atmosphere, into or in the neighbourhood of solid bodies. He conceived light to be a material substance, consisting of minute particles, propelled in straight lines from the luminous centres. These small particles, when arriving at or near the surface of transparent bodies, came under the influence of an attraction from the substance of such bodies, and Newton succeeded in showing that for rays of light which fall on transparent surfaces at an angle, the path of the ray in the body would be deflected according to the rule experimentally determined by Snell, and published by Descartes. This application of the idea of attraction, or action at a distance, to very small or molecular dimensions, required a modification of the gravitation formula. The first who took an important step farther in this direction was Francis Hauksbee. Between the year 1709 and 1713 he made a series of experiments on what is called capillary action. His experiments were discussed by Newton in the later editions of the 'Opticks,' and followed by those of Dr Jurin in 1718. Hauksbee, Newton, Jurin, and subsequent writers, like Clairaut, all attributed these and similar phenomena to molecular attractions, and Laplace showed that for the mathematical treatment of the subject a knowledge of the exact law (corresponding to the Newtonian law of molar attraction) was unnecessary, but that it was necessary and sufficient to assume the existence of an attraction of the molecules of bodies, which decreases very rapidly as their distances increase, "so as to become insensible at the smallest distances perceptible by our senses."[1] The phenomena of atmos-

32. Capillary action.

[1] See 'Mécanique céleste,' vol. iv. (1805), Supplement, p. 67. See also p. 2: "J'ai cherché, il y a longtemps, à déterminer les lois d'attraction qui représentent ces phénomènes: de nouvelles recherches