

THE RIDDLE OF THE UNIVERSE

directly, a pupil of Johannes Müller. Starting from the anatomy and physiology of man, he soon gathered all the chief groups of the higher and lower animals within his sphere of comparison. As, moreover, he compared the structure of extinct animals with the living, and the healthy organism with the diseased, endeavoring to bring together all the phenomena of life in a truly philosophic fashion, he attained a biological knowledge far in advance of his predecessors.

The most valuable fruit of these comprehensive studies of Johannes Müller was his *Manual of Human Physiology*. This classical work contains much more than the title indicates; it is the sketch of a comprehensive "comparative biology." It is still unsurpassed in respect of its contents and range of investigation. In particular, we find the methods of observation and experiment applied in it as masterfully as the philosophic processes of induction and deduction. Müller was originally a vitalist, like all the physiologists of his time. Nevertheless, the current idea of a vital force took a novel form in his speculations, and gradually transformed itself into the very opposite. For he attempted to explain the phenomena of life mechanically in every department of physiology. His "transfigured" vital force was not *above* the physical and chemical laws of the rest of nature but entirely bound up with them. It was, in a word, nothing more than life itself—that is, the sum of all the movements which we perceive in the living organism. He sought especially to give them the same mechanical interpretation in the life of the senses and of the mind as in the working of the muscles; the same in the phenomena of circulation, respiration, and digestion as in generation and development. Müller's success was chiefly due to the fact