

beings: both earth, air, and sea have been shewn to sustain myriads of sentient, although to the naked eye invisible existences; and every leaf and drop of water nourishes a numerous empire instinct with life and enjoyment.

In order to arrange or classify the multitudes of animated beings already known to naturalists, they are first separated into groups: each group having a number of individuals possessing in their main features a common character. These groups, or kingdoms, are again divided into classes and orders, which likewise are further reduced into genera and species. When we come to treat of the different breeds of the domesticated animals, we shall have reached the lowest division, or varieties; that is animals agreeing in specific character, and differing only in such minor points as observation and experiment have shewn to be produced by climate, food, and general treatment. These are considerations of the first importance to the practical breeder and farmer. Cuvier, the illustrious French anatomist, formed a system of classification several years ago, which has been, with some slight modifications, very generally adopted. The whole animal kingdom is arranged under four grand divisions. (1) *The Radiata*; (2) *The Articulata*; (3) *The Mollusca*; (4) *The Vertebrata*. We will briefly illustrate this arrangement by some familiar examples.

The *Radiata*, or radiated animals, are so denominated from their general appearance; their organs proceeding from a centre like rays of light. They are the lowest in the scale of animal organization, having a nervous system of the most rudimentary kind; in cases where it has been observed, it was found to consist only of a few simple fibres.—Many species of this large group are invisible to the naked eye; but by the aid of the microscope they are found to inhabit the waters in countless myriads. They appear admirably provided with organs adapted to their various modes of existence: and in such whose habits have been observed, the strong prey upon the weak. Some of the species, as the sponge and coral, seem fixed, like a plant, to a particular spot; while others, as the Medusæ, float upon the waters of the ocean, occasionally tinging the colour of its surface over hundreds of miles. The well known star-fish, so frequently seen on the sea coast, after the receding of the tide, affords a familiar example of a higher species of this division of animated nature.

The *Articulata*, or jointed animals, includes many numerous groups of various sizes and appearance, from the hosts of invisible animalcula inhabiting the waters, to the vast tribes of insects with which both earth and air everywhere abound. In this division are also included the *Crustacea*, or such as possess

a horny covering to protect the softer parts of their bodies, held together by joints, so as to allow free motion to the animal. Examples may be seen in the crab and lobster.

The *Mollusca* have soft bodies and the power of secreting a calcareous substance, which by hardening into a shell, forms an admirable protection. Of this endlessly diversified group the oyster and mussel afford familiar instances. While ascending higher in the scale, the eel-like fish may be mentioned, which is endowed with the singular function of emitting a dark thickish fluid for, it would appear, the double purpose of seizing its prey or escaping from its enemy.

We next come to a still higher division of the animal kingdom, the *Vertebrata*, including animals possessing a spine, and a more extensively developed nervous system, by which a more intimate connection is formed with the external world. In the higher forms of life belonging to this division, the nervous system expands into a true brain extending from the head through the vertebræ, which constitute the back-bone. The *Vertebrata* are usually arranged by naturalists under four divisions.—(1) *Pisces*, or fishes; (2) *Reptilia*, or reptiles; (3) *Aves*, or birds; (4) *Mammalia*, or animals which suckle their young. The whole of these animals have an organization admirably adapted to their various wants, and the external condition in which they are placed.

Fishes are cold-blooded animals, whose temperature is varied but little above that of the element in which they live. Their bones are soft and cartilaginous; they possess the singular property of altering their specific gravity by means of an air bladder which they can either contract or expand, and thus are enabled to rise or sink at pleasure. Fish are exceedingly voracious: a constant warfare is going on in the waters, the strong devouring the weak.—This principle of nature, when rightly understood in the spirit of an enlarged philosophy, presents no difficulty in regard to our conception of creative goodness. The whole system of nature is one of mutual dependence and nicely adjusted balancings; the result being upon the whole most obviously favorable to the enjoyment of sentient beings.

The group of *Reptiles* contains creatures of a great diversity of form and modes of life. Some in their first stage living in water, breathe like fish by gills; but on becoming inhabitants of the land, lungs are developed;—while a few retain both, thus becoming adapted to either land or water, and hence designated amphibious. As common examples of the class *Reptilia*, may be mentioned the frog, toad, lizard, crocodile, and all the varieties of the serpent tribe, some of which secrete a virulent poison which