tangled collection of the roots and leaves, as they may be, of the *Stigmaria ficoides*, these being frequently traceable to the main stem (*Sigillaria*), which varies in diameter from about two inches to half a foot. The main stems are noticed as occurring nearer the top than the bottom of the bed, as usually of considerable length, the leaves or roots radiating from them in a tortuous irregular course to considerable distances, and as so mingled with the under-clay that it is not possible to cut out a cubic foot of it which does not contain portions of the plant." (Logan "On the Characters of the Beds of Clay immediately below the Coal-seams of South Wales," Geol. Transactions, Second Series, vol. vi., pp. 491-2. An account of these beds had previously been published by Mr. Logan in the Annual Report of the Royal Institution of South Wales for 1839.)

From the circumstance of the main stem of the Sigillaria, of which the *Stigmaria ficoides* have been traced to be merely a continuation, it was inferred by the above-mentioned authors, and has subsequently been generally recognised as probably the truth, that the roots found in the underclay are merely those of the plant (*Sigillaria*), the stem of which is met with in the overlying coal-beds—in fact, that the *Stigmaria ficoides* is only the root of the *Sigillaria*, and not a distinct plant, as was once supposed to be the case.

This being granted, it is a natural inference to suppose that the present indurated under-clay is only another condition of that soft, silty soil, or of that finely levigated muddy sediment—most likely of still and shallow water—in which the vegetation grew, the remains of which were afterwards carbonised and converted into coal.*

In order thoroughly to comprehend the phenomena of the transformation into coal of the forests and of the herbaceous plants which filled the marshes and swamps of the ancient world, there is another consideration to be presented. During the coal-period, the terrestrial crust was subjected to alternate movements of elevation and depression of the internal liquid mass, under the impulse of the solar and lunar attractions to which they would be subject, as our seas are now, giving rise to a sort of subterranean tide, operating at intervals, more or less widely apart, upon the weaker parts of the crust, and producing considerable subsidences of the ground. It might, perhaps, happen that, in consequence of a subsidence produced in such a manner, the vegetation of the coal-period would be submerged, and the shrubs

* For the opinions respecting the *Stigmaria ficoides*, see a Memoir on "The Formation of the Rocks in South Wales and South-Western England," by Sir Henry T. De la Beche, F.R.S., in the "Memoirs of the Geological Survey of Great Britain," vol. i., p. 149.