cuttings. At this stage, however, the thaw came on, and encircled with a shallow ring of water, that rose over the depressed surface, the central patch of shivered ice, and the boulders in the midst; and then the second frost set in, and the shallow liquefied ring became a solid. Now, let us mark the phenomena exhibited. There, first, in the centre of the pond, rises the line of boulders. There is an isolated area all around them, — a formation of the earlier frost, much broken by faults; and these radiate from the stones rudely and irregularly, but still, on the whole, distinctly enough to indicate the boulder-line as a producing cause of the fracturing and dislocation. And then, around this broken and disjointed area, we find an encircling formation of the later frost, — the solidified ring, — in which there are no faults or cuttings, but in which all is undisturbed and entire. Our geological model is now complete; that row of boulders represents the chain of Trap and Silurian hills which runs along the Dudley coal-field, and whose elevation from below has so broken up the formation with long lines of radiating faults and transverse fractures. The fractured, insulated area of the ice of the first frost represents the coal-field itself; the unbroken enveloping ring of the second, the surrounding New Red Sandstone.

Now, there are several points worthy of notice in this model. Observe, first, that we can ascertain with great certainty, relatively at least, at what period the dislocations and fracturings of the central area took place. They occurred at the close, or not long after the close, of the first ice formation, and not later; for had they taken place during the time of the second ice formation, it also would have been broken up, whereas we find it entire. Observe, next, that under the shallow solidified ring of the second frost we may naturally expect to find existing, as a nether stratum, a prolongation of the shattered ice of the first.