

(361.) Hence he drew the conclusion that it has become *latent*, and continues to exist in the product, maintaining it in its new state, without increasing its temperature. He further proved, that when the vapor condenses, or the liquid freezes, this latent heat is again given out from it. This great discovery, with its natural and hardly less important concomitant, that of the difference of specific heats in different bodies, or the different quantities of heat they require to raise their temperature equally, are the chief reasons for regarding heat as a material substance in a more decided manner than light, with which in its radiant state it holds so close an analogy.

(362.) The subject of latent heat has been far less attentively studied than its great practical importance would appear to demand, when we consider that it is to this part of physical science that the theory of the steam-engine is mainly referable, and that material improvements may not unreasonably be expected in that wonderful instrument, from a more extended knowledge than we possess of the latent heats of different vapors. This is not the case, however, with the subject of specific heat, which was followed up immediately after its first promulgation with diligence by Irvine; and, after a brief interval, by Lavoisier and Laplace, as well as by our countryman Crawford, who determined the specific heats of many substances, both solid and liquid. After a considerable period of inactivity, the subject was again resumed by Delaroche and Berard, and subsequently by Dulong and Petit: the result of whose investigations has been the inductive establishment of one of those simple and elegant physical laws which carry with them, if not their own evidence, at least their own recommendation to our belief, as being in unison with every thing we know of the harmony of nature. The law to which we allude is this:—that the atoms of all the simple chemical elements have exactly the same capacity for heat, or are all equally heated or cooled by equal accessions or abstractions of heat. It is only among laws like this that we can expect to find a clew capable of guiding us