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THE MARQUISE DU CHÂTELET: ARISTOCRAT AND MATHEMATICIAN

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CLEAR COPY THE COVER. Émilie de Breteuil, Marquise du Châtelet
(Portrait by Maruice Quentin de la Tour)

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Émilie de Breteuil, Marquise du Châtelet, was born in Paris in 1706 to parents at the Court of the Louis XIV. She died at the Château de Lunéville in 1749. Her life was remarkable. She is famous for being the lover, companion, and scientific collaborator of Voltaire. In recent times the importance her work in mathematics, physics, and natural philosophy is increasingly recognized. Her translation of Newton's *Principia* into French, with detailed commentary, is still the standard for this text in French. She was the first woman to have a scientific article published by the French Academy of Science [1], [2].

As was expected for a woman of her background, her marriage was arranged and one purpose was to produce an heir for the Marquis du Châtelet. In quick succession they had three children including a boy. Émilie then enjoyed ever more freedom for socializing and such pursuits as gambling and love affairs. She deepened her knowledge of science and engaged as her tutors some of the well recognized mathematicians in Paris, including Clairaut and de Maupertuis [1], [2].

In 1733 Émilie began a friendship and an affair with Voltaire. They both supported Newtonian physics even though many French intellectuals of the time still favored Descartes. Émilie moved to live in a property of her husband at Cirey in the north of France. She was often joined there by Voltaire, and they set up a serious laboratory for scientific experiments to test their ideas. Although they often worked in collaboration, they were both very competitive. In 1737 they independently entered essays to the French Academy of Science contest on the nature of fire. Both entries aimed to disprove the theory that fire was a material substance. Neither won the contest but both received praise, and both essays were published by the French Academy of Science. It is interesting to note that Leonhard Euler was awarded the first prize. The paper of Du Châtelet was entitled "Dissertation sur la nature et la propagation du feu". Among other creative ideas she speculated that there may be colors in other suns that are not found in the spectrum of sunlight on Earth [1], [2].

In 1738 Voltaire published his book, "Éléments de la Philosophie de Neuton", which is a magnificent volume of 306 pages with 115 illustrations including classical engravings and many technical illustrations. It is likely that the detailed science in Voltaire's book was actually written by Émilie. The book is dedicated to Madame la Marquise Du Ch., and the dedication consists of 92 lines about Émilie in the form of rhyming couplets. The elaborate frontispiece depicts ideas coming from God through Newton to Du Châtelet and thence to Voltaire who is recording them [3].

Many friends, including famous intellectuals and aspiring scientists, came to Cirey to enjoy the intellectual life with Émilie at the center. Surrounded as she often was by proponents of Newton's theories, Émilie undertook a massive task. In the early 1740s she began her work to understand in depth Newton's *Principia* and translate it to French with extensive annotations and detailed commentary. This included her derivation of the notion of conservation of energy from its principles of mechanics and other deep ideas that went beyond Newton's original work [1].

In 1749, when Voltaire was her friend but no longer her lover, Émilie became pregnant by a younger man. She was 42 and feared she might die in childbirth. She continued to work with great dedication on her translation of Newton up to the hour of giving birth. A quote attributed to Voltaire, who was present, says "... being at her desk working on Newton she felt a little call. The call was a daughter,

who appeared in an instant. She was laid on a quarto book of geometry.” Émilie continued to work but tragically six days later she died. It was not until ten years later in 1759 that her complete two-volume translation of the *Principia* was finally published. Voltaire was instrumental in ensuring that Du Châtelet’s most famous work received the publication that it was due. He wrote a fulsome preface to praise her remarkable talents [1], [2], [3].

REFERENCES

- [1] J. J. O’Connor and E. F. Robertson, *Gabrielle Émilie Le Tonnelier de Breteuil, Marquise du Châtelet*, [Mathhistory/st-andrews.ac.uk/Biographies/Chatelet](http://mathhistory/st-andrews.ac.uk/Biographies/Chatelet), 2003.
- [2] *Émilie du Châtelet*, [Wikipedia.org/wiki/Emilie_du_Chatelet](https://en.wikipedia.org/wiki/Emilie_du_Chatelet), 2022.
- [3] Gerald L. Alexanderson, *About the cover: Voltaire, du Châtelet, and Newton*, Bull. Amer. Math. Soc. (N.S.) **52** (2015), no. 1, 115–118, DOI 10.1090/S0273-0979-2014-01482-X. MR3286483

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