

*From the Preface to 'Passionate Minds':*

You are beautiful  
so half the human race will be your enemy  
You are brilliant  
and you will be feared  
You are trusting  
and you will be betrayed...

VOLTAIRE, 'EPISTLE ON CALUMY', 1733  
Written soon after meeting Émilie  
(Everything he predicted came true.)

I'd been researching  $E=mc^2$  when I came across a footnote about an obscure French woman of the early 18th century, Émilie du Châtelet. The note said she'd played a minor role in developing the modern concept of energy, then added that she had acquired a certain notoriety in her time.

I was intrigued, and a few days later ended up at the science library of University College London; not in the modern, well-lit stacks upstairs, but deep in the darker ground-floor recesses, where the stacked journals had enough dust on them to reveal they hadn't been touched for years. What I discovered there – and then in other archives, as I tracked down her letters, as well as contemporary accounts of her life – astounded me. The footnote had understated her significance entirely. This woman had played a crucial role in the development of science – and had also had a wild life

She and the great writer Voltaire were lovers for nearly a decade, though they certainly took their time settling down, having to delay for frantic gallopings across France, swordfights in front of besieged German fortresses, a wild affair (hers) with a gallant pirates' son, and a deadly burning of books (his) by the public executioner at the base of the grand stairwell of the Palais de Justice in Paris. There was also rigging the French national lottery to guarantee a multi-million-franc pay-out, and investing in North African grain futures with the proceeds.

Then, when she and Voltaire finally did commit to each other, things started getting more interesting. They'd decided to create a research institution, in the isolated château de Cirey they'd rebuilt, which in many respects was a century or more ahead of its time: a berthed spaceship from the future. Visitors from intellectual centers in Italy and Basle and Paris came to scoff, but then stayed, and became awed by what they saw. There are accounts of Émilie and Voltaire at breakfast reading from the letters they received – from Bernoulli, and Frederick the Great; earlier there had been letters from Bolingbroke and Jonathan Swift – and in their quick teasing at what they heard, they'd come up

with fresh ideas, then return to their separate wings of the house and compete to elaborate them.

When they ran out of money, Émilie would sometimes resort to the gambling tables at Versailles. Since she was so much quicker than anyone else at mathematics, she could often be counted on to win. Voltaire wrote proudly that ‘the court ladies, playing cards with her in the company of the queen, were far from suspecting that they were sitting next to Newton’s commentator’.

Voltaire wasn’t much of a scientist, but Émilie was a skilled theoretician. Once, working secretly at night at the château over a single intense summer month, hushing the servants not to spoil the surprise for Voltaire, she came up with insights on the nature of light which set the stage for the future discovery of photography, as well as of infrared radiation. Her later work was even more fundamental, for she played a key role in transforming Newton’s thought for the modern era. The research she did on what later became termed the conservation of energy was crucial here, and the ‘square’ in Einstein’s famous equation  $E=mc^2$  came, in fact, directly from her work.

In the evening of ordinary days, when she and Voltaire did take a break from their separate research, there were candles everywhere, and Émilie raced in conversation, eyes sparkling, faster than anyone Voltaire had ever met. He adored her youth and intelligence (she was twenty-seven when they met), and she teased him for that: but she was thankful, deeply, that she’d finally found someone with whom she could let her intelligence pour forth. She’d been raised in a world where women weren’t educated to any serious level, and had been too unsure of herself to make these efforts on her own (even though no one who saw her confidence as an adult would have guessed how self-doubting she’d been.)

Each of them transformed the other. Before meeting Émilie, Voltaire had been a respected wit, but little of his earlier output would be considered important today. Yet he loved Émilie beyond measure:

*...why did you only reach me so late?  
What happened to my life before?  
I'd hunted for love, but found only mirages*

Since the two often got restless after a few months at Cirey – or the government would draw up arrest warrants again – their shared decades wasn’t just one of quiet reading and conversation. There were border escapes and Versailles card cheats; Paris throngs, and more torn affairs. There’s a carriage overturning in deep snowdrifts at night; even a friend’s expedition through the frozen wastes of northern Lapland, trying to find the truth about God’s plan for the universe in the cold of Earth’s Arctic latitudes.

One of the most painful parts in my writing came when I reached the moment that their idyll started crashing apart. It was like watching friends you've loved destroying themselves in a divorce. Voltaire and Émilie had always had sudden quarrels, but those were usually patched up by an afternoon in the bedroom, followed, if they were at the château, and the weather was good, by a picnic nearby, for which they'd bring wine, food and – to new visitors' puzzlement – an extra crate with books, writing paper, quills and ink. But in time these resolutions came further and further apart.

Voltaire fell out of love first, his ego hurt by his lover's greater success. Émilie knew she should still be able to have a satisfying life, and at one point wrote how ridiculous it was to think that an intelligent woman really needed a man to be happy. Yet she did need that warmth, and the main text shows the catastrophe that led to, resulting in her sudden death in her early forties.

*(Here and in the other extracts I often call du Châtelet by her first name, and Voltaire by his last – which seems unfair, except that this is generally how the two referred to each other. The name 'du Châtelet' wasn't what she was born with, nor what she chose, and when it came to teasing her male friends, she'd often write that they were one of her 'Émiliennes'. 'Voltaire', by contrast, was a name that he chose, and which he did like.)*