

# Grande Dames of Science



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**During the Age of Enlightenment, when scientific thought was developing rapidly, the overwhelming majority of the individuals involved in the scientific movement were men. However, two ladies from the French aristocratic circles put so much energy into their scientific interest that their contemporaries were simply unable to restrict and sideline them**

The ladies in question were the Marquise Émilie du Châtelet and Mme. Louise d'Épinay. The former was an outstanding scholar; one of her achievements was the translation and annotation of Isaac Newton's works. She was a long-term associate and companion of Voltaire. The latter, a friend of Friedrich Melchior, Baron von Grimm, posed very creative and modern questions about pedagogy. She was heavily critical of Jean-Jacques Rousseau for his views, which unilaterally favored men, and instead set out different, logical and natural roles and positions for mothers within the family and society.

In a most positive, admirable and noble way, these two outstanding female personalities of that era rejected all limitations imposed on women by society. They both strived for all women to be given the same opportunities to overcome barriers and prohibitions imposed on them. Marquise du Chatelet was an embodiment of personal intellectual growth, Mme. d'Épinay of maternal instinct and ambition.

### Top floor childhood

Gabrielle Émilie Le Tonnelier de Breteuil (until her marriage to Marquis Florent-Claude du Châtelet-Lomont in 1725, when she became Marquise du Châtelet) was born on 17 December 1706 in Paris. Her early childhood was a happy one, spent on the top floor (intended exclusively for children) of Breteuil Palace, doted on by her father, and granted the occasional visit from her rather severe and traditional mother. She was the daughter of Louis Nicolas le Tonnelier de Breteuil, Principal Secretary and Introducer of Ambassadors

to King Louis XIV. From her youngest years she strove to develop her academic interests, and she was prepared to make any effort to bring her desires and dreams into reality. She was supported in her aspirations, and received the finest possible education available in those days. She had a passion for languages, and was fluent in English, Italian, Latin, and Greek. She made the most of her parents' great respect for scholarly matters, and in turn they made great efforts to ensure that their children grew up in an intellectual atmosphere.

Her father first met the young Voltaire in 1714, and invited him to Tuileries Palace and a year later to PreUILly-sur-Claire Palace. Émilie was just 10 years old at the time, but years later the acquaintance evolved into a powerful and personal bond, which brought her significant scholarly support. Her parents, impressed by her diligence, maturity, and passion for knowledge, endeavored to help her develop her intellect. Not only was no sort of learning forbidden to her, but she was positively encouraged to vigorously question stated fact. When she was just 10 years old, Émilie was so adept at

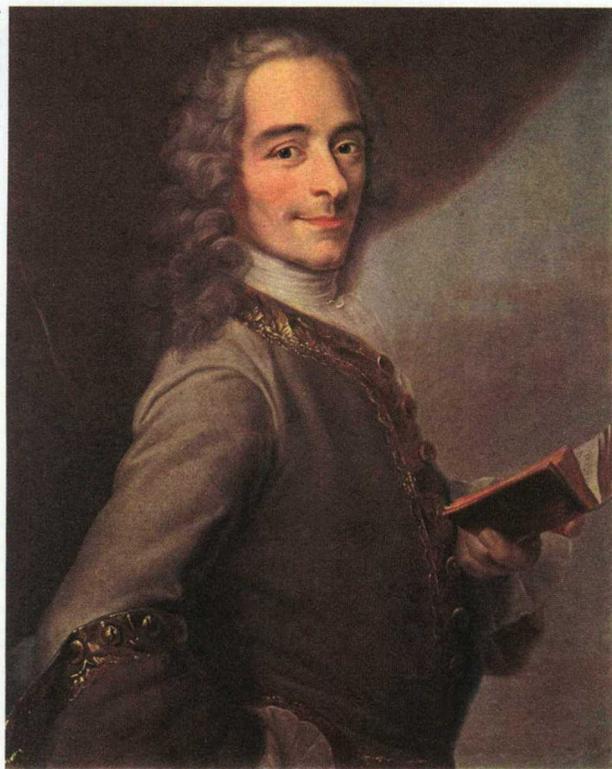


**Émilie du Châtelet was independent and inquisitive, and she frequently broke existing rules**

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## Pioneers of women's rights in science in the 18th century

Chateau de Cirey



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English that she could easily read works by John Locke. From her earliest days she showed a great interest in mathematics, physics, and metaphysics, and her young mind absorbed all available works on the subjects. There were many markers along the way of Émilie's transformation from an exuberant student of a brilliant intelligence and unique personality, enjoying all pleasures available to the aristocracy, into a respected scholar, admired by other scientists, in particular Europe's physicists. Her greatest scientific achievement was to establish the correct equation for kinetic energy.

### Independent and inquisitive

A student of Moreau de Maupertuis (member of the French Academy of Sciences) from 1733, and after 1735 of the mathematician Alexis Clairant, Émilie demonstrated that she was as independent as she was inquisitive. Each time she broke through the existing norms and came under attack, she gathered fresh energy and repelled the assailants with renewed force.

When de Maupertuis abandoned her, and Voltaire started focusing more on his own interests, she doubled her efforts in her own work. She frequently contradicted her mentors when she believed them to be in error. She was attentive of Francesco Algarotti, Dortous de Mairan, and in particular du Maupertuis, yet she did not hesitate to criticize the first, debate with the second, and bestow a heavy dose of irony on the works by the third.

Over the course of five years, she turned from an enlightened amateur into a highly valued specialist. She found debate highly stimulating; she regarded the emotions it stirred in her as more valuable than love.

Marquise du Châtelet conducted extensive research, wrote scientific articles, translated, and debated with other scholars. Her wide-ranging achievements include the book *Institutions de Physique*, published in 1740, discussing new trends and ideas in science and philosophy, and the monograph *Discours sur le bonheur* on the nature of happiness. Her crowning glory was her translation of and commentary on Isaac Newton's seminal work *Principia Mathematica*, which she started in 1745. The publication had previously been translated into Latin, although the reading of such a complex and abstract work in a foreign language was extremely difficult. This made the translation all the more significant and instrumental for the French scientific community.

She was finishing the manuscript of the *Commentaire*, the culmination of her work, while heavily pregnant; on 10 September 1749 she handed the completed text to Voltaire and the poet Jean François de Saint-Lambert, by whom she had had a daughter just days earlier. She passed away just hours after that. Her translation and commentary on Newton's work were finally published 10 years after her death, with an introduction by Voltaire himself: "This translation, which in reality should have been made by the greatest male scholars for other male scholars to study in depth, was made impeccably by a woman, to the greatest glory of her nation. (...) For a woman, the understanding of even basic geometry is a challenge, and yet du Châtelet understood this great man's teachings even at the beginning of her scientific career."



Marquise du Châtelet was extremely open about her scientific interests and ambitions

Chateau de Cirey

### Difficult conditions

Louise d'Esclavelles was similarly driven to obtain knowledge, and had similar interests and talents to du Châtelet. Louise was born on 11 March 1726 to a noble family, and from her earliest day she received great love and attention from her parents: a warm and caring mother, and an elderly father. Her early years were filled with affection for her parents and her surroundings. After her father's death when Louise was 9, her mother was unable to provide a suitable environment for her to extend and develop her knowledge, so the youngster was sent to Paris in the care of her aunt, and the two quickly fell into conflict. While in Paris, the young Louise was assigned a governess and quickly made significant progress. This infuriated her aunt, who banned her from further studies.

However, Louise was hugely driven; she had immense willpower, and extraordinary intelligence. She managed to acquire knowledge in spite of adverse circumstances, enduring humiliation and experiencing scarcity at times verging on poverty. In 1745 she was married to her cousin Denis Joseph de La Live d'Épinay. As Mme. d'Épinay she became a pioneer of new educational ideas, giving women a real opportunity to make decisions on their family model and placing them firmly in the position of family decision maker.

Louise was tender and sensitive; she was a fascinating speaker and an attentive listener. She had a beautiful, light writing style and a tremendous vocabulary. Her most popular and most frequently commented on publications were *Les Pseudo-mémoires de Madame d'Épinay*, *Lettre à la gouvernante de ma fille*, *Lettres*, and *Conversations d'Émilie*. By a large majority, on 13 January 1783 the French Academy of Sciences awarded her the prestigious Prix Montyon, given to the author of the "book published in the current year that might be of most benefit to society." Mme. d'Épinay passed away on 17 April 1783, aged 57.

### Conquerors of unknown lands

Both du Châtelet and d'Épinay experienced the kind of events that mark important stages in many women's lives; they were wives, mothers, housewives, and lovers. They are symbolic of women's desires and their pursuit of knowledge while demonstrating that although female individuality was almost entirely unacceptable during their day, certain spheres generally regarded as being in the men's domain should and could become open to women.

d'Épinay propagated the image of a powerful mother figure, devoted to her family without coercion or surprise, and enjoying her work. She proclaimed a revolutionary view about the necessity to divide roles and duties within the family. She spoke openly and convincingly of the strength and value of women, a subject rarely touched on by men; she also presented motherhood as an area of essential work and creativity for women. At the same time she answered the question of what men's role should in this arrangement:



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**Louise d'Épinay proclaimed a revolutionary view about the necessity to divide roles and duties within the family**

they should play a dual role, focusing first and foremost on both work and family. The former element was long known, but the latter came as a complete surprise at the time. The female model formulated by d'Épinay became increasingly popular in France, and today it is regarded as something obvious. This theory brought significant comfort to men of the Enlightenment, already bearing significant responsibility for the education of young people.

Things were rather different concerning the personality and aspirations of du Châtelet; in those days they were shocking for all those attached to the model of women as mothers bringing up their children. She was very open about her scientific interests and personal ambitions; she regarded her irresistible desire to compete with the greatest male minds of the time as something obvious, and she was successful in her aims and actions. She was regarded as fiercely independent, and yet she also had children and cared for them. Her attitudes and passions remained unacceptable in a man's world for a long time.

We can conclude our examination of these two amazing women by echoing the words of Élisabeth Badinter, author of biographies of both scholars: "Dear conquerors of unknown lands, which are yet to be fully discovered; your daughters, filled with gratitude, will never forget you." ■

#### Further reading:

- Vaillot A.R. (1978). *Madame du Châtelet*. Paris: Albin Michel.  
Badinter E. (1983). *Émilie, Émilie ou l'ambition féminine au XVIIIe siècle*. Paris: Flammarion.