is, that it changes their *form*, as it is often called, that is, their condition as solid, liquid, or air. Since the term "form" is employed in too many and various senses to be immediately understood when it is intended to convey this peculiar meaning, I shall use, instead of it, the term *consistence*, and shall hope to be excused, even when I apply this word to gases, though I must acknowledge such phraseology to be unusual. Thus there is a change of consistence when solids become liquid, or liquids gaseous; and the laws of such changes must be fundamental facts of our thermotical theories. We are still in the dark as to many of the laws which belong to this change; but one of them, of great importance, has been discovered, and to that we must now proceed.

Sect. 3.—*The Doctrine of Latent Heat.*

The Doctrine of Latent Heat refers to such changes of consistence as we have just spoken of. It is to this effect; that during the conversion of solids into liquids, or of liquids into vapors, there is communicated to the body heat which is not indicated by the thermometer. The heat is absorbed, or becomes *latent;* and, on the other hand, on the condensation of the vapor to a liquid, or the liquid to a solid consistency, this heat is again given out and becomes *sensible.* Thus a pound of ice requires twenty times as long a time, in a warm room, to raise its temperature seven degrees, as a pound of ice-cold water does. A kettle placed on a fire, in four minutes had its temperature raised to the boiling point, 212°: and this temperature continued stationary for twenty minutes, when the whole was boiled away. Dr. Black inferred from these facts that a large quantity of heat is absorbed by the ice in becoming water, and by the water in becoming steam. He reckoned from the above experiments, that ice, in melting, absorbs as much heat as would raise ice-cold water through 140° of temperature: and that water, in evaporating, absorbs as much heat as would raise it through 940°.

That snow requires a great quantity of heat to melt it; that water requires a great quantity of heat to convert it into steam; and that this heat is not indicated by a rise in the thermometer, are facts which it is not difficult to observe; but to separate these from all extraneous conditions, to group the cases together, and to seize upon the general law by which they are connected, was an effort of inductive insight, which has been considered, and deservedly, as one of the most striking