

the impression; and thirdly, the unbroken continuity of the impression throughout its entire length. It must be evident that there are only two ways—both exceedingly improbable—by which these impressions could by any possibility have been made by any animal, whether crustacean or mollusk, or member of any other group. If the impression be really a track, the animal must either have had, or have been able to assume, the form of a complete sphere or cylinder with ribbed surface, and it must have possessed sufficient internal force to roll itself over and over throughout a length of many feet; or otherwise the creature must have moved forward by a series of spasmodic jerks or jumps, alighting always in an exact line with the end of the trail, so as to avoid the *slightest overlap* or other *break of symmetry* in the entire impression. Any other mode of progression would unavoidably have effaced or smudged the transverse grooves or ridges as the body of the animal passed over them. If formed by a mollusk also, we might naturally expect to find the shell of the creature (or at least casts of the shell) in the surrounding strata, because, if the transverse ridges were formed by the creeping foot, the beaded rim must be attributed to the aperture of the shell; and the latter, consequently, must have been of large dimensions, and the shell itself of considerable weight and solidity, and thus not unlikely to have become fossilized. The casts of gasteropod shells—*Ophileta*, *Pleurotomaria*—but none to which these impressions can be attributed, are not altogether absent from our Potsdam beds: and if these have been preserved, why not others? There is also another point which appears to be in complete opposition to the assumed track-origin of these impressions. In places, two, or even three, of these supposed tracks cross one another, but at the crossing points there is no sign of disturbance or smearing, so to say, such as must inevitably have occurred if one trail had been carried across another. As shown especially in Sir William Logan's original figure, representing a group of several "tracks" (Geol. of Canada, p. 107), the one impression simply conceals or lies over the other at these points, as would happen if two fucoid-fronds, or other similar bodies, were drifted together to a sandy shore, and were there covered simultaneously with sediment.

In attributing these impressions to large fucoids, we encounter, on the other hand, no real difficulty. Many algae, it is well known, present transverse furrows; and a salient example of this character may be seen in our *Arthrophyces Harlani*, so abundant in many of the