

The discovery of the Reptilian Birds has brought the general law to view, that, among the four classes of Vertebrates, ordinarily received, each, excepting the lowest, consists of, *first* a grand *typical* division, embracing the majority of its species, and *secondly*, an inferior or *hemitypic* division, intermediate between the typical and the class or classes below.

Before proceeding with our illustrations of this point, a word may be added in behalf of these four classes. In order to appreciate their true value, it is necessary to have in view the *type-idea* which is the basis of the fundamental characteristics of each, and which is connected with the existence of *three* distinct habitats for life—the water, the air, and the land: that in Fishes, this idea is that of *swimming aquatic* life; in Reptiles, that of *creeping terrestrial* life; in Birds, that of *flying aerial* life; in Mammals, that of *terrestrial* life, again, but in connection with a higher grade of structure, the Mammalian. The type-idea is expressed in the adults both of the typical and hemitypic groups; and any attempt to elevate the hemitypic into a separate class tends to obscure these ideal relations of the groups in the natural system of Vertebrates.

The following are the illustrations of the law above mentioned.

(1.) In the classification of Vertebrates, Mammals, the first class, are followed by Birds, as the second; and while the former are viviparous, the latter are, without exception, *oviparous*. The species of the inferior or hemitypic group of Mammals, partake, therefore, in some degree, of an *oviparous* nature, as the term *semi-oviparous* or *Oötocoid* implies.

In fact, all Vertebrates excepting Mammals are typically *oviparous*, although some cases of viviparous birth occur among both Reptiles and Fishes. In the viviparous Mammals, the embryo during its development derives nutriment directly from the body of the parent until birth, and also for a time after birth; while in the viviparous Fish, the Selachians excepted, there is simply a development of the egg internally, in the same manner, essentially, as when it takes place externally. Applying then the term *oviparous* to all cases in which the embryo is shut off from any kind of placental nutrition, Reptiles and Fishes, with the exception mentioned, are as essentially *oviparous* as Birds. Hence, the *Oötocoids* or non-typical Mammals are actually intermediate in this respect, and in others also, between the typical Mammals, on one side, and the inferior *oviparous* Vertebrates collectively, on the other.

(2.) Again, the class next below Birds is that of Reptiles. And, correspondingly, the inferior or hemitypic group of Birds is *Reptilian* in some points of structure.

(3.) Again, the class next below Reptiles is that of Fishes; and therefore the inferior or hemitypic group of Reptiles is the