

what I termed, in the first section of this history, the astronomical and the atomic views of nature. The kinetic view was still only very imperfectly developed. The conception and term energy did not exist. The peculiar properties which attach respectively to vibratory, rotational, and translatory motion, and the definite part which each played in the description of physical phenomena, were not clearly understood. Further, the second law of thermodynamics, the dissipation of energy, was unknown to all but a very small number of the foremost thinkers. And lastly, the theory of descent and of the transmutation of species had not yet been formulated in a manner which made it useful for an exact comprehension of biological phenomena. We can not therefore be surprised that Büchner's work was acceptable neither to the representatives of exact science nor to those of philosophy. It was the first bold attempt to develop a detailed creed by means of conceptions familiar to all naturalists as well as to common-sense, but clearly defined only in the minds of very few amongst the foremost thinkers. What characterised its attitude was a dogmatic assertion of theories which could never be proved, and the use of conceptions which were not clearly defined, and which were in fact assumed to be undefinable. Nevertheless, with terms such as matter and force, the popular mind is accustomed to connect a definite meaning which is founded upon special sensations such as extension, pressure, or weight. Now there is no doubt that the popular mind connects a definite meaning also with such terms as idea and spirit. This is evident from the fact that these

18.  
Inadequacy,  
yet popularity, of  
"Matter"  
and  
"Force."