pheric refraction as well as those of cohesion and adhesion of bodies—*i.e.*, the attraction of particles of the same or of different matter under what is commonly called contact or at distances which we call in science molecular—were thus submitted to calculation, and the results brought largely into harmony with experience.[1] The problem presented itself and occupied natural philosophers all through the last century, whether a more general law of action at a distance could be found which comprised the phenomena of molecular as well as of molar attraction.

33. Boscovich's extension of the Newtonian formula.

The most celebrated attempt in this direction is that of the Jesuit Roger Boscovich, who in 1758 published an elaborate treatise on this subject.[2]

m'ont enfin conduit à faire voir qu'ils sont tous représentés par les mêmes lois qui satisfont aux phénomènes de la réfraction, c'est-à-dire par les lois dans lesquelles l'attraction n'est sensible qu'à des distances insensibles ; et il en résulte une théorie complète de l'action capillaire."

[1] The terms insensible and imperceptible, which are commonly used in these discussions, must be taken with caution. It is now known that, though not directly perceptible or sensible, the distance through which molecular action takes place is measurable. Plateau in Belgium (1843 and following years) and Quincke in Germany (1868) made experiments on independent lines, and came to very similar results. The distance of molecular action appears to be about the twenty thousandth part of a millimetre. See Clerk Maxwell's article on Capillary Action in the 9th edition of the 'Ency. Brit.,' reprinted in 'Scientific Papers,' vol. ii. ; also Violle's 'Cours de Physique,' German edition, vol. i. p. 591, &c., and p. 639.

[2] Roger Joseph Boscovich, of the Society of Jesus (1711-87), took up the ideas thrown out by Newton in the last query to the 'Opticks,' and published in 1758 at Vienna an elaborate treatise with the title 'Theoria Philosophiæ Naturalis redacta ad unicam legem virium in Natura existentium.' A second edition was published at Venice in 1763. His speculations begin with the year 1745, when he hit upon his general view that all forces in nature can be reduced to the action of indivisible and inextended atoms, endowed with inertia and with a mutual force which at vanishing distances is repulsive, which at insensible distances alternates according to some mathematical formula between repulsion and attraction, and, finally, at sensible distances becomes identical with Newton's force of gravitation. The general form of the curve which exhibits this action at a distance is given, and the algebraical formula discussed, in the Supplement. But it was, of course, impossible to define the law any further. The