

perhaps by mathematicians and mathematical physicists, that the manner in which they defined and used the terms matter and force was quite different from the conception of these things in common life and practice. In fact, it took a very long time before, even in the better text-books of physical science, not to speak of those of chemistry and biology, clear definitions were introduced.

In the many editions of Büchner's work which appeared during the second half of the nineteenth century, nothing is more evident than the change which has come over the meaning of such words as matter and force in the minds of naturalists themselves. The first edition appeared at a time when the conservation of energy was clearly understood only by very few of the foremost representatives of the physical sciences, and in later editions of the book, though the word energy is occasionally introduced, there is no explanation of the reasons which brought about the change of terminology. Also the book appeared at a time when the notion of action at a distance still appeared as an axiom in most of the scientific works published on the Continent. Helmholtz had, in the year 1847, published his celebrated tract on the 'Conservation of Force,' which, through its very title, perpetuated the vagueness which still adhered to the term. He also, characteristically of the school in which he was brought up, advanced the proposition that natural phenomena might be considered to be fully explained if they were reduced to attracting and repelling forces acting between particles at a distance. It was the age that was content with