

what we have ever observed. But, however interesting and important such processes may be, it is not to be supposed that they are of direct moment in physiological processes. These conditions are far beyond the limits of our present investigation. Accordingly, everything that observation has taught confirms the belief that energy, like matter, is in general well known to us. Its manifestations are few, and they are universal. But just as the generalizations of science yield further assurance regarding matter, so they do not fail to confirm our conclusions in the study of energy. The law of the conservation of energy and the law of the degradation of energy, otherwise known as the first and second laws of thermodynamics, clearly indicate that the manifestations of energy are not accidental nor independent of one another. They are orderly, and they obey laws. Energy is one and indestructible.

Such are the apparently irrefragable conclusions of the brief half century of creative development, from the time when Young first used the word "energy" and Bolton and Watt first employed the idea of measuring energy in horse power, through the period of Carnot's brilliant intuition regarding the relation between heat and work, to the epoch