

Nevertheless, the fact that gravity, radiation, and electric and magnetic action appear as central emanations, decreasing with the square of the distance,—two properties which lend themselves to mathematical and geometrical representation,—seemed to pave the way for further generalisations. All forces in nature were put down as central forces, either attractive or repulsive, and if not following the Newtonian formula, still dependent on the distance according to some mathematical expression. For nearly a century theoretical physics were occupied in working out the mathematical formulæ expressive of these ideas, and Laplace himself promoted these attempts by the weight of his great authority. We do not possess the final views on this point with which the great mathematician intended to complete the last edition of his ‘Exposition du Système du Monde’; but some of the later chapters of this work, treating of gravitation and molecular attraction, show us clearly in which direction he looked for progress in theoretical physics.¹

26.
Molecular
action.

no peculiar condition of the intervening or diamagnetic matter; but now that we are able to distinguish such an action; . . . now that diamagnetics are shown not to be indifferent bodies, I feel still more confidence in . . . asking whether it may not be by the action of the contiguous or next succeeding particles that the magnetic force is carried onward,” &c. (No. 2443). Faraday also made repeated experiments with the view of determining how the force of gravitation is communicated, believing as little as Newton did in an *actio in distans*, and he was wont to quote Newton’s words on this matter, referring also to Euler’s ether theory (No. 3305).

¹ In the fifth edition of the ‘Exposition du Système du Monde’ Laplace had suppressed these chapters, and had announced his intention “to unite the principal results of the application of analysis to phenomena depending on a molecular action differing from universal attraction” into a special treatise which should form a sequel to the ‘Exposition,’ &c. This project was never carried out (see “avertissement au sixième édition de ‘l’Exposition’”). The success which attended Laplace’s attempts to explain double refraction and aberration of light (following Newton’s suggestions in the ‘Principia’ and ‘Optics’) as well as capillary phenomena (following Haukesbee) left no