there can be little doubt,-whatever the cause or the order of their occurrence,-that alternations of groups of colder and warmer, better and worse seasons, do occur; and it seems more than probable that, in obedience to some occult law, as little understood in the present age as when its operations were first detected in the Netherlands, Scotland had in the times of the Oolite, as certainly as now, its alternating groups of chill and of genial summers, and of temperate and severe winters. And the well-marked rings of its fossil Coniferæ remain to attest the fact. We can even determine the kind of soil into which a certain proportion of these ancient pines struck root. It was extremely shallow in some localities, and lay over a hard bottom. We find that some of the fossil stumps shot out their roots horizontally immediately as they entered the earth, and sent down no vertical prolongations of the trunk into the subsoil,-an arrangement still common among the roots of trees planted on a shallow stratum of soil resting on a hard bottom. Further, we are still able to ascertain that the hard bottom that underlay the soil in which some of the Oolitic pines of Helmsdale grew was composed of Old Red flagstone, identical in its mineral composition and organic remains with what is now known as Caithness flag.

But let us trace the history of a single pine-tree of the Oolite, as indicated by its petrified remains. This gnarled and twisted trunk once anchored its roots amid the crannies of a precipice of dark-grey sandstone, that rose over some nameless stream of the Oolite, in what is now the north of Scotland. The rock, which, notwithstanding its dingy colour, was a deposit of the Lower Old Red Sandstone, formed a member of the fish-beds of that system,—beds that were charged then, as now, with numerous fossils, as strange and obsolete in the creation of the Oolite as in the creation which at present exists. It was a firm, indestructible stone, covered by a thin, barren soil; and the twisted rootlets of