

organization than fishes, were created till after the carboniferous strata had been elaborated.

During my stay in Westmoreland County, I was indebted to Dr. King for the most active assistance in the prosecution of my inquiries. He kindly devoted several days to this object, and we first visited together a stone quarry in Union township, six miles southeast of Greensburg, on a farm belonging to Mr. Gallagher, where the foot-marks had been first observed, standing out in relief from the lower surface of slabs of sandstone, resting on thin layers of fine clay. These slabs were extracted for paving-stones, and the excavation was begun in the bank of a small stream, where there was at first a slight thickness only of shale overlying the harder beds; but as they cut their way into the bank, the mass of shale became so dense as to oblige them to desist from the work. Between the slabs of stone, each a few inches thick, were thin parting layers of a fine unctuous clay, well fitted to receive and retain faithful impressions of the feet of animals. On the upper surface of each layer, Dr. King saw the foot-steps impressed more or less distinctly; but, as the clay was left exposed to the weather, it had crumbled to pieces before I examined it, and I had only an opportunity of seeing the casts of the same projecting in relief from the under sides of slabs of argillaceous sandstone. I brought away one of these masses, of which the annexed figure (fig. 12) is a faithful representation; and it will be observed that it displays not only the marks of the foot-prints of an animal, but also casts of cracks, *a*, *a'*, of various sizes, which must have existed in the clay. Such casts are produced by the drying and shrinking of mud, and they are usually detected in sandstones of all ages in which foot-marks appear. It will be seen that some of these cracks, as at *b*, *c*, traverse the foot-prints, and they not unfrequently produce distortion in them, as might have been expected, for the mud must have been soft when the animal walked over it and left the impressions, whereas, when it afterward dried up and shrank, it would become too hard to receive such indentations. I have alluded, in my former "Travels,"\* to the recent foot-prints of birds called sand-pipers

\* Vol. ii. p. 168.