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The Animal Kingdom

Georges Cuvier (1769–1832), made a peer of France in 1819 in recognition of his work, was perhaps the most important European scientist of his day. His most famous work, Le Règne Animal, was published in French in 1817; Edward Griffith (1790–1858), a solicitor and amateur naturalist, embarked in 1824, with a team of colleagues, on an English version which resulted in this illustrated sixteen-volume edition with additional material, published between 1827 and 1835. Cuvier was the first biologist to compare the anatomy of fossil animals with living species, and he named the now familiar 'mastodon' and 'megatherium'. However, his studies convinced him that the evolutionary theories of Lamarck and St Hilaire were wrong, and his influence on the scientific world was such that the possibility of evolution was widely discounted by many scholars both before and after Darwin. Volume 1 is the first of four books on mammals.

The Animal Kingdom

Volume 1:
The Class Mammalia 1

Georges Cuvier
Edited and translated by
Edward Griffith

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THE

ANIMAL KINGDOM

ARRANGED IN CONFORMITY WITH ITS ORGANIZATION,

BY THE BARON CUVIER,

MEMBER OF THE INSTITUTE OF FRANCE, &c. &c. &c.

WITH

ADDITIONAL DESCRIPTIONS

OF

ALL THE SPECIES HITHERTO NAMED, AND OF MANY NOT BEFORE NOTICED,

BY

EDWARD GRIFFITH, F.L.S, A.S., *&c.*
AND OTHERS.

VOLUME THE FIRST.

LONDON:
PRINTED FOR GEO. B. WHITTAKER,
AVE-MARIA-LANE.

MDCCCXXVII.

THE

CLASS MAMMALIA

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SPECIFIC DESCRIPTIONS

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MAJOR CHARLES HAMILTON SMITH, F.R.S., L.S., &c.
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PREFACE.

IT is scarcely necessary to remind the Public that we possess no complete and compendious work on zoology in our language commensurate, at least, with the modern improvements and discoveries in that science. And that while the naturalists of the continent have been zealously and rapidly enlarging the extent, and determining the limits of the various departments of the animal kingdom, we have evinced but little solicitude to participate in their labours or to emulate their acquirements.

The attempt to supply a work of this description, and to excite, if possible, a little more attention to this very interesting subject, cannot, it is presumed, require apology. With this view it was originally intended that the present book should have been presented to the Public in an original form; but upon consideration that the system almost altogether, as well as much of the materials would be derived from the illustrious naturalist to whom the science of organized nature is so deeply indebted, it was

thought better to translate the whole of his compendium of zoology, the "Regne Animal," and to make such additions to it as might appear requisite to render the present work not merely useful to the naturalist as a book of pure science, but also interesting at large as a general zoological biography, and ornamental as containing original and well-executed illustrations. It was thus proposed to avoid the charge of unacknowledged or repeated plagiarisms on the one side, or of presumptuous temerity on the other.

The propriety of this course will, it is hoped, further appear, when it is considered that the "Regne Animal" of Cuvier itself is little else than a scientific, though partial, catalogue or synopsis of the living tribes, arranged according to the laws of their conformation. It was meant to serve as an introduction to his still more elaborate work on Comparative Anatomy, and intended chiefly for the use of professional students: it is consequently deficient in much popular and entertaining matter relative to the instincts, habits, *&c.*, of animals, and contains only a partial selection of the various species sufficient for the purpose of illustrating the different genera. To supply this deficiency, additional descriptions of all the species will

be here found proportioned in extent to the interest each may offer. Thus while a complete translation is given of the "Regne Animal" with as much closeness and accuracy as the corresponding idioms of the two languages will permit, much that is interesting and important from the pens of other modern naturalists and travellers, and from original sources, will be found subjoined by way of supplement.

It is feared that some repetitions, and perhaps occasional apparent diffusiveness, may have resulted from this plan; they have, however, been avoided as much as possible, and when detected, it is hoped will be deemed venial, if not absolutely necessary.

It may be proper to state here the objects Cuvier had in view in his work on the Animal Kingdom, together with a summary of his labours upon it. This we shall do in his own words.

"I was necessitated," (says the Baron, in the preface to his 'Regne Animal,') "in furtherance of my object, to make anatomy and zoology, dissection and classification, proceed hand in hand together,—in my first remarks on organization, to look for the best general principles of distribution,—to employ those principles in making new observations,

and those new observations in their turn, to carry to perfection the general principles of distribution. In fine, to produce from this action and re-action of the two sciences, such a system of zoology, as might serve for an introduction and a guide in anatomical researches, and such a body of anatomy as might tend to develop and explain the zoological system.

" I by no means, however, intended to carry this twofold labour into all the classes of the animal kingdom; the vertebrated animals naturally claimed a larger portion of my attention in consequence of their superior interest in every point of view. Among the invertebrated tribes, I have occupied myself more especially with the naked mollusca and the larger zoophytes. But the innumerable variations of shells and corals, the microscopic animals, and the other families which play no very apparent part on the theatre of life, or whose organization affords few facilities to the scalpel, did not require to be treated with similar minuteness of detail.

" It formed no part of my design to arrange the animated tribes according to gradations of relative superiority, nor do I conceive such a plan to be practicable. I do not believe that the mammalia and birds placed last, are the most imperfect of their class; still less do I

think that the last of the mammiferous tribes are superior to the foremost of the feathered race, or that the last of the mollusca are more perfect than the first of the anelides or zoophytes. I do not believe this to be, even if we understand this vague term of *perfect*, in the sense of most completely organized. I have only considered my divisions as a scale of resemblance between the individuals classed under them. It is impossible to deny that a kind of step downwards from one species to another, may be occasionally observed. But this is far from being general, and the pretended scale of life, founded on the erroneous application of some partial remarks, to the immensity of organized nature, has proved essentially detrimental to the progress of natural history in modern times.

" In conformity with these views I have established my four divisions of the animal kingdom, which I believe more exactly to express the mutual relations of animal conformation than the old arrangement of vertebrated and invertebrated tribes. For it is obvious that a much greater mutual resemblance exists between the individuals of the former, than of the latter classes.

" In the mammiferous class I have reduced the solipedes to the pachydermata, and have divided

these last into families on a new system. The ruminantia I have placed at the end of the quadrupeds, the sea-cow, among the cetacea. I have varied in some respects, the arrangement of the carnivora. The ouistites I have wholly separated from the simiæ, and I have pointed out an analogy between the pouched animals and other digitated mammalia, entirely according to my own anatomical researches. On the recent and profound labours of my friend and colleague, M. Geoff. St. Hilaire, I have founded my observations on the quadrumana and chiroptera.

" The researches of my brother, M. Frederic Cuvier, on the teeth of the carnivora and others have been of great use to me in arranging the sub-genera. Though the genera of the late M. Illiger are but the results of the same researches and of those of some foreign naturalists, I have generally adopted his names, whenever my sub-genera could be comprehended under his genera; I also eagerly adopted the excellent divisions of M. de Lacepede in this kind; but the characters which I have marked as indicative of all the various degrees, have been all taken from nature, either in the cabinets of anatomy, or the galleries of the Museum.

" I have pursued a similar plan with the birds.

I have examined with the utmost attention more than four thousand individuals of this class in the Museum. For more than five years they have been arranged according to my ideas in the public gallery, and all that I have said relating to them has been drawn from my studies there. Thus any relation between my descriptions and some recent ones from other hands, is purely accidental.

" I trust that naturalists will approve of the numerous sub-genera, which I have thought proper to institute in the birds of prey, passeres and water-fowl. They appeared requisite for the purpose of introducing clearness into the arrangement of these birds, hitherto so complicated. I have also marked as far as possible, the correspondence of these sub-divisions, with the genera of MM. de Lacépède, Meyer, Wolf, Temminke, and Savigny, and referred to each of them all the species of which I possessed authentic information. This labour, fatiguing to myself, will prove useful and agreeable to future investigators of the subject. I have derived considerable pleasure in precisely defining those several species, from many elegant works on ornithology lately published, more especially from those of M. Le Vaillant, and M. de Vieillot.

"The general division of reptiles, by my friend M. Brouguiart, I have thought it right to procure, but I have made very laborious anatomical researches to establish the ulterior subdivisions. On the fishes, it will probably be found that I have done more than in the rest of the vertebrated department. In consequence of the great accessions made to our museum in this way, I have been enabled to add many subdivisions to those of M. de Lacépède: I have also been enabled to authenticate many species noticed by Commerson and other travellers. My division of this class, is perhaps not so convenient for me, but I believe it is more natural than any preceding one, and should another be established more convenient, and equally conformable to organization, I shall be happy to adopt it.

"In the general division of the invertebrated animals, I have pursued the plan formerly indicated in my memoir, in 1795. The classification of the mollusca in particular, on which it is well known, how much labour I have expended, especially on the naked mollusca, depends entirely on my own observations. I have verified every fact furnished by that skilful anatomist, M. Pole, concerning the multivalves and bivalves, and have marked, as I

conceive, with more precision, the functions of certain organs. I have attempted to fix determinately, the animals to which the various configurations of shells belong, and to range the latter accordingly. In the ulterior divisions of shells, whose inhabitants mutually resemble, I have chiefly confined myself to a brief sketch of such as are admitted by MM. Lamarck and Montfort. Those few genera and sub-genera which belong to myself, are the result of observation. In this department, however, I do not profess to have observed a similar degree of critical accuracy, as on the vertebrated animals and the naked mollusca.

"The establishment of the annelides as an order, I believe, I may justly claim for myself, although the invention of the name does not appertain to me. I have extricated them from the state of confusion, in which they had been left by former naturalists among the mollusca, the testacea, and the zoophy es; given them a more natural arrangement, and thrown considerable light on their several genera, by the fixed definitions I have made on the subject in the Dictionary of the natural Sciences and elsewhere.

"The Crustacea, Arachnoides, and Insects belong (with the exception of some anatomical

details,) to M. Latreille, who will himself explain every thing peculiar to his own researches.

" On the zoophytes, the final division of the animal kingdom, I have availed myself of the labours of M. de Lamarck, respecting the echinodermata, and of M. Rudolphi's work on intestinal worms, entitled *Entozoa*. I have, however, carefully anatomized all the genera, and fixed some that were hitherto unsettled. The corals and the infusoria presenting but few facilities for anatomical investigation, I have sketched but briefly."

But to return to the subject of the present undertaking. Criticism, to be indulgent must cease to be just: it is in vain, therefore, to deprecate its censures, or to appeal to the motives which induced the work as an excuse for its malperformance.

Still, however, there are points in a work of this nature, on which persons of sound principles in general, and the guardians of the opening minds of others in particular, may demand early satisfaction, and to which, therefore, we shall advert.

Natural history sometimes involves details which if needlessly dwelt on, might prove offensive to delicacy, such unnecessary dilatations have been scrupulously avoided in the following

pages. Another and a more serious charge has been brought against zoological science as delivered to us by the scavans of Germany and France: it is asserted that it has been made a vehicle for the insidious poison of infidelity. That it has no natural adaptation to such an end is certain, that it has been perverted to such a purpose, is, we fear, too true. Our author at least, in our minds, stands clearly acquitted of such a charge, but as his views of science have been distorted by others to the prejudice of religion, a distortion which has, perhaps, been facilitated by an occasional want of precision in his style, it has been our particular care in every individual instance of such perversion, to show its utter inapplicability to such an end. It is not the heavens alone that "declare the glory of God," nor the firmament only "which sheweth his wondrous works." His omnipotence, his wisdom, and his superintending providence, are equally manifested in the meanest worm that creeps upon the earth, and in the lowest of the radiated tribes that slumber in the coral caves of ocean.

PRELIMINARY SKETCH

OF

THE RISE AND PROGRESS

OF

ZOOLOGY.

That the arrangement of Cuvier, and the modern improvements in Zoology, may be better understood and appreciated, it is proposed to introduce them by a preliminary sketch of the early state and progress of this science, with a very few observations on its importance, utility, and relations, and a brief view of the several systems.

A strict definition of the term Natural History, will be found hereafter, and is, therefore, needless in this place. Zoology is, beyond all doubt, the most extensive, important, and sublime branch of Natural History. It is not confined in its details to a mere dry description of the external forms of animals. It embraces all the phenomena of life and animal motion ;

the internal organization of each individual part; the processes of digestion, assimilation, nutrition, secretion, and reproduction; the wonderful instincts, the varied dispositions, and the different degrees of intellectual superiority in the animal world, from the half vegetable zoophyte through innumerable gradations of being up to man himself, the image of the divinity. Let no one pretend to disparage or undervalue a science like this. In such a case, contempt can only be founded on ignorance. "*Damnant quod non intelligunt.*" Wonderful, indeed, are all the works of that divine artist, whom minuteness cannot perplex, or magnitude encumber; but of them all, the most wonderful beyond all comparison, is an organized body possessed of life, motion, sensation, and thought.

The utility of this science will be further apparent, when we consider its relations with several others. The accomplished Zoologist must be well acquainted with human and comparative anatomy; he must be versed in chemistry and physiology. He cannot avoid an acquaintance with geology, since it will be necessary for him to study the fossil remains of animals, and the wrecks of former creations.

It is entirely owing to the study of such remains, that any rational ideas respecting the theory of the earth have been obtained. They alone have enabled philosophers to determine with anything like certainty, the æras of the formation of the different strata which compose our globe, and the consequent age of the earth itself.

Finally, the Zoologist has need of the knowledge of languages, and will succeed but indifferently in the philosophy of his science, without a competent familiarity with the philosophy of the human mind.

Another, and a striking advantage of this science on the mind of the student, is the habit which it induces, of arranging ideas with method and precision. From a study of the various systems of Naturalists, it must infallibly result, that a principle of order and natural connexion, will be introduced into our thoughts on every other subject. It is impossible that a long and close attention to any one systematic pursuit, will not produce a tendency to a systematic accuracy in every other; and, perhaps, in this point of view, the study of Zoology is inferior to no other, not even Mathematics itself excepted.

The object of Zoology, as a science, is to

arrange all known animals under certain divisions and sub-divisions, according to their degrees of affinity or resemblance. The more that such arrangement approaches to the order observed by nature herself, the better. In other words, the more that systems are constructed on the similarity, not only of external, but of internal conformation the better. Yet, perhaps, too much refinement in this way, is sometimes insisted on. It should never be forgotten, that the only, or at all events, by far the principal use of systems is to assist the memory. They are, after all, in a great measure, the arbitrary creations of man, and their object of facilitating retention will not be gained, if simplicity be much lost sight of. The undue multiplication of divisions, must, therefore, prove of most especial detriment to the progress of science. Much has been said about *natural methods;* but it may be questioned whether an artificial method, constructed on simple principles, and not deviating too widely from the general order observable in nature, be not better adapted to answer the purposes of scientific arrangement, than a more complicated, though, perhaps, a more strictly philosophical system. But when we come to examine the methods of celebrated Naturalists,

we shall speak a little more at large on this subject.

It is singular that Zoology, though so decidedly the most interesting and important branch of Natural History, should so long have remained uncultivated as a science. That the animal world must have very early attracted the attention of mankind, is obvious. The close and important relations subsisting between them and other animals, render this point indubitable. Man cast naked and hungry on the earth, and comparatively weak in physical powers, was forced not only to examine the properties of plants, but likewise to observe narrowly the instincts and habits of the brute creation. By such observations, he was led to recognise those substances which were necessary and salutary to his existence, and to distinguish them from what might prove fatal or pernicious. He was forced to resist the carnivorous tribes, and to elude the attacks of venemous reptiles; to seek his clothing and his food by hunting and by fishing, and to tame and associate with him, such animals as were sufficiently docile and intelligent to assist him in his pursuits.

Such, doubtless, was the origin and foundation of zoological science. That it was culti-

vated to some extent by the sages of India, of Egypt, of Chaldea, and other Eastern nations, is much more than probable. In the climes and ages to which we allude, the priests were the sole depositaries of all knowledge. The first naturalists, and the first physicians, were the interpreters of the Divine will, the prophets to whom futurity was unveiled, and the magicians to whom all nature was obedient. No certain testimony can be collected from those ages of darkness, in which the sciences descended from heaven at the command of priests, and were preserved on earth as their exclusive patrimony. Through the fleeting medium of oral tradition, or the mystic garb of symbolical writing, little may be traced with accuracy respecting the progress of science. In India, Egypt, and the East, it flourished only in the shade of temples, and the secrecy of solitudes. Philosophy formed but a part of theology, and the phenomena of nature proved, but too frequently, powerful engines in the hands of the artful, over the ignorant and the superstitious, and, perhaps, occasionally useful instruments for the maintenance of civil order: such is universally the case in the infancy of society.

We may fairly suppose that the study of animals was not altogether neglected by such

men as the ancient Bramins of India, Zoroaster, Hermes Trismegistus, and other eastern philosophers. We may also well suppose, that Moses, who was learned in all the wisdom of the Egyptians, and Solomon who knew every plant from the cedar to the hyssop, had paid some attention to the phenomena of the animal world. This is very clearly proved from the Levitical law, and the various allusions in the Bible, generally, and particularly in the book of Job to this subject. Among the early Greeks, it is more than probable, that such men as Esculapius, Melampus, Chiron, Orpheus, Aristæus, *&c.*, who studied plants and their properties, did not neglect the habits and instinct of animals. The principal sects or schools of philosophy, which cultivated physical sciences, were the *Italian* founded by Pythagoras; the *Eleatic* by Xenophanes; and the *Ionic* by Thales. Heraclitus also distinguished himself in this walk, as did also Anaximander, Anaximenes, and Anaxagoras, the friend of Pericles; but from the *Academic* or *Platonic* school, though by no means distinguished by its attention to physical science, sprung the first man who furnished the world with anything really valuable or methodical on the subject of which we treat.

This was Aristotle of Stagyra, one of the most extraordinary geniuses that, perhaps, the world ever saw. A man, who, in reference to his times, the then state of knowledge, and the means of its cultivation, may be considered as a prodigy of invention, acuteness, and research. He remoulded, as it were, the entire system of human knowledge; ascended to the primary laws of thought, and gave rules of composition to orators and poets, which must be as lasting as their respective arts. He illustrated all the moral and physical sciences, and founded a new philosophy, which reigned for ages with an ascendency unparalleled in the history of the human mind.

This great man was the first to observe and attempt to explain the organization of animals. His book, Περι Ζωων Ἱστοριας, will always be justly regarded as one of the master-pieces of antiquity. It contains in the clearest style a prodigious number of facts and observations. The organization of animals in its divers parts is compared with that of man. Their generation, their habits, their organs, the mechanism of their functions, their relations, their resemblances, and differences, are discussed with astonishing clearness and sagacity. He may be considered to have established a solid basis

for Natural History; and his principal divisions of the Animal Kingdom are so well founded, that almost all of them are still substantially admitted. Nothing can more clearly prove than this circumstance how deeply he had meditated on the subject. In arranging facts, he goes back to causes; from general principles he deduces a multitude of comparisons pregnant with result, and calculated to exhibit his subject under every point of view. The work, replete with luminous speculations and important truths, bespeaks at once the vigour and extent of a mighty genius, and the acuteness of a correct observer, whose opportunities of research, through the liberality of Alexander, have perhaps been seldom equalled. Not to speak of other branches, Aristotle may be considered as, properly speaking, the first Ichthyologist. He has not only collected all preceding observations on fishes, and added a multitude of his own, but he has arranged those animals, and considered them, in a general view, with a discrimination and exactness not less to be admired than the order of his ideas and the simplicity of his diction. It is true he has confined himself to the grander and more marked external distinctions in his classification of fishes.

But this, as well as other defects and errors, which have crept into his Treatise, may justly be considered as belonging to the age in which he wrote; while its merits, which are infinitely more numerous and prominent, may be attributed to himself alone.

It may not, perhaps, be out of place here, just to observe, that, though the Ancients did not attend so much as we do to detail and method, yet their views of the whole, and of general laws, were probably as correct and as philosophical as ours. Their idea was to neglect minutiæ, and to attach to every object in nature no more than its real share of importance. By the total neglect of this maxim, science has, perhaps, been rather overloaded than enriched: we view nature too much with a microscopic eye to embrace her genuine dimensions.

Zoology, as well as other physical sciences, after the time of this great man, languished among the degenerate Greeks. Arts follow the progress of arms, and philosophy and science passed over to the victorious Romans. Never was a finer field opened for the cultivation of Natural History than Rome presented in her "high and palmy state" under her earlier emperors. To the study of Zoology in parti-