sense. Thus, in the illustration given in case one of the falling weight, it is possible to call its distance from the earth's surface that due to potential energy, simply because the influence of all other bodies in the universe, on the motion of the falling body, is inappreciable; but strictly speaking, they influence its motion, and it is falling towards the same point of the earth's surface at no two successive instants of time.

We see thus that this term *potential energy*, which can only be used under conditions which do not obtain generally in nature, and which obtain with only an approach to strictness in a very few cases, *has no right to* be included in the expression of a law which *professes* to represent not an approximate, but an absolute truth of nature.

We have also seen, by the foregoing example of six bodies whose motions are governed by a law which actually holds in nature, that the chances are almost infinitely great against the conservation of actual energy, even in the sense of periodic restorations.

What must our conclusion be? *Is it* not that the principle of conservation cannot be predicated of the material universe if the observed laws of force are laws of action at a distance? On the other hand, *the conservation of dynamic or actual energy* is a necessary result of the action by contact theory, if we admit the rigidity of the atom.

It *may* be asked, How are the phenomena of latent heat, of liquefaction and evaporation, to be explained on these principles. We have not to go far for an answer. Liquidity and gaseity are modes of motion of matter as well as heat. We do not expect the sensible vibrations of an elastic ball to affect the thermometer, neither should we expect the motions of liquidity and gaseity to do so. In a liquid the molecules are gliding around each other in all directions. In a gas the molecules are flying about in straight lines in all directions. To these motions is due the pressure in both cases. Since the pressure is equal in all directions at a given point, the inference is that the molecules are moving in all directions.

Whenever a motion appears in a heated body which itself is *not* such a motion as would affect the thermometer, a corresponding amount of heat necessarily disappears. Just as in a steam engine, heat disappears as the motions of the parts of the engine and the attached machinery increase. If the machinery be applied to doing work, that is, to setting other bodies in motion, a corresponding amount of heat disappears.