

gree in which the force is affected by the *obliquity* of the elements. One of the general causes of equilibrium, of which we have spoken, gave a relation between these two quantities;<sup>2</sup> and as the power was naturally, and, as it afterwards appeared, rightly conjectured to be the inverse square, the other quantity also was determined; and the general problem of electrodynamical action was fully solved.

If Ampère had not been an accomplished analyst, he would not have been able to discover the condition on which the nullity of the integral in this case depended.<sup>3</sup> And throughout his labors, we find reason to admire, both his mathematical skill, and his steadiness of thought; although these excellences are by no means accompanied throughout with corresponding clearness and elegance of exposition in his writings.

*Reception of Ampère's Theory.*—Clear mathematical conceptions, and some familiarity with mathematical operations, were needed by readers also, in order to appreciate the evidence of the theory; and, therefore, we need not feel any surprise if it was, on its publication and establishment, hailed with far less enthusiasm than so remarkable a triumph of generalizing power might appear to deserve. For some time, indeed, the greater portion of the public were naturally held in suspense by the opposing weight of rival names. The Amperian theory did not make its way without contention and competition. The electro-magnetic experiments, from their first appearance, gave a clear promise of some new and wide generalization; and held out a prize of honor and fame to him who should be first in giving the right interpretation of the riddle. In France, the emulation for such reputation is perhaps more vigilant and anxious than it is elsewhere; and we see, on this as on other occasions, the scientific host of Paris springing upon a new subject with an impetuosity which, in a short time, runs into controversies for priority or for victory. In this case, M. Biot, as well as Ampère, endeavored to reduce the electro-magnetic phenomena to general laws. The discussion between him and Ampère turned on some points which are curious. M. Biot was disposed to consider as an elementary action, the force which an element of a voltaic wire exerts upon a magnetic particle, and which is, as we have seen, at right angles to their mutual distance; and he conceived that

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<sup>2</sup> Communication to the Acad. Sc., June 10, 1822. See Ampère, *Recueil*, p. 292.

<sup>3</sup> *Recueil*, p. 314.