

been converted into molecular energy in the form of heat. Heat is defined as a movement of the ultimate atoms of matter, and is therefore energy of motion, and in this respect is like the energy of the moving cannon-ball. We call heat molecular energy and motion of a mass mechanical or visible energy, both belonging, however, to the same general class—energy of motion. One is a movement of the atoms of matter within a mass; and the other is a movement of the mass itself. While the cannon-ball was moving, it was the embodiment of both forms of energy, molecular and mechanical. After it had been arrested by piercing the plate of metal, that which was before mechanical has been added to the molecular energy of both the cannon-ball and the plate, so that the molecular energy of both have been intensified; for, if now we examine the cannon-ball and the plate, we shall find that both have been intensely heated. The ball may have been heated even to the point of redness. If the mechanical energy had been great enough and the plate thick enough the cannon-ball might have been heated to the melting point. The energy that was before mechanical has become molecular in the form of heat; none of it has been lost. Some of it resides in the gun-barrel caused by friction of the ball, some of it is in the air, caused by the same kind of friction, but most of it is