petrifaction must also, in some instances, have commenced almost immediately after the death of the animal. In some specimens of fossil fish from chalk, in the museum of Mr. Mantell of Lewes, the air-bladder is uncompressed, and filled with mineral matter.

In tracing the different animal remains that occur in the lower, the middle, and the upper strata, the circumstance most worthy of notice, is the first appearance of any of the different divisions and classes of animals, and of the orders, genera, or species belonging to each division. In the luminous arrangement of Baron Cuvier, in his *Règne Animal*, all animals are distributed, according to their organization, into four grand divisions—*Vertebrated*, *Molluscous*, *Articulated*, and *Radiated*.

1st, *Vertebrated*.—Animals which have a skull, containing the brain, and a spine or back bone, containing the principal trunk of the nervous system, commonly called the spinal marrow: they have red blood. This division comprises the mammalia (or animals that suckle their young), birds, reptiles, and fishes.

2d, *Molluscous*.—Animals in this division have no internal skeleton: the muscles are attached to the skin, which, in many species, is covered with a shell. The nervous system and viscera are composed of detached masses, united by nervous filaments: they possess only the senses of feeling, taste, and sight; but many species want the latter. They have a complete system of circulation, and particular organs for respiration. Animals with bivalve, univalve, or with chambered shells, belong to this division; but many molluscous animals have no shell.

3d, *Articulated*.—To this division belong worms, crustaceous animals, and insects: their nervous system consists of two long chords, ranging along the body, and swelling out in different parts into ganglions and knots. Worms having their bodies composed of rings, are called annelides; they have red blood: some species inhabit a calcareous tube, supposed to be formed by exudation.

4th, *Radiated*—comprises all the animals which were by former naturalists called zoophytes, or animal plants, as the corallines, &c. which were long mistaken for marine vegetables. In animals of this division, the organs of sense and motion are disposed circularly around a centre or axis. They have no distinctly marked nervous system, and the traces of circulation in many species can scarcely be discerned. Many of the animals in this division have no power of locomotion, as madrepores and encrinites. Others, as the echinus, possess a very complex organization, and the power of moving from place to place on their spines, which serve them for feet.

In describing the order in which the organic remains belonging to each of these grand divisions are distributed through the different classes of rocks, it will be more convenient to begin with the lowest.

Radiated Animals, such as encrini and madrepores, have left their remains dispersed abundantly through rocks of the transition series: