The theory of Æpinus, however, still required to have the law of action of the particles of the fluid determined. If we were to call to mind how momentous an event in physical astronomy was the determination of the law of the cosmical forces, the inverse square of the distance, and were to suppose the importance and difficulty of the analogous step in this case to be of the same kind, this would be to mistake the condition of science at that time. The leading idea, the conception of the possibility of explaining natural phenomena by means of the action of forces, on rigorously mechanical principles, had already been promulgated by Newton, and was, from the first, seen to be peculiarly applicable to electrical phenomena; so that the very material step of clearly proposing the problem, often more important than the solution of it, had already been made. Moreover the confirmation of the truth of the assumed cause in the astronomical case depended on taking the right law; but the electrical theory could be confirmed, in a general manner at least, without this restriction. Still it was an important discovery that the law of the inverse square prevailed in these as well as in cosmical attractions.

It was impossible not to conjecture beforehand that it would be so. Cavendish had professed in his calculations not to take the exponent of the inverse power, on which the force depended, to be strictly 2, but to leave it indeterminate between 1 and 3; but in his applications of his results, he obviously inclines to the assumption that it is 2. Experimenters tried to establish this in various ways. Robison,[9] in 1769, had already proved that the law of force is very nearly or exactly the inverse square; and Meyer[10] had discovered, but not published, the same result. The clear and satisfactory establishment of this truth is due to Coulomb, and was one of the first steps in his important series of researches on this subject. In his first paper[11] in the *Memoirs* of the Academy for 1785, he proves this law for small globes; in his second Memoir he shows it to be true for globes one and two feet in diameter. His invention of the *torsion-balance*, which measures very small forces with great certainty and exactness, enabled him to set this question at rest for ever.

The law of force being determined for the particles of the electric fluid, it now came to be the business of the experimenter and the

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[9] *Works*, iv. p. 68.

[10] *Biog. Univ.* art. *Coulomb*, by Biot.

[11] *Mém. A. P.* 1785, pp. 569, 578.