we infer that it was laid down layer by layer in the manner of aqueous deposits. On the other hand, its chemical composition is quite different from that of the muds, sands and gravels usually deposited from water. Their special characters are caused by the fact that they have resulted from the slow decay of rocks like these gneisses, under the operation of carbon dioxide and water, whereby the alkaline matter and the more soluble part of the silica have been washed away, leaving a residue mainly silicious and aluminous. Such more modern rocks tell of dry land subjected to atmospheric decay and rain-wash. If they have any direct relation to the old gneisses, they are their grandchildren, not their parents. On the contrary, the oldest gneisses show no pebbles or sand or limestone—nothing to indicate that there was then any land undergoing atmospheric waste, or shores with sand and gravel. For all that we know to the contrary, these old gneisses may have been deposited in a shoreless sea, holding in solution or suspension merely what it could derive from a submerged crust recently cooled from a state of fusion, still thin, and exuding here and there through its fissures heated waters and volcanic products. This, it may be observed here, is just what we have a right to expect, if the earth was once a heated or fluid mass, and if our oldest Laurentian rocks consist of the first beds or layers deposited upon it, perhaps by a heated ocean. It has been well said that "the secret of the earth's hot youth has been well kept." But with the help of physical science we can guess at an originally heat-liquefied ball with denser matter at its centre, lighter and oxidised matter at its surface. We can imagine a scum or crust forming at the surface; and from what we know of the earth's interior, nothing is more likely to have constituted that slaggy

[1] Carbon dioxide, the great agent in the decay of silicious rocks, must then have constituted a very much larger part of the atmosphere than at present.