

THE EVOLUTION OF THE WORLD

bodies, the separation of the planets, and so forth. This first "origin of movement" is Du Bois-Reymond's second "world-enigma"; he regards it as transcendental. Many other scientists and philosophers are equally helpless before this difficulty; they resign themselves to the notion that we have here a primary "supernatural impetus" to the scheme of things, a "miracle."

In our opinion, this second "world-enigma" is solved by the recognition that movement is as innate and original a property of substance as is sensation. The proof of this monistic assumption is found, first, in the law of substance, and, secondly, in the discoveries which astronomy and physics have made in the latter half of the century. By the spectral analysis of Bunsen and Kirchhoff (1860) we have found, not only that the millions of bodies, which fill the infinity of space, are of the same material as our own sun and earth, but also that they are in various stages of evolution; we have obtained by its aid information as to the movements and distances of the stars, which the telescope would never have given us. Moreover, the telescope itself has been vastly improved, and has, in alliance with photography, made a host of scientific discoveries of which no one dreamed at the beginning of the century. In particular, a closer acquaintance with comets, meteorites, star-clusters, and nebulae has helped us to realize the great significance of the smaller bodies which are found in millions in the space between the stars.

We now know that the *paths* of the millions of heavenly bodies are *changeable*, and to some extent irregular, whereas the planetary system was formerly thought to be constant, and the rotating spheres were described