mental doctrines of physiology that every part of our organism has its own definite term of vitality, and that there is a continuous succession of the destruction of old cells and the formation of new ones in all tissues, and especially in those in which the most active vital changes are going on, as, for example, in the nervous and muscular tissues. Even the most solid portions of the animal frame, such as the bones, and, to a less extent, the teeth, are undergoing a perpetual, although slower change of this nature, and throughout the body there is a continuous removal of effete or worn-out tissues, and a corresponding deposition of new matter. Every blow we strike, every thought we think, is accompanied by the death and disintegration of a certain amount of muscular or nervous tissue as its necessary condition, and thus every action of our corporeal life, from its beginning to its close, takes place at the expense of the vitality of a certain amount of organized structure. This we term molecular* death. It must be clear to every intelligent mind that this process could not go on forever without the capacity of being repaired.

We therefore have recourse to food to supply the waste. Broadly speaking, the animal body is a machine well adapted for converting potential energy into actual energy. The potential energy is supplied by the food we eat; this the metabolism of the body converts into kinetic or actual energy of heat and mechanical labor. So we may say that our bodies are delicately constructed heat engines.

Energy, like matter, is indestructible and of two kinds—kinetic, or actual, and potential, or positive energy. Our whole life consists but in the transformation of these two different kinds of energy. We procure food which we eat, the greater part of which, under chemical action of various juices of the digestive organs, is absorbed into our system, which thereby enables us to perform a certain amount of work, mental or physical; in other words, to transform a certain amount of potential into kinetic or actual energy. For a certain amount of work to be done (without waste or injury to the system), a certain amount of food must be absorbed, that is, digested. If the absorption be in excess of the expenditure, then nature stores this energy up in the form of fat; if the expenditure be in excess of absorption, then nature works upon our bodies and we grow thin. If the absorption equal the expenditure, then we are in a state of what the doctors term physiological equilibrium, in perfect good health.

Energy is expended in building organic substances, or, in other

^{*} Speaking of molecules, scientists state that a cubic inch of oxygen, at ordinary temperature and pressure, contains so many molecules, that a number equal to the population of our globe might escape every second, and it would take over six thousand years to empty this small space. Or if a single drop of water could be magnified to the size of the earth, the molecules would be the size of billiard balls.