

1. S.951 — Regulatory Accountability Act of 2017 (April 26, 2017) (<https://www.congress.gov/bill/115th-congress/senate-bill/951>).
2. Administrative Conference of the United States. Recommendation 71-7: Rule-making on a record by the Food and Drug Administration. December 7, 1971 (<https://www.acus.gov/sites/default/files/documents/71-7.pdf>).
3. Recommendations of the Administrative Conference of the United States. *Fed Regist* 1973;38(140):19782-94.
4. Letter from Leslie Kux, acting assistant commissioner for policy, Food and Drug Administration, to Andrew Maguire, vice president, Environmental Defense. November 7, 2011 ([http://emerald.tufts.edu/med/apua/news/news\\_119\\_1919102228.pdf](http://emerald.tufts.edu/med/apua/news/news_119_1919102228.pdf)).

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## HISTORY OF MEDICINE

# The Myth of the Milkmaid

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Two hundred fifty years ago, an almost-forgotten country doctor made an observation while inoculating a group of farmers against smallpox. Although John Fewster never appreciated the importance of his discovery, he told his colleagues what he had found, setting in motion a process that led to the development of the smallpox vaccine and the eventual eradication of the virus. All immunizations arguably have their origins in this event.

Almost all histories of vaccination state that Edward Jenner became aware of the benefits of cowpox from a conversation with a milkmaid who claimed that she was immune to smallpox because she had had cowpox. According to variations of this story, milkmaids were known for their unblemished complexions and fabled beauty. In fact, the milkmaid story is a myth invented by Jenner's biographer, John Baron, 13 years after Jenner's death in order to protect his reputation amid the many assertions that he did not discover cowpox.<sup>1</sup> Jenner never claimed to have been responsible for discovering the benefits of cowpox and referred to a vague "rumour in the dairies."

However, there is a contemporary account of the events that

led Jenner to appreciate the possibilities of vaccination with cowpox that was published during Jenner's lifetime and that he never denied.

In 1796, Fewster, a country surgeon based in the Gloucestershire town of Thornbury, wrote about an event that had occurred in 1768. That year, he and two colleagues, Hugh Grove and Daniel Sutton, began inoculating people against smallpox. "We found in this practice that a great number of patients could not be infected with Small Pox poison, not withstanding repeated exposure under most favourable circumstances for taking the disease," Fewster recounted. "At length the cause of the failure was discovered from the case of a farmer who was inoculated several times ineffectually, yet he assured us that he had never suffered the Small Pox, but, says he, 'I have had the Cow Pox lately to a violent degree, if that's any odds.'"<sup>2</sup> It turned out that the other patients with no response to smallpox inoculation had all had cowpox as well.

Fewster described his observation to his medical society, which met at the Ship Inn in Alveston and was composed of about seven other local surgeons and apothecaries. Among them were the

Ludlow brothers, Daniel and Edward. In 1768, Jenner was their apprentice. He probably heard from them about the phenomenon that would ensure his fame. Jenner told his friend James Carrick Moore that 1768 was the year he learned of cowpox.<sup>3</sup> In addition, the fact that Fewster was associated with Sutton indicates that Fewster's observation occurred after 1766, when the Suttonian method of inoculation became widespread, and before 1770, when Jenner went to London already aware of the phenomenon. Jenner also wrote that farmers became aware of the immunogenic effects of cowpox only after the Suttonian method became readily available.<sup>1</sup> Both Fewster and his partner Grove were experienced doctors who had practiced in Gloucestershire for many years. The fact that they hadn't heard of the phenomenon suggests there was no general folk belief that having been infected with cowpox offered protection against smallpox.

When Jenner returned to Gloucestershire in 1774, he joined the medical society with Fewster and the Ludlows. Baron wrote that cowpox was a frequent topic of conversation but wasn't considered particularly important.

Even after Jenner published reports of his first experiments with cowpox, Fewster didn't think the phenomenon was of any significance, in part because he considered cowpox to be more severe than the side effects of smallpox inoculation. "Inoculation of the Small Pox seems to be so well understood that there is little need of a substitute," he wrote. The cowpox finding "is curious, however, and may lead to other improvements."<sup>4</sup> Fortunately, Jenner realized that if natural cowpox produced immunity, then inoculated cowpox would do so as well.

Fewster, who died in 1824, was recognized as the discoverer of the benefits of cowpox in his, and Jenner's, lifetimes. His obituary recorded that he was "uni-

versally considered in [Thornbury] as the first person who noted the effects of vaccine virus." Because of the "skill and perseverance" of both Fewster and Jenner, it continued, "the blessings of vaccine virus were distributed through the earth."<sup>5</sup>

There are many paradoxical aspects of the cowpox story. The vaccinia virus used in the final smallpox eradication drive was not in every case cowpox, and its origin remains unknown. Fewster, who made the observation that led to Jenner's experiments, didn't believe his finding had any value. And the widely believed version of the story, involving the beautiful milkmaid, is a myth. In reality, the trail that led to the eradication of smallpox began with a simple clinical observation and its

communication to a medical community 250 years ago.

Disclosure forms provided by the author are available at NEJM.org.

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