

of Shakspeare. So daring a disregard of probability and violation of analogy would have been condemned as unpardonable, even where the poet was painting those incongruous images which present themselves to a disturbed imagination during the visions of the night.

But, as fossil mammalian remains have been met with in strata of the more modern periods, it will be desirable to take a rapid view of the contents of successive geological formations, and inquire how far they confirm or invalidate the opinions commonly entertained respecting the doctrine of successive development.

In the first place it should be stated, that traces of fossils referable to the animal kingdom make their appearance in strata of as early a date as any in which the impressions of plants have been detected. Until lately we have been but imperfectly acquainted with the organic remains of the primary fossiliferous formations of those below the carboniferous series; yet in some of these, as in the limestone of Ludlow, for example, scales and bones of fish have been found.* And similar Ichthyolites have been met with in still older rocks of the same group in North America.† We cannot expect, however, to bring many vertebral remains to light from the most ancient of the fossiliferous rocks hitherto examined, if the opinion be correct, that these strata are deep-sea formations, accumulated for the most part far from land. This inference has recently been drawn by Professor E. Forbes, after studying both the European and American Fauna of the Silurian period, on the ground of the small size of most of the bivalves or *Conchifera*, — from the paucity of spiral univalves, and the great number of floaters, such as *Bellerophon* and *Orthoceras*, — and from the abundance of *Brachiopoda*, together with the deep-water forms of the sea-weeds and the absence of land plants. Until we have obtained more information respecting the littoral deposits, and terrestrial vegetation of this Silurian period (as yet only one or two species of land plants, having come to light) we cannot expect to meet with any indications of air-breathing creatures of any class.

If we next consider the Devonian beds, or Old Red Sandstone, we find that the entire skeletons of fish have been discovered therein, and they belong to various families; among others, to the sharks, which rank as the most highly organised tribe in that great division of the *Vertebrata*. Until lately, no instance was on record of a fossil reptile in strata of this period, but in 1849 a double row of impressions, bearing a considerable analogy to the European *Cheirotherium*, was announced as having been detected by Mr. Isaac Lea, in the Old Red Sandstone at Pottsville, near Philadelphia, in the gorge of the Alleghany hills, where the Schuylkill breaks through the Sharp Mountain. These foot-prints occur on a ripple-marked sandstone, and are each about four inches long, and four broad. The animal appears to have had five toes, some of which exhibit unguinal appendages. The geological position of the beds is well determined, and the overlying coal-

* Murchison, *Silurian System*, p. 605.

† See *Travels in N. America*, by the Author, chap. 16.