

the American *Limulus* (*Polyphemus occidentalis*). I proved by experiment with the modern animal that the recurring series of groups of markings were produced by the toes of the large posterior thoracic feet, the irregular scratches seen in *Protichnites lineatus* by the ordinary feet, and the central furrow by the tail. It was also shown that when the *Limulus* uses its swimming feet it produces impressions of the character of those named *Climactichnites*, from the same beds which afford *Protichnites*. The principal difference between *Protichnites* and their modern representatives is that the latter have two lateral furrows produced by the sides of the carapace, which are wanting in the former.

As Limuloid crustaceans are well known in the Carboniferous beds of Europe and America, their footprints might be expected to occur in rocks of this age, but the first I have met with were sent to me last summer by my friend Mr. Elder, of Harvard College, who found them quite abundantly in dark-colored flagstones belonging to the Millstone Grit formation at McKay's Head in Nova Scotia (fig. 1). The animal which produced these marks must have been of small size (about half an inch in breadth), in this agreeing with the usual size of the Coal-formation Limuloids; and like the ancient *Protichnite* makers, it left no trace of the edges of the carapace, but a very distinct impression of a sharp pointed tail. Its posterior feet had three or possibly four sharp toes. There were besides several pairs of sharp-pointed walking feet. On the same slabs there are some series of marks, evidently made by the same kind of animal, which have no tail-mark, and there are tail-marks with only traces of those of the toes. It is worthy of notice that, though these tracks indicate the presence of the animal, no crusts of Carboniferous Limuloid crustaceans have yet been found in Nova Scotia. The sand in which the tracks now referred to were made was probably too hard to permit the swimming feet to make any impression. With respect to the absence of the marks of the sides of the carapace, I may observe that the genus *Belinurus* of the Carboniferous had the sides of the carapace less deep than that of the modern *Limulus*, and this may also have been the case with the more ancient Limuloids of the Potsdam. See as to this a letter by Prof. Hall in the *Canadian Naturalist*, 1862.

To *Protichnites* may perhaps be referred a very singular