

Scientist, social reformer, soldier, spy

From a Massachusetts farm to the court of England's George III, and beyond.

Count Rumford: The Extraordinary Life of a Scientific Genius

by G. I. Brown

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Apart from being a formidable scientist and ingenious inventor, the American-born Count Rumford was also a soldier, spy, statesman, a brilliantly successful, if callous, social reformer, and the individual predominantly responsible for founding the Royal Institution of Great Britain. Born in 1753 in Massachusetts, of simple farmer stock, Rumford also founded the professorship named in his honour at Harvard University, and the Rumford prizes and medals of both the Royal Society, London, and the American Academy of Arts and Sciences, Cambridge, Massachusetts.

In quick succession, while in his middle teens, Rumford (who was christened Benjamin Thompson) tried his hand at commerce, medicine and schoolteaching; he also attended some courses at Harvard. In July 1772, he took up a position as schoolmaster in the town of Concord (formerly called Rumford, a corruption of the English town Romford), New Hampshire. Four months after arriving there, he married the wealthiest widow in the province. She was nearly 14 years his senior. He thereby became not only a gentleman farmer — with scope to indulge in natural philosophy — but also gained entry into the political and social circle surrounding the Royalist governor, John Wentworth.

Rumford became extremely unpopular in Concord because of his overt espousal of the American Tory cause in that turbulent period when the American colonies were struggling to free themselves from the British Crown. He abandoned his wife and young daughter in Concord and fled, first to Boston and then to London, where the self-assured 23-year-old major of the New Hampshire Militia soon became private secretary to the Secretary of the Colonists, Lord Germain. It was in Germain's country estate that he carried out impressive experiments on gunpowder, and where he measured the momentum exchange between a bullet and a ballistic pendulum. The Reverend G. E. Ellis, writing of this period of Thompson's life (in a *Memoir* published in Boston in 1871), says that he was already a courtier. "He manifested in early manhood the tastes, aptitudes, and cravings which prompt their possessor, however humbly born, and under whatever repression from surrounding influences, to



Right, Rumford, aged 30, and, above, James Gillray's cartoon, "The comfort of a Rumford stove".

push his way in the world by seeking the acquaintances and winning the patronage of his social superiors, who have favours and distinctions to bestow". How true. He courted favour with, and gained the admiration of, Sir Joseph Banks, the influential president of the Royal Society — Thompson was elected a fellow in 1779 — and he "extracted" a knighthood from King George III before settling into an 11-year stint as the supremo of the Elector of Bavaria, Karl Theodor, who in 1791 made him Count of the Holy Roman Empire.

All this and more are described in this compact and well-illustrated account of Rumford's numerous adventures, good and bad, by G. I. Brown, former chemistry master at Eton. Brown also deals concisely with the sequence of events that led to the creation of the Royal Institution. Rumford wrote extensively about his own achievements and aspirations. There are also early biographies by Ellis and Bence Jones in 1871, as well as two recent ones by the late Sanborn Brown of the Massachusetts Institute of Technology who thoroughly analysed Rumford's accomplishments. Brown has benefited greatly from Sanborn Brown's five-volume publication of *The Collected Works of Count Rumford* (Harvard University Press, 1970–71), and he has written an admirable summary of the man known to most scientists largely through his famous observations on the drilling of cannon in the arsenal at Munich, observations that were to

demolish the caloric theory of heat. But there is much more, scientifically and technologically, to Rumford than that important work. He was among the first to enunciate the now-popular mantra that fundamental research in a problem is a prerequisite to technological development.

Brown's book highlights how, during Rumford's mission-oriented efforts to improve the conditions of the wretched inmates of his House of Industry (essentially a workhouse) and of the Bavarian army, many scientific advances were made. These included the discovery of convection currents in liquids, an estimate of the mechanical equivalent of heat, an understanding of radiation loss from

surfaces and the creation of a whole host of gadgets, such as pressure-cookers, drip coffee-makers, efficient oil-lamps, stoves, kitchen ranges and the construction of a photometer to measure candle power.

We are also informed how badly Rumford treated his first wife (his daughter less so), how he came to marry, and separate acrimoniously from, the

widow of Antoine Lavoisier, and how outrageously he treated Thomas Garnett, the first professor of chemistry at the Royal Institution. He also records Rumford's many amorous exploits: there was a succession of mistresses and two illegitimate children.

My only serious criticism of the book is that, in summarizing the dazzling number of discoveries made by Michael Faraday at the Royal Institution, two of Faraday's principal achievements are not mentioned: the introduction of the concept of field, which set the stage for James Clerk Maxwell's endeavours in the 1850s, and the realization that matter and electricity are inextricably linked. That electricity comes in units is of far greater significance than the laws of electrolysis *per se*. Brown also quotes a tendentious example to support his contention that Rumford wrote badly. Yet Rumford could make his case beautifully in the written word. How about this sentence? "The ardour of my mind is so ungovernable that every object that interests me engages my whole attention and is pursued with a degree of indefatigable zeal which approaches to madness." Nevertheless, this is an enjoyable book about one of the great individualists of science. ■

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