

*This is a review submitted to Mathematical Reviews/MathSciNet.*

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**Mathematical Reviews/MathSciNet Reviewer Number:** 127139

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**Title:** The Principia's second law (as Newton understood it) from Galileo to Laplace.

**MR Number:** MR4078304

**Primary classification:** 01A50

**Secondary classification(s):** 01A45 70-03

**Review text:**

This paper aims at closing over three hundred years of discussion about the interpretation of Newton's second law. Today this law is known as the law of force, and is usually taught in the famous form  $F = ma$ . However, any historian of mathematics and physics—actually anyone who has opened the Principia—knows that this equation was never written by Newton. The form of the law is: “A change in motion is proportional to the motive force impressed and takes place along the line in which that force is impressed.”

In this paper, the author aspires to solve the mystery of why this law, as such, was never quoted in subsequent treatises of mechanics during the 18th century. It is a rigorous and thorough study of the works of Varignon, Hermann, Maclaurin, Euler (two works), d'Alembert, Lagrange and Laplace. Through the paper the author succeeds in showing that this law is actually present in every one of these treatises, and precisely in the form that Newton understood it, which is not exactly the enunciated form quoted above.

Thus, in the first place, the author clarifies the meaning of this law to Newton himself, and addresses that the main problems in the interpretation of the law are due to Newton's obscurity in the formulation. Newton is ambiguous in the meaning of the fundamental concepts of the law, which are “change in motion” and “motive force”. Once the meaning of these terms is clarified within the Principia, the author deduces Newton's interpretation of his second law. Then, he searches for antecedents of the law—without the Newtonian sense of “force”—in Galilei and Huygens, and proceeds to demonstrate that this law—as Newton understood it—is in fact present implicitly or explicitly in the most important treatises of mechanics in the 18th century. It is a paper very carefully written, sometimes difficult in the argumentation, but very precise in the use of diagrams and sources.