

## AN ACCIDENT THAT LED TO A NOTABLE DISCOVERY.

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IN Ernst Mach's well-known lecture "On the Part Played by Accident in Invention and Discovery,"<sup>1</sup> there is no mention of the remarkable accident that led to Oersted's<sup>2</sup> momentous discovery of the action of an electric current on a magnetic needle. An interesting account of this accident was given by Christopher Hansteen<sup>3</sup> in a letter of December 30, 1857, to Faraday.<sup>4</sup> From this letter we will make the following extract:

"Professor Oersted was a man of genius, but he was a very unhappy experimenter; he could not manipulate instruments. He must always have an assistant, or one of his auditors who had easy hands, to arrange the experiment; I have often in this way assisted him as his auditor. Already in the former century there was a general idea that there was a great conformity, and perhaps identity, between the electrical and magnetical force; it was only the question how to demonstrate it by experiments. Oersted tried to place the wire of his galvanic battery perpendicular (at right angles) over the magnetic needle, but remarked no sensible motion. Once, after the end of his lecture, as he had used a strong galvanic battery in other experiments, he said, 'Let us now, while the battery is in activity, try to place the wire parallel with the needle.' When this was done, he was quite struck with perplexity by seeing the needle making a great oscillation (almost at right angles with the magnetic meridian). Then he said, 'Let us now invert the direction

<sup>1</sup> *Popular Scientific Lectures*, 3d ed., Chicago, 1898, pp. 259-281.

<sup>2</sup> Hans Christian Oersted (1777-1851).

<sup>3</sup> Hansteen lived from 1784 to 1873. His famous researches on terrestrial magnetism began in 1812.

<sup>4</sup> H. Bence Jones, *The Life and Letters of Faraday*, London, 1870, Vol. II, pp. 395-397.

of the current,' and the needle deviated in the opposite direction. Thus the great discovery was made; and it has been said, not without reason, that 'he tumbled over it by accident.' He had not before had any more idea than any other person that the force should be *transversal*. But as Lagrange said of Newton on a similar occasion, 'such accidents only meet persons who deserve them.'"

In connection with what may be considered as a happy accident for Newton—the discovery of a whole solar system as a field of application for his newly discovered fluxional calculus—it is worth while to quote Delambre's<sup>5</sup> report of what Lagrange said: "...M. Lagrange, often quoted him [Newton] as the greatest genius who ever existed, adding at the same time: 'and the most fortunate; one does not find more than once a system of the world to establish.'"

<sup>5</sup>"...M. Lagrange...le citait souvent comme le plus grand génie qui eût jamais existé, ajoutait-il aussitôt: 'et le plus heureux; on ne trouve qu'une fois un système du monde à établir.'" "Notice sur la vie et les ouvrages de M. Le Comte J." L. Lagrange, *Œuvres de Lagrange*, Vol. I, p. xx.