http://www.geology.19thcenturyscience.org/books/1858-Whewell-HistSci/README.htm

in this as in other experiments;[7] and the mere motion of a wire, under proper circumstances, produced in it, it appeared, a momentary electric current.[8] These facts were curiously confirmed by the results in special cases. They explained Arago's experiments: for the momentary effect became permanent by the revolution of the plate. And without using the magnet, a revolving plate became an electrical machine;[9]—a revolving globe exhibited electro-magnetic action,[10] the circuit being complete in the globe itself without the addition of any wire;—and a mere motion of the wire of a galvanometer produced an electro-dynamic effect upon its needle.[11]

But the question occurs, What is the general law which determines the direction of electric currents thus produced by the joint effects of motion and magnetism? Nothing but a peculiar steadiness and clearness in his conceptions of space, could have enabled Mr. Faraday to detect the law of this phenomenon. For the question required that he should determine the mutual relations in space which connect the magnetic poles, the position of the wire, the direction of the wire's motion, and the electrical current produced in it. This was no easy problem; indeed, the mere relation of the magnetic to the electric forces, the one set being perpendicular to the other, is of itself sufficient to perplex the mind; as we have seen in the history of the electrodynamical discoveries. But Mr. Faraday appears to have seized at once the law of the phenomena. "The relation," he says,[12] "which holds between the magnetic pole, the moving wire or metal, and the direction of the current evolved, is very simple (so it seemed to him) although rather difficult to express." He represents it by referring position and motion to the "magnetic curves," which go from a magnetic pole to the opposite pole. The current in the wire sets one way or the other, according to the direction in which the motion of the wire cuts these curves. And thus he was enabled, at the end of his Second Series of *Researches* (December, 1831), to give, in general terms, the law of nature to which may be referred the extraordinary number of new and curious experiments which he has stated;[13]—namely, that if a wire move so as to cut a magnetic curve, a power is called into action which tends to urge a magnetic current through the wire; and that if a mass move so that its parts do not move in the same direction across the magnetic curves,

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[7] Second Series, *Phil. Trans.* p. 163. [8] Art. 141. [9] Art. 150. [10] Art. 164.
[11] Art. 171. [12] First Series, Art. 114. [13] Art. 256—264.