

distances from the next pair. In each parallel row the toes turn the one set to the right, the other to the left. In the European *Cheirotherium*, before mentioned (p. 337), both the hind and the fore feet have each five toes, and the size of the hind foot is about five times as large as the fore foot. In the American fossil the posterior footprint is not even twice as large as the anterior, and the number of toes is unequal, being five in the hinder and four in the anterior foot. In this, as in the European *Cheirotherium*, one toe stands out like a thumb, and these thumb-like toes turn the one set to the right, and the other to the left. The American *Cheirotherium* was evidently a broader animal, and belonged to a distinct genus from that of the triassic age in Europe.*

We may assume that the reptile which left these prints on the ancient sands of the coal-measures was an air-breather, because its weight would not have been sufficient under water to have made impressions so deep and distinct. The same conclusion is also borne out by the casts of the cracks above described, for they show that the clay had been exposed to the air and sun, so as to have dried and shrunk.

The geological position of the sandstone of Greensburg is perfectly clear, being situated in the midst of the Appalachian coal-field, having the main bed of coal, called the Pittsburg seam, above mentioned (p. 392), three yards thick, 100 feet above it, and worked in the neighborhood, with several other seams of coal at lower levels. The impressions of *Lepidodendron*, *Sigillaria*, *Stigmara*, and other characteristic carboniferous plants are found both above and below the level of the reptilian footsteps.

Analogous footprints of a large reptile of still older date were afterwards found (1849) at Pottsville, 70 miles N. E. of Philadelphia, by Mr. Isaac Lea, in a formation of red shales, called No. XI. by Prof. H. D. Rogers, in the State Survey of Pennsylvania, and referred by him to the base of the coal, but regarded by some geologists as the uppermost part of the Old Red Sandstone. A thickness of 1700 feet of strata intervenes between the footprints of Greensburg, before described, and these older Pottsville impressions. In the same Red Shale, No. XI., the "debatable ground" between the Carboniferous and Devonian group, Prof. H. D. Rogers announced in 1851 that he had discovered other footprints, referred by him to three species of quadrupeds, all of them five-toed and in double rows, with an opposite symmetry, as if made by right and left feet, while they likewise display the alternation of fore foot and hind foot. One species, the largest of the three, presents a diameter for each footprint of about two inches, and shows the fore and hind feet to be nearly equal in dimensions. It exhibits a length of stride of about nine inches, and a breadth between the right and left footsteps of nearly four inches. The impressions of the hind feet are but little in the rear of the fore feet. The animal which made them is supposed to have been allied to a Saurian, rather than to a Batrachian or Chelonian. With these footmarks were seen shrinkage cracks, such as are caused by the sun's heat in mud.

* See Lyell's Second Visit, &c., vol. ii. p. 305.