

already had the lung for respiration, which is the characteristic feature of all terrestrial Vertebrates.

In rising from the multiply structure of the Fish to the grade of Amphibian, the Vertebrate type reached a fixed or normal limit in the number of limbs, in the number of the bones of the fore and hind limbs, including even the number of digits, but not in the number of articulations of the digits. In the typical species of the old Carboniferous Amphibians the fore limbs have the scapula, humerus, radius and ulna, wrist bones, and the five fingers characteristic of the higher Vertebrates.

Further, in rising to Amphibians, the method of progression, which is *urosthenic* in Fishes, became *podosthenic* in the adult Amphibian. The young Amphibian, or Tadpole, retains the urosthenic feature and the gills of the Fish; but in passing to the adult stage, when feet are developed, the higher Amphibians lose both the tail and gills and have only feet for locomotion. The tailed Amphibians are intermediate forms representing the stages of progress. The absence of limbs in the Amphibian Snakes of the Carboniferous is probably a case of degeneration.

True Reptiles occur in the Permian. In this higher grade of Vertebrates the fish-like features of gills, and of tails for locomotion, are absent in the young state, and feet are throughout the locomotive organs. Besides, the number of joints in the digits of the fore and hind feet of these terrestrial Vertebrates has essentially the normal limit. But the teeth in the earlier species are still multiply in number and in series.

One prominent difference between the Reptilian and Amphibian skeletons is the existence in Amphibians of *two* occipital condyles for the articulation of the skull with the first cervical vertebra, while in Reptiles there is but *one*. In this feature Mammals, as early stated by Huxley, are more nearly related to *Amphibians* than to Reptiles or Birds.

REALITY OF THE PALEOZOIC WORLD.

The term *Paleozoic* is not simply a name for a division of geological time. It expresses a profound historical truth. It signifies the reality of a Paleozoic character in the world's early life which was exhibited not only in the very earliest of plants and animals, but also throughout the succession of species, and so decidedly that the Paleozoic world stands out in bold contrast with the Mesozoic. This truth has the greater importance inasmuch as Paleozoic species were the earth's population for more than half of all post-Archæan time.

The truth of this statement is obvious after the review of Paleozoic life on the preceding pages. Corals, Crinoids, Trilobites, Brachiopods and Mollusks, even of their highest group, that of Cephalopods, commence in the Cambrian and are prominent through the Paleozoic. Trilobites end near the close of Paleozoic time. The prolific Brachiopods at its close lose nearly all their Paleozoic genera; Crinoids drop their Paleozoic characteristics, and