequent pathways, after a refreshing shower. Some, as the ear-wig, may be discovered in the hollow stems of decayed umbelliferous plants, and on many sorts

of fruits and flowers. In this whole order, perhaps not a single species is of any known utility in medicine or the arts, (though numbers are extremely beautiful and curious,) excepting the flies called cantharides; on the contrary, many of them are injurious to vegetation, or consume the fruits of human industry.

The cantharides, so valuable in medicine, from forming the principal ingredient of the common blistering plaster, differ considerably from each other in size; the largest are about an inch long, and as much in circumference. Some are of a pure azure colour, others of a pure gold, and some a mixture of both; however, they are all very brilliant, and extremely beautiful. They are chiefly natives of Spain, Italy, and Portugal; but in the summer are to be found near Paris, on the leaves of the ash, the poplar, and the rose; as well as among wheat, and in meadows. The country people, it is said, expect them every seven years; when they appear in such swarms in the air, that the atmosphere to some distance is impregnated with their offensive smell, which is a guide to those whose business it is to catch them. When dried, fifty of them will scarcely weigh a single dram.

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## ORDER II. — HEMIPTERA.

THIS order is much smaller than the preceding: its distinguishing character is, that the insects which compose it have four wings, the two superior of which are semi-crustaceous and incumbent, that is, the interior edges lie one above the other.

Some of these insects, as the cock-roach, are found about bakehouses; others, as the camel-cricket and the locust, feed on grass, and every species of vegetable; while the boat-fly, the water-scorpion, and many others, frequent lakes, rivers, and standing pools.

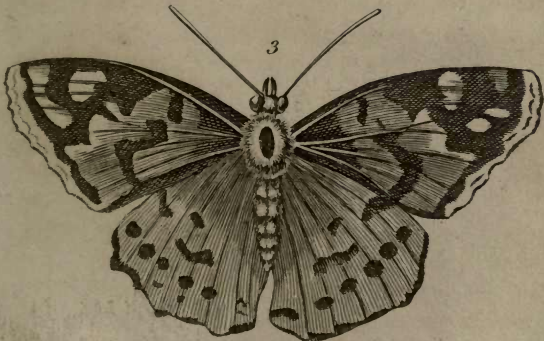
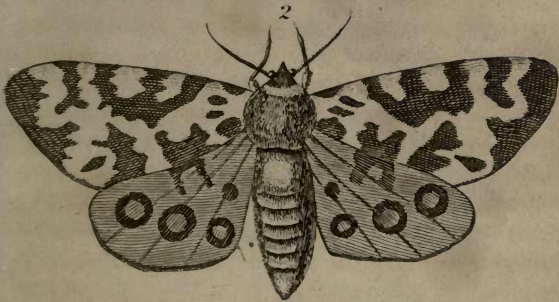


Fig. 1. *Deiphobus* Butterfly.  
Fig. 2. Large Flyer Moth.  
Fig. 3. *Pinnax* Lachy Butterfly.

Cooper sculp.

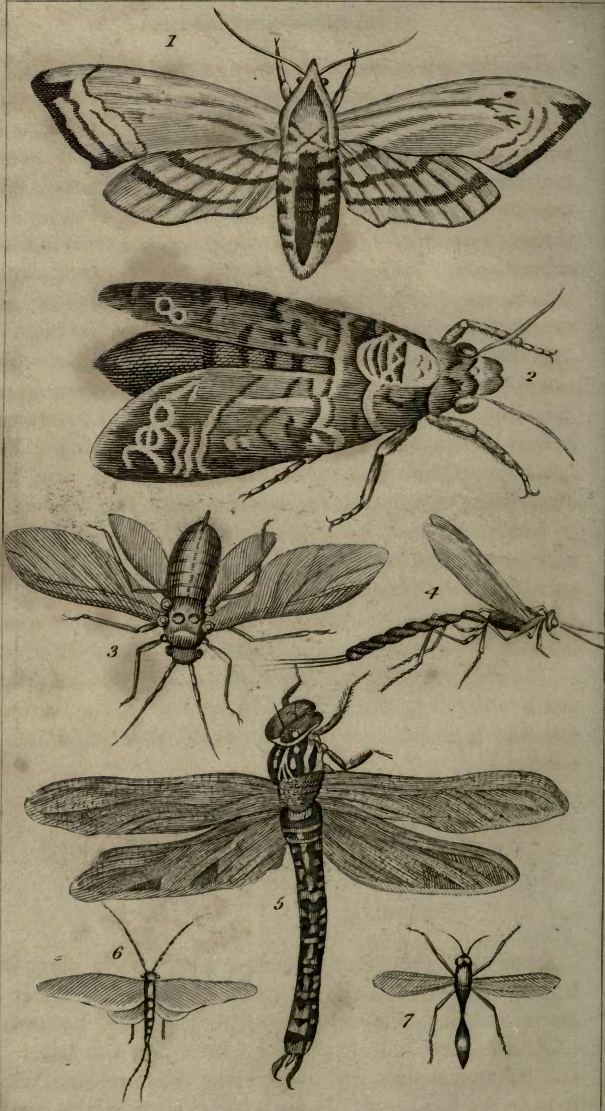


Fig. 1. Privet Moth.  
 Fig. 2. Sphinx.  
 Fig. 3. Bee.

Fig. 4. Ichneumon.  
 Fig. 5. Dragon Fly.  
 Fig. 6. Day Fly.

Fig. 7. Savage.

Copper sculp.

The hemiptera comprise some of the most noxious as well as the most valuable kinds of insects. The devastations occasioned by locusts, are too well known to be enlarged on here. The most luxuriant face of nature they turn into a desolate wilderness. When these insects take the field, they appear to be under the conduct of a leader; whose flight they observe, and direct their motions accordingly. At a distance they resemble a black cloud; which, as it approaches, gathers on the horizon, and threatens to obscure the light of the sun. It often happens that the husbandman perceives this impending storm pass away; and the whole swarm proceed on their course to devour the labours of some devoted country. Unfortunate indeed is that district where these multitudes alight! In a few minutes they desolate the promise of the year, and often bring on all the horrors of famine. The inhabitants of some countries, however, convert this plague into a real benefit: for, in many kingdoms of the East, and in some parts of Africa, locusts are pursued as an article of wholesome and not disagreeable food, when properly dressed.

The *coccus* genus also furnishes some estimable drugs, and auxiliaries to the arts. The cochineal, the kermes, and the gum-lac, are all produced from its different species.

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### ORDER III. — LEPIDOPTERA.

INSECTS of this order have four wings, all of them imbricated with scales. It comprises the beautiful tribes of moths and butterflies: the former distinguished by having filiform feelers, and flying chiefly by night; the latter by the clavated feelers, and by pursuing the business of their lives in the day time. These insects, so attractive by the elegance of their forms, and the vivid lustre and variety of

their colouring, enliven the face of nature, and augment the fascinations of the finest season in the year: various large and costly volumes have been devoted to this subject alone, to which the curious must be referred for enumeration; for a particular description would be almost an endless task. It should be remarked, however, that the silkworm is a species of moth which, by its intrinsic value, abundantly compensates the sterile beauty of the rest of the family.

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#### ORDER IV.—NEUROPTERA.

THE neuroptera have four wings, interwoven with veins like a piece of net-work, and have no sting. The order includes seven genera; some of which, as the pearl-fly and the camel-fly, are found in woods, hedges, meadows, and sand-banks, as well as on walls, fruits, and umbelliferous flowers. Others, as the beautiful dragon-fly, the spring-fly, and the ephemeron or May-fly, frequent lakes and rivers.

The last of these, though so minute, is one of the most interesting objects in natural history. In its latest or winged state, the ephemeron very much resembles the butterfly kind, excepting that its wings are not imbricated. As there are but few species of this genus natives of England, the entomologist can only be gratified by a contemplation of their appearance and transient existence, on the banks of the Seine, the Rhine, and other continental rivers, in temperate latitudes. For about three days towards evening, in the middle of summer, their numbers and rapid motions in such situations are perfectly astonishing. Millions of aureliæ, ascending to the top of the water, instantly become inhabitants of the air, and fill all the vicinity with their flutterings. But their sport is speedily terminated; for the whole swarm, in about five



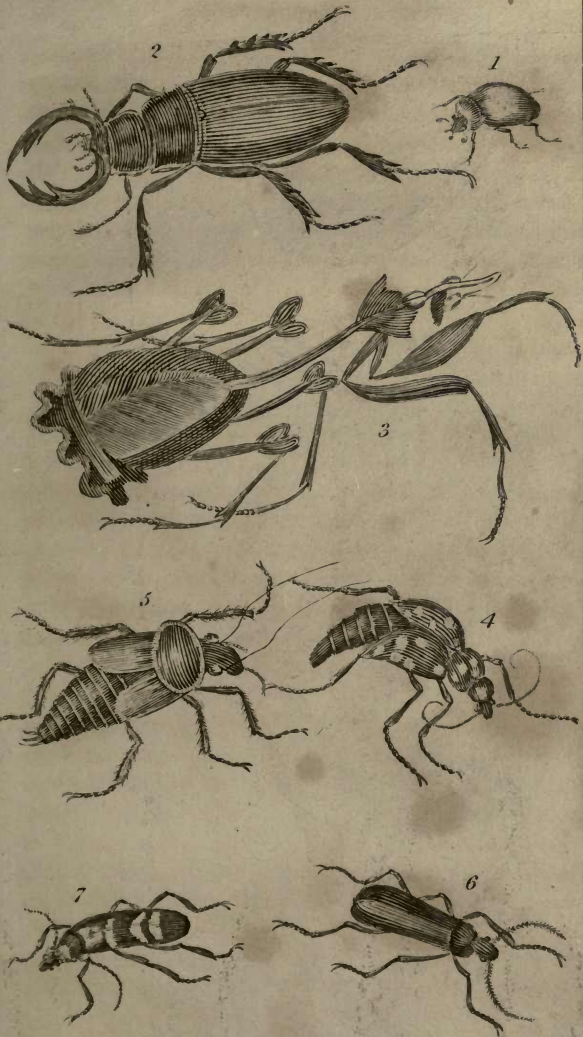


Fig. 1. Cochineal.

Fig. 2. Stag Beetle.

Fig. 3. Mantle or Soothsayer.

Fig. 4. Blossom-Eater.

Fig. 5. Blatta.

Fig. 6. Cantharis.

Fig. 7. Wood-Beetle.

Cooper sculp.

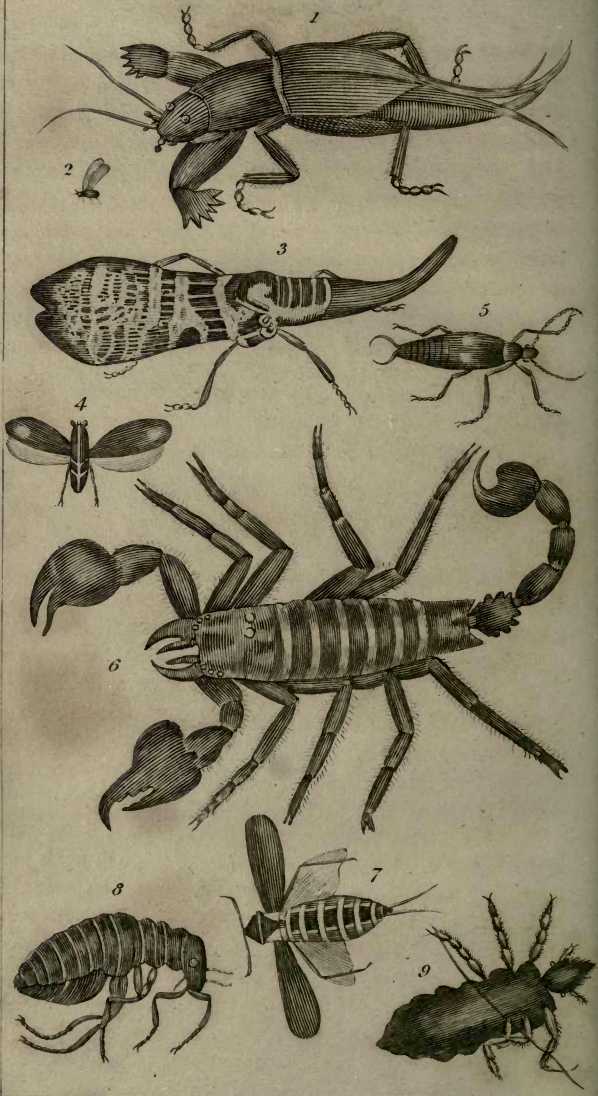


Fig. 1. Locust.

Fig. 2. Plant Louse.

Fig. 3. Lanthorn Fly.

Fig. 4. Flea Locust.

Fig. 5. Earwig

Fig. 6. Water Scorpion.

Fig. 7. Scorpion

Fig. 8. Magnified Flea.

Cooper sculp.

hours at most, yield up their existence, and strew the ground on each side of their parent stream. Yet, limited as their duration is, they perform every office of nature, propagate their kind, enjoy their pastime and their food, and seem to live in as much felicity as the contracted period of a few hours will admit.

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### ORDER V.—HYMENOPTERA.

NEUROPTEROUS and hymenopterous insects agree in their characteristics, excepting that the latter are armed with a sting. This distinctive mark, however, is confined to the females and neuters; for the males want it. This order includes bees, wasps, ants, and similar insects, whose history is highly interesting, in whatever view it can be placed. On the subject of bees alone, as many volumes have been written, from ancient times to the present, as would fill a library; yet, after all, we are but imperfectly acquainted with some parts of their economy. Reaumur, indeed, who spent a great part of his life in the study of these wonderful animals, is sufficiently minute; but, seduced by an unbounded enthusiasm for the subject of his researches, he has ascribed the most extravagant qualities and habitudes to this really curious race.

It is certain, however, that every hive is composed of three sorts of bees; the labouring, which are most numerous, and neither male nor female; the drones, which are larger, and idle, merely serving as males to propagate the species; and the queen-bees, which are supposed to lay all the eggs from which the whole swarm is hatched. The last are much larger than either of the former, and are very few in number, though it does not appear (as was once supposed) that each hive contains only one.

The manner in which bees extract honey from flowers, the instruments with which nature has furnished them for

this purpose, the construction of their combs, their social habits, and the laws under which they live and act, all claim our curiosity and admiration ; and the naturalist will find his labour abundantly compensated in studying this branch of entomology with diligence and attention. It is a serious misfortune, and a loss to individuals and the public, that bees are not more generally reared in this country ; and it is afflicting for humanity to reflect, that no generally practicable expedient has been hitherto contrived, by which we may participate in the sweets of this industrious tribe, without making them victims to our cupidity.

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#### ORDER VI. — DIPTERA.

THE diptera have two wings ; and two clavated halteres, or balances, behind each. The order contains an infinite variety of such winged insects as most frequently present themselves to our view, and either annoy by their punctures, or molest by their intrusions. Some of them, as the gad-fly, the house-fly, and the whame, flutter about horses, cows, sheep, the tops of trees, eminences, around ditches, dung-hills, and every offensive object ; others, as the wasp-fly, are mostly found on flowers of different sorts, particularly those of a fetid smell.

The troublesome gnat, included in this order, is well known in this country ; but the inconveniences arising from it are trivial, when compared with those of the mosquito-fly, one of this kind. In the less populous and uncultivated regions of America, where the climate is warm and the waters occasionally stagnate, mosquitoes are an incessant annoyance to every thing that breathes. There the whole atmosphere appears loaded with them on the decline of the sun, and neither force nor evasion can shield the wretched sufferers from their attacks. Some of the species

measure several inches in length, while others are imperceptible by the naked eye. All, however, possess the art of inflicting pungent pain; and, where they swarm, it is almost impossible to enjoy quiet by day or rest by night.

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### ORDER VII. — APTERA.

THE characteristic of animals in this order is, that they are destitute of wings. It comprehends fifteen genera; in which are included the spider, the acarus, the flea, the louse, the termes or white ant, the scorpion, the crab, and the lobster.

No general description can embrace subjects so various, and creatures in reality so dissimilar in their nature, though accidentally agreeing in the single circumstance of having no wings. This article shall therefore be dismissed with a few explanatory remarks on that curious subject, the metamorphosis and generation of insects.

Except the aptera order, all insects are constantly and successively undergoing some transformation. From the egg they become a caterpillar or maggot, then a chrysalis, and lastly a perfect fly. During each of these changes, their appearance differs as much, as if they were distinct productions of nature. Before the insect undergoes the third and last change, it has arrived at its full growth; when it waits only for the expansion of its wings. Such is the disposition to change in this class of animals, that even the crustaceous insects, such as crabs and lobsters, belonging, and bearing a distant analogy, to the order of aptera, annually cast their shells, as their growth would otherwise be impeded.

Among insects in general, the same difference of sex exists as in large animals; and some of them, when they become perfect, seem to be produced for no other purpose than to propagate their kind. Thus the silk-worm, when

it has arrived at its moth state, ceases to feed, and can scarcely fly: it endeavours only to perpetuate its race; after which the male immediately dies, and is followed by the female as soon as she has deposited her eggs. In some kinds of insects, however, as bees, a third sex exists, called neuters. These, of course, are unprolific, and seem destined to be drudges to that part of the family, whose business it is to attend to the propagation of the species.

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### CLASS VI. — VERMES, or WORMS.

WE have now arrived at the lowest class of animated nature, and perceive the *last link* in the GRAND CHAIN. To determine precisely where animal life terminates and vegetable commences, as was observed at the outset of this work, is confessedly difficult; perhaps it is not necessary for the advancement of science. It is enough, if the various productions of nature are distinctly noticed, and described with tolerable exactness. It may indeed amuse the speculative to enquire in what respect a zoophite resembles an animal, and what relation it bears to a plant; but, with regard to the enlargement of the mind, or the valuable purposes of life (the great ends to which all our studies should be directed), this investigation appears to be of little importance.

Worms are distinguished by having only one ventricle to the heart, no auricle, and a cold colourless sanies, instead of blood. They are particularly discriminated from insects by having tentacles, whereas the latter have antennæ. They are likewise still more imperfect than that class: they are mostly destitute of heads, of eyes, and other organs of sense; if cut, they are capable of reproduction; and the locomotive power in a great number of them is very limited indeed.

Worms include five orders, viz.

1. **INTESTINA** ; or animals perfectly naked, and without any kind of limbs.

2. **MOLLUSCÆ** ; simple and naked animals ; but brachiated, or furnished with a species of limbs.

3. **TESTACEA** ; animals having soft simple bodies, but covered with a coat of a calcareous nature.

4. **LYTHOPHITA** and **ZOOPHITA** ; animals furnished with a kind of flowers, and having a vegetating root and stem.

5. **INFUSORIA** ; very small simple microscopic animals.\*

This class, like the preceding, must be here confined to a brief survey. It is the professed object of this work to conduct the student only to the threshold of the spacious temple of animated nature : rather to stimulate research by a short comprehensive view of well-known facts, than to explore minutely the vast field of animation.

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### ORDER I.—INTESTINA.

THE characteristics of this order are, that the animals are perfectly naked, and without any kind of limbs. There are twenty-one genera ; in which the most remarkable species are the various intestinal worms of men and other animals, the earth-worm, and the leech. A description of the common earth-worm may suffice to give a general idea of the whole.

This creature has a spiral muscle running round the whole body, from the head to the tail, by means of which it performs its progressive motion : alternately contracting and dilating itself ; and easily keeping the ground which it has gained, by means of the slime appertaining to the fore-part of its body.

Being formed for a life of obscurity, the worm is wisely

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\* These definitions should be committed to memory.

adapted to its situation. It is armed with sharp spines, or prickles, which it occasionally erects or depresses; and under the skin is a slimy juice, which it ejects through certain perforations between the rings of the muscles, as occasion requires. It has also breath-apertures along the back, and is furnished with a mouth and an alimentary canal. The latter is always found full of a very fine earth.

Worms unite both sexes in themselves, at once impregnating and being impregnated in their turn. Their eggs are laid in the earth, and become hatched, in twelve or fourteen days, by the genial warmth of their situation.

During the winter, these animals bury themselves deeper in the earth, and appear in some measure to partake the torpidity of the insect tribe; but in spring they revive, and pursue the universal purpose of propagating their kind.

As a proof of the simple organization of worms, and their degradation in the scale of being, they are also capable of being multiplied by cuttings. Each section gradually acquires what was wanting to complete its form; and, in a few months, the minute parts of the original creature attain their natural size and proportion. Thus one of the most seemingly abject of lives is the most difficult to destroy; and, in proportion to the dangers to which the tribe is exposed, Providence seems to have allotted it qualities requisite for its preservation,

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## ORDER II. — MOLLUSCÆ.

ANIMALS of this order are simple and naked; but they are brachiated, or furnished with a species of limbs. There are thirty-one genera, and a great number of species; some of which, as the medusa, the echinus, and the limax, are objects of particular curiosity to the proficient in natural science. By far the greater part of molluscæ are natives of the sea or its shores. In this treatise only a few can be particularised.



To begin with the medusa. The body of this animal is of an orbiculated convex figure, of a gelatinous substance, and destitute of hair; and the mouth is below and central. The medusæ are sometimes seen swimming in clusters on the surface of the sea, and are said to constitute the principal nourishment of the whale. Of the various species of this genus, the most remarkable is that which was first noticed by Sir Joseph Banks, in his passage from Madeira to Brazil: when drawn up by means of the casting-net, it had the appearance of metal violently heated, and emitted a white light. With these animals were taken three small crabs of different species, entirely new; each of which yielded as much light as the glow-worm, though the creature was not above one-tenth of the size. These luminous animals give that appearance to the sea which has been observed by many navigators, and for which different reasons have been assigned by different writers. The flashes of light from them exactly resemble those of lightning; and are so frequent, that several are visible in the same instant.

The echinus, or sea-urchin, has its body covered with a sutured crust, often furnished with moveable spines which assist its motion; and its mouth, which is placed beneath, has five valves. The covering, which resembles a scooped apple, is filled with a soft muscular substance, through which the intestines wind from bottom to top. Some species of the echinus are reckoned equal to lobsters, in point of delicate and wholesome eating,—and their eggs, which are of a deep red colour, are highly valued by epicures. The shell, or rather crust, is frequently preserved as an object of curiosity. These animals are generally found in a fossil state.

The asterias, or sea-star, forms a numerous tribe of marine creatures that are found to vary in their appearance at different periods: the same animal which at one time appears round like a ball, very often, in a short time, becomes as flat and thin as a plate. The body of the asterias is composed of a semi-transparent gelatinous substance, covered with a thin membrane. To an inattentive ob-

server, it appears like a lump of inanimate jelly, floating at random on the surface of the sea, as if casually thrown ashore at the departure of the tide : but on a more minute inspection, the creature is seen shooting out its arms in every direction, in order to seize worms, small shells, or the spawn of fish, which it devours with great avidity.

In summer, when the water of the sea is warmed by the heat of the sun, the asteriæ float on the surface, and in the night emit a kind of luminous effluvia resembling phosphorus.

These animals have obtained from some naturalists the appellation of sea-nettles, because they irritate the hands of those who touch them. They are often found affixed to rocks and to the largest sea-shells, as if they derived their nourishment from that source. If injected into spirits of wine, they will continue entire for many years ; but, on being exposed to the air, they melt down, in a few hours, into a limpid offensive liquid. There are a variety of species, of different colours. Many of them are natives of our own coasts.

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### ORDER III. — TESTACEA.

ANIMALS of this order have soft simple bodies, but are covered with a coat of a calcareous nature. It includes the whole tribe of shells, or testaceous animals properly so called \*, consisting of thirty-six genera, and nearly a thousand species. The names of the genera of this beautiful family are, CHITON, LEPAS, PHOLAS, MYA, SOLEN, TELLINA, CARDIUM, MACTRA, DONAX, VENUS, SPONDYLUS, CHAMA, ARCA, OSTREA, ANOMIA, MYTILUS, PINNA, ARGONAUTA, NAUTILUS, CONUS, CYPRÆA, BULLA, VOLUTA, BUCCINUM,

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\* Crustaceous animals, as crabs and lobsters, belong to the class of insects, and order of aptera, as mentioned in page 313.

STROMBUS, MUREX, TROCHUS, TURBO, HELIX, NERITA, HALIOTIS, PATELLA, DENTALIUM, SERPULA, TEREDO, and SABELLA.

In order to assist the young reader to acquire some insight into the formation of shells, a few observations shall be here added on the garden-snail; with whose figure every one is acquainted, and whose history has been very minutely investigated. As nature acts in an uniform manner, with regard to this animal and all other testacea, whether they belong to the sea, to the land, or to rivers, the history of one will, of course, be the history of all the rest.

At the instant when the young snail quits the egg, its shell is seen on its back: at first this is not much larger than the head of a pin, with two circumvolutions;—but it enlarges very rapidly. In proportion as the animal grows, the spiral turns increase, till they reach the number of five, at which they remain fixed.

From the mouth the snail augments its shell, accordingly as it finds itself strained for room beneath; and, when about to extend its covering, it may be seen biting and clearing away the scaly skin that adheres to the edges with its little teeth, after which it adds another rim to its abode.

The art of manufacturing shells is natural to the snail, as well as to other testaceous animals. For this purpose its whole body is furnished with glands, from the orifices of which exudes a kind of slimy fluid, which unites in one common crust or surface, and, in time, acquires a stony hardness. That glistening substance, in fact, which the snail so frequently leaves behind it, is, in reality, the matter with which the animal either augments its shell, or repairs its defects. Thus every shell may be considered as a composition of layers of slime, originally proceeding from the creature's body, and moulded conformably to its shape and various exigencies.

But, though the actual formation of shells may be thus accounted for, they, probably, receive their beautiful tints

from some extraneous causes. — It is well known that all the internal parts of shells are of an uniform white colour ; and that the outermost layer alone is so beautifully varied, and so richly tintured with vivid colours. Hence it appears that there must be an accretion of earthy or saline matter arising from food or situation, exclusive of the slimy fluid derived from the animal's own body, in order to produce those pleasing tints which we witness in cabinets of shells collected by the curious.

In those repositories, which are sometimes formed at an astonishing expense, are found shells possessing every shade of colouring but blue ; the reason of which exception is, the sea-water immediately annihilates that colour, while it suffers others to exist. Put a piece of blue silk, or a feather of this colour, into an infusion of salt, urine, or nitre, and its tint will soon be extinguished. This may throw some light on the operations of nature in regard to shells. Neither the animal-slime alone, nor the external earthy, nor saline particles individually, could produce colours, but both united may yield an effect which neither singly possessed. Hence it may be inferred, that the animal alone does not tincture its shell, but that external causes co-operate in adding to its beauty.

But, though the shell with its beautiful tints is not produced by the sole agency of the animal, the fact is otherwise with regard to its convolutions, its prominences, and its general forms. These entirely depend on the art of the animal ; or rather on the instincts, which in the same species are ever invariable. The shell, indeed, always bears some rude resemblance to the body on which it has been moulded : wherever there is an excrescence on the body, there is a prominence on the shell ; and a depression is always accompanied with a correspondent hollow. If the body is channelled, the shell that covers it will be channelled likewise ; if annulated, the shell will wind about it in the same spiral manner.

Thus shells are as various in their figures as the animals which they inclose. Indeed, the diversity of shells is so

great, and the figures and colours appear so very curious, that some virtuosi have made the arrangement of them the study and the business of their lives. Nor should this singular task be too severely blamed. The mind that can find innocent entertainment in those humble contemplations is at least not ill employed. “What can be more gratifying,” says Pliny, “than to view nature in all her irregularities, and sporting in all her varieties of shells? Such a difference of colour do they exhibit, such a distinction of figure; flat, concave, long, lunated, circular, or the orbit divided; some prominent on the backs, some wrinkled, toothed, streaked, the point variously intorted, the mouth pointed like a dagger, folded back, or bent inwards: All these variations, and many more which might be enumerated, at once administer to novelty, to elegance, and to contemplation.”

Whatever subdivisions, and generic as well as specific characters, have been adopted by different conchologists, all appear to admit the three grand distinctions of shells; the UNIVALVE, the BIVALVE, and the MULTIVALVE. This arrangement, which is at once obvious and simple, must be made the basis of every system.

It is almost unnecessary to mention, that most of the shells discovered of late years have been also found in a fossil state; and some moreover in the latter form, whose existing animal has not yet been recognized.

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#### ORDER IV.—ZOOPHITA.

THIS order consists of compound animals, furnished with a kind of flowers, and having a vegetating root and stem. Under this head fifteen genera are arranged, namely, TUBIPORA, MADREPORA, MILLEPORA, CELLEPORA, ISIS, ANTIPATHES, GORGONIA, ALCYONIUM, SPONGIA, FLUSTRA,

TUBULARIA, CORALLINA, SERTULARIA, PENNATULA, and HYDRA.

Zoophytes are so contracted in their powers, and so defective in their formation, that some naturalists have confessed themselves at a loss whether to consider them as a superior rank of vegetables, or as the humblest order of animated nature. Indeed, in some of them, the marks of the animal are so few, that it is difficult to fix with precision their place in nature ; or to tell whether it be an animal or a plant that is the object of our consideration. However, zoophytes enjoy one faculty of which vegetables are wholly deficient ; which is, either the actual ability or the awkward attempt of self-preservation, by receding from external contact. Though some plants may seem to possess this important quality, it seems at best in them but a mechanical impulse ; they are neither capable of searching for food in the manner of animals, nor of warding off the slightest danger which menaces them.

The hydra, or fresh-water polypus, may serve to furnish an example of zoophytes. At first it was conceived to be a mere plant ; but was soon discovered to be a sensitive ambulant, and yet to be capable of propagation by slips and cuttings. There are various species of this genus ; found in different situations, in ditches of stagnant water, and among duck-weed : but they all possess the property of re-production, in whatever form they are divided. If cut into three parts, the middle puts out a head from one end and a tail from the other ; and it becomes three distinct animals, all living like their original, and performing the various offices of their species.

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## ORDER V.—INFUSORIA.

INFUSORIA, or animalcules, consist of very small simple animals, forming the subsequent fifteen genera ; BRACHIONUS, VORTICELLA, TRICHODA, CERCARIA, LEUCOPERA,

GONIUM, COLPODA, PARAMECIUM, CYCLIDIUM, EUSARIA, VIBRIO, ENCHELIS, BACILLARIA, VOLVOX, and MONAS. Most of these are microscopic, and consequently our knowledge of their habits is but very imperfect. There can, however, be no doubt that there are gradations of existence below the smallest animalcules which the best microscopes have brought to light; and, though we have already been able to discover myriads of different creatures in the least drop of water, yet it seems a rational presumption, and not unworthy of the CREATOR OF ALL, to infer that HE who has filled the immensity of space with habitable matter, with suns, and worlds, has also peopled every particle of that matter with some appropriate inhabitant, though too minute to be perceived by any apparatus that has yet been invented by man.

Full Nature swarms with life; one wond'rous mass  
 Of animals, or atoms organized,  
 Waiting the vital breath, when parent Heaven  
 Shall bid his spirit blow. The hoary fen  
 In putrid steams emits the living cloud  
 Of pestilence. Through subterranean cells,  
 Where searching sun-beams scarce can find a way,  
 Earth animated heaves. The flowery leaf  
 Wants not its soft inhabitants. Secure  
 Within its winding citadel, the stone  
 Holds multitudes. But chief the forest boughs,  
 That dance unnumber'd to the playful breeze,  
 The downy orchard, and the melting pulp  
 Of mellow fruit, the nameless nations feed  
 Of evanescent insects. Where the pool  
 Stands mantled o'er with green, invisible  
 Amid the floating verdure, millions stray.  
 Each liquid too, whether it pierces, soothes,  
 Inflames, refreshes, or exalts the taste,  
 With various forms abounds. Nor is the stream  
 Of purest crystal, nor the lucid air  
 (Though one transparent vacancy it seems,  
 Void of their unseen people. These, conceal'd  
 By the kind art of forming Heaven, escape  
 The grosser eye of man.

\* \* \* \* \*

Let no presuming impious railer tax  
 Creative Wisdom; as if aught were form'd  
 In vain, or not for admirable ends.  
 Shall little haughty Ignorance pronounce  
 His works unwise, of which the smallest part  
 Exceeds the narrow vision of her mind?  
 As if, upon a full-proportion'd dome,  
 On swelling columns heav'd, the pride of art!  
 A critic fly, whose feeble ray scarce spreads  
 An inch around, with blind presumption bold,  
 Should dare to tax the structure of the whole.  
 And lives the man whose universal eye  
 Has swept at once th' unbounded scheme of things;  
 Mark'd their dependence so, and firm accord,  
 As with unflinching accent to conclude  
 That this availeth nought? Has any seen  
 The mighty chain of beings, lessening down  
 From infinite perfection to the brink  
 Of dreary nothing; desolate abyss,  
 From which astonish'd thought recoiling turns?  
 Till then alone let zealous praise ascend,  
 And hymns of holy wonder, to that Power  
 Whose wisdom shines as lovely on our minds,  
 As on our smiling eyes His servant-sun.

THOMSON.

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## CONCLUSION

### THE PRINCIPAL END OF NATURAL HISTORY.

WHILE the inferior orders of Animals are solely intent on the gratification of the senses, or are conducted to the performance of certain duties by blind instinct, unconscious of the wonders that surround them, it is the glory and prerogative of Man to be gifted with ability to extend his views beyond his own insulated existence, to examine the relations and dependencies of things, and to contemplate the vast universe of being. But noble and expansive as his powers become with adequate cultivation, he too frequently neglects the improvement of their energies, casts



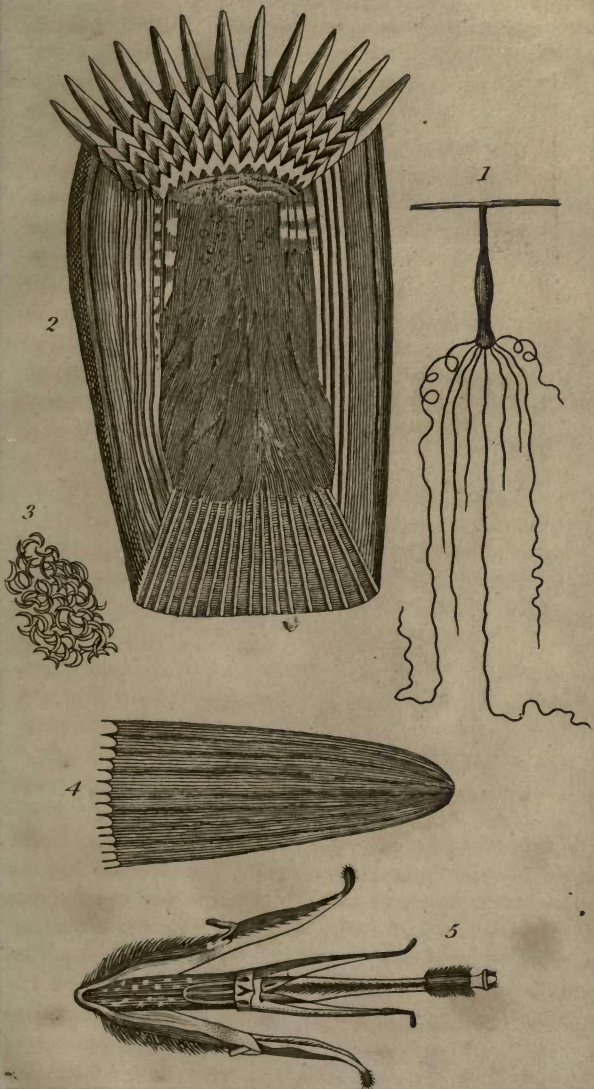


Fig. 1. The long Armed Polype. Fig. 3. Volvox Luvula.  
 Fig. 2. Scale of a Soal fish. Fig. 4. A particle of the dust of a Butterfly Wing  
 Fig. 5. The Trunk of a Bee.

Cooper sculp.

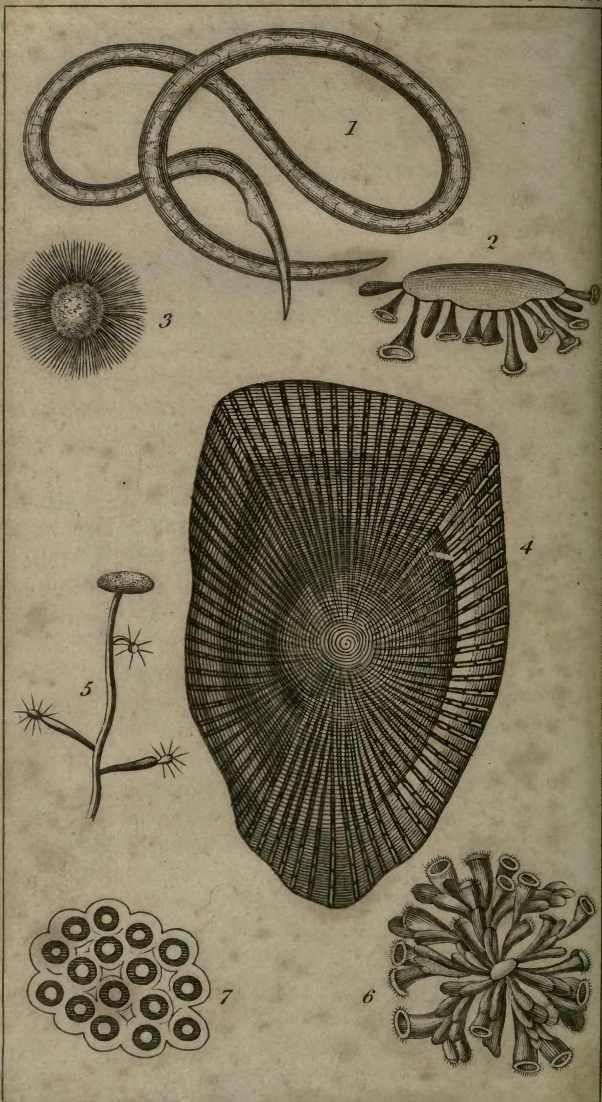


Fig. 1. The Eeel found in Vinegar.

Fig. 2. The Flauel Polype.

Fig. 3. Trichoda Sol.

Fig. 4. The Scale of a Haddock.

Fig. 5. The Green Polype.

Fig. 6. The Social Polype.

Fig. 7. Conium Pectorale.

Cooper sculp.

the vacant eye of ignorant admiration on what he was born to investigate and understand ; or at best satisfies himself with acquiring a very limited store of knowledge, in proportion to his capacity.

Placed in an amphitheatre of boundless space, he suffers himself to be confounded and lost, in the magnificence and multiplicity of the objects that solicit his attention. His eager mind aspires to comprehend the whole at once ; and, when it finds that attempt impracticable, it sinks into apathy and indifference ; and thus intercepts the source of the most sublime enjoyments, — the patient investigation of truth in the retreats of nature. How can we otherwise account for the slight acquaintance that mankind in general contract with the works of creation ? It is not that the study is deficient either in pleasure or in profit ; nor that this science is, in itself, unattainable by ordinary capacities : but the origin of this neglect resides in indolence, which shrinks from mental exertion ; in an impatience, resulting from an inability to grasp in a short period of time what would afford subjects of the most rational entertainment to an active and inquiring mind, through the longest duration of our existence.

To point out errors and defects, however, without proposing the means of their rectification and redress, is a useless, invidious, and perhaps ungenerous occupation.

As the highest powers of man are limited, it is prudent to moderate our attempts. The most stately palace is raised by the progressive accumulation of single stones ; the noblest monuments of art are but the gradual effect of reiterated touches. A young student in Natural History, therefore, should begin with parts, and progressively increase his stores of knowledge. Animated existence is that branch of it which possesses charms the most numerous and the most diversified, and is fraught with the most important consequences to man ; but even this division of nature cannot be comprised by a glance. It is advisable, for this reason, to begin with examining the nature and qualities of such QUADRUPEDS as are most familiar to our

observation. Even in the dog and horse, how many properties reside which are hourly experienced, but seldom considered with attention! From such objects as are most obvious and inviting, we should gradually ascend, by firm and patient steps, to the knowledge of others.

The larger animals, and such as contribute to our pleasure and utility, will doubtless first engage our attention. After duly examining their nature and instincts, their growth, their maturation, their increase, the care of their young, their selection of food, and the various means with which Providence has endowed them for their preservation, the student should descend to such quadrupeds as are more minute or retired from his notice: and, when he is tolerably well acquainted with those of his own country, should extend his views to the natives of foreign regions. The same mode of proceeding is proper, through every class of animated and also unanimated nature.

The sagacious docility of the elephant, the persevering fortitude of the camel, the generous magnanimity of the lion, and the savage fierceness of the tyger and the hyena, will supply abundant materials for reflection, and incentives to farther and closer investigation. We shall discover how the useful quadrupeds are wisely apportioned to their respective climates, and to the exigencies of men; and how the noxious classes are generally restrained to haunts little frequented by mankind, and how their numbers are limited by a most admired and benevolent economy of nature.

After this acquaintance with the history of quadrupeds, the student should proceed to BIRDS, the most beautiful and most innocent tribes of the creation. To contemplate the lustre of their plumage, and listen to their notes of love; to study their propensities and their pursuits, will prove an exhaustless fund of rational entertainment. The various means by which they are enabled to subsist, either on land or water; the invariable structure of their nests, according to their respective kinds; and the fond affection displayed for their young, will teach lessons of prudent

foresight in our affairs, of attachment to our domestic duties, and of humanity to our kind; will make us consider them, not as intruders on our labours, but as agreeable associates in our enjoyments. To produce contentment with our lot, and to instruct us not to set too high a value on our exterior accomplishments and graces, it may be useful to reflect, that those birds whose beauty of tints excites our admiration are generally destitute of harmonious voices; thus the parrot, the peacock, and the pheasant, disgust by their screams; while the homely lark, the nightingale, and the blackbird, delight by the sweetness of their melody, and captivate unseen.

REPTILES, the next class in animated nature, are far less numerous and less inviting; yet even among them we shall discover much gratification of curiosity. In the formidable alligator, in the poisonous serpent whose fang is death, in the harmless tortoise, and the vivacious frog, very contradictory qualities, some disgusting and some terrifying, will be discovered; but a perfect adaption to their respective situations in the scale of creation will be clearly discernible in all.

Should it be asked, why so many animals in this class are noxious to man, without any sensible benefit; and why so many are found in other classes apparently useless; it will be a sufficient answer to say, that whatever is made is the work of INFINITE WISDOM, and therefore *must be* destined to some good end. The stupendous economy of the Deity is uniform throughout the globe; and, if Providence does not always calculate according to our narrow apprehensions, it is our duty to acquiesce in its decrees. The Supreme Intellect embraces whole systems at one view; but we can only see parts, and even those imperfectly.

The next class to which the attention of the student should be directed is that of FISHES: a race of animals formed to people another element, and consequently more removed from our sight; yet ichthyology is by no means an unentertaining study. The conformation of fishes, their wonderful adaption to the nature of the place which they

inhabit, their value as an article of our food, their amazing fecundity, their powers and faculties, though inferior to those of beasts and birds, challenge our admiration, and are calculated to animate our researches.

The gregarious and migratory kinds, such as the herring, the pilchard, and many others, furnish a wonderful proof of instinct, implanted and directed by Infinite Wisdom : while the more stationary tribes show how well the climate which they prefer is suited to their wants and modes of life.

The science of entomology, or that which relates to INSECTS, is so extensive as almost to baffle the most inquisitive investigator. Every plant, every leaf, is the receptacle or the food of one or more species, some of which are imperceptible to the naked eye. The study, however, is replete with rational entertainment. All insects are propagated from eggs, which by a wonderful law of nature undergo several changes, before the animal arrives at its perfect state. The caterpillar, the aurelia, and the butterfly, so distinguishable from each other, are but the same animal in different characters of existence. Even the minutest insect is formed with as much skill as the most stately quadruped ; and is equally qualified to enjoy life, and to transmit that life to its posterity. A general knowledge, however, of this class may be sufficient for the naturalist : and, when we arrive at the last of the species, or that of WORMS, our difficulties undoubtedly increase ; and some limits should be set to our inquiries, unless we have leisure to devote ourselves wholly to the enchanting study of the works of NATURE. But even the most incurious cannot overlook the tribe of shells, whose beauty and mechanism baffle all description. In them life seems to be scarcely active, and to many the locomotive power is denied : but still we shall discover wonders in the economy of the most humble existence ; and even the zoophite, which connects the animal with the vegetable kingdom, even the animalcule that floats in the liquor which we drink, or lodges in our food, has, beyond all controversy, its sphere of duties to fill, and its share of blessings to enjoy.

We have now arrived at the last stage of animation : and the student who designs to pursue the knowledge of nature to its whole extent will next have to direct his attention to **VEGETABLES**, from vegetables to **MINERALS**, and from the face or the produce of the earth to **CELESTIAL ORBS** that roll in the abyss of space ; the planets in their regular courses, the comets in their eccentric orbits, and the myriads of stars that adorn the vaults of heaven with their bright embroidery. How amazing is the contemplation of the Universe! Wonders crowd on wonders ; and the mind is bewildered in the observation, till it recurs to the Supreme Cause, and reposes from its excursions on the bosom of Omnipotence.

The object indeed of all our physical studies ought to be our moral, as well as intellectual improvement ; by exalting our admiration, and inflaming our love, for the Architect of the Universe, and the Creator of all Beings. To this end alone should our inquiries into nature be made conducive, and to this purpose chiefly and essentially applied. The proud philosopher, who notices effects without a reference to the **FIRST CAUSE**, will soon be perplexed and lost in a labyrinth of his own construction ; but the devout mind, in tracing the visible energies of the Deity, learns to ascend by successive steps to the fountain of illumination, of order, and of truth ; and, by catching an emanation of the Divinity, sees and determines with clearer vision.





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