Extirpating the Loathsome Smallpox: A Study in the History and Demise of Smallpox, as Aided by Thomas Jefferson

Anna Durham

Abstract: This essay explores the history of smallpox variolation and vaccination with particular emphasis on the contributions of Thomas Jefferson to the spread of both methods in the United States. The research draws mainly upon contemporary histories of the disease and modern medical insights, as well as primary sources in the form correspondence between Thomas Jefferson and his contemporaries. Jefferson’s motivation in performing his own experiments with variolation and vaccination becomes clear when considering his Eastern and British forerunners, and the enthusiasm with which he writes on the subject points to his emotional involvement. This research makes clear the significance of Jefferson’s experiments to scientific progress and the importance of his efforts to alert the American people of the procedures’ value.

“Future nations will know by history only that the loathsome smallpox [sic] has existed and by you has been extirpated,” Thomas Jefferson wrote in 1806, closing a letter to the revolutionary physician Edward Jenner.¹ That Jefferson’s proclamation rings true is surely a testament to the efforts of Jenner, whom Jefferson praises, but also to the efforts of Jefferson himself. After millennia of destruction without regard to class or motive, the extirpation of naturally occurring smallpox epidemics began just before Jefferson’s lifetime and became increasingly more efficient in the late eighteenth century, supported by his own efforts. The history of smallpox is a rich and devastating one, dating back beyond recorded history and continuing into the present day. This essay will trace that history, from some of the first instances of the virus in Europe and the New World through the Western “discovery” of variolation and vaccination in the eighteenth century. In particular, the virus’s effects in the lifetime of the late Thomas Jefferson, and his efforts in combatting it through the adoption and promotion of inoculation, are of particular interest when examining the rise and decline of smallpox itself. Jefferson’s contributions to the health and welfare of mankind through his treatment of smallpox variolation and later vaccination are often overlooked by today’s public, but it is clear to those who study this history that this swift and almost miraculous medical progress could not have occurred, or would at least have been greatly retarded, without the support of Jefferson.

Smallpox, identified as the two virus variants Variola major and Variola minor by modern scientists, is a highly contagious disease with devastating physiological effects. It is spread through close contact in several ways. The most common method occurs when the virions in the infected person’s mouth ulcers are expelled in sneezes or coughs, so that the healthy person inhales them and becomes infected as well. Smallpox may also be spread through physical contact with the clothing, bedding, or skin of a diseased individual whose sores have burst or become pierced by some other means. After an incubation period of one to three weeks, the virus begins to present itself in the form of a high fever accompanied by vomiting and pain in the limbs and abdomen. Just three days after the onset of these initial symptoms come the reddish spots, which develop into the characteristic smallpox rash as illustrated in the artwork and literature of countless cultures.
throughout the centuries. Those reddish spots develop into fluid-filled vesicles that become opaque and begin to scab. In those who survive smallpox, most of the scabs are gone from the body (with the exception of the palms of the hands and the soles of the feet, which take longer to heal) after four weeks from the first observed symptom. In the place of those scabs are deep, depigmented scars that force survivors to bear the pocked appearance of the disease for the rest of their lives, and its high fevers commonly resulted in neurological damage or blindness, particularly in the very young.\(^2\)

Those scarred individuals, however, were the lucky ones. The general mortality rate of the disease ranged between twenty and sixty percent, but for the weak, especially children, this mortality rate was much higher, at eighty percent of cases or higher resulting in death. Since its first occurrence in 10,000 B.C. in Northeastern Africa, smallpox has swept across the world from its origin to India and then Europe, spreading through trade, migration, and other contact across cultures, until its reach became global. Smallpox is at least partly responsible for several of history’s most dramatic events. The Roman Empire first began to fall in 180 A.D. as smallpox ravaged Roman troops on their return home from the Middle East, killing between three-and-a-half and seven million people in what became known as the Plague of Galen. Mexico’s population decreased dramatically from twenty-five million to fewer than two million between 1518 and 1620 after Spanish and Portuguese conquistadors brought with their colonial ambitions and violence the deadly disease.

As a biological terror, smallpox made no distinction between rich and poor, powerful and weak. It is responsible for the death of governmental figures from Marcus Aurelius to King Louis XV of France, as well as countless citizens. In the late 1700s, for example, over four hundred thousand Europeans died annually of the disease and its complications.\(^3\)

How, then, were victims of smallpox treated, and what steps were taken to prevent the spread of the disease? For most of the Western world through the late eighteenth century, these were questions that had yet to be answered. Even today there exists no cure for smallpox, and treatment even in the twentieth century focused on addressing individual symptoms, such as fever and dehydration, rather than the virus itself.\(^4\) For Europeans and European-Americans in the New World, smallpox was an enigmatic killer, unavoidable and insurmountable. That survivors of smallpox would not fall victim to the disease once again was obvious, but Europeans until the eighteenth century had no notion of how to use this knowledge to their advantage; encouraging an individual to develop a full case of smallpox so that they might avoid it in the future is an illogical idea. In the Eastern world, however, physicians and early scientists understood that one might cause a deliberate, milder viral infection that nevertheless confers immunity to the individual. This process, called variolation after the virus \textit{Variola}, was a form of inoculation practiced for centuries in China, Africa, and the Ottoman Empire before Europeans gained the same knowledge through contact with those cultures.\(^5\)

As Europeans started traveling to these eastern regions, particularly Turkey, in the early eighteenth century, reports of this curious practice trickled into their mother countries. These early reports, such as those given in 1714 by Emanuele Timoni and 1716 by Giacomo Pilarino to the Royal Society of London, however, did little to influence European physicians of the time, who were reluctant to experiment with Eastern medicine and especially with such a devastating disease as smallpox. Just a few years later in 1718, an
English aristocrat named Lady Mary Wortley Montagu, wife to the British ambassador to the Sublime Porte in Turkey, observed the Turkish practice of variolation and demanded that her own son be inoculated by the embassy surgeon. When she returned to England in 1721, she had her daughter inoculated as well—this time in the presence of the British court physicians and the president of the Royal Society, the result of both her close connection with the premier court physician Charles Maitland and her own reputation as a knowledgeable “witness to the Orient.” This was the first variolation performed in England and its prominence and success led the British monarchy to authorize trials by Dr. Maitland. His trials were certified a success by the Royal Society and the College of Physicians, and knowledge of variolation spread generally throughout England by 1722. Around the same time, across the ocean in America, another individual was discovering the value of inoculation in preserving the health of large populations. Cotton Mather, well known in American history as a Puritan minister and for his support of the Salem witch trials, was also responsible for quantifying—and thus rendering more acceptable—the effectiveness of variolation in the New World. Like Timoni and Pilarino, Mather wrote to the Royal Society of London about the Eastern practice of variolation. However, his 1716 letter was not the result of travel to the East, but rather a conversation with “[his] Negro-Man Onesimus, who is a pretty Intelligent Fellow.” Onesimus, an African slave purchased for Mather by his congregation in 1706, had shown Mather a peculiar scar on his arm. Onesimus explained that this scar was the result of undergoing variolation while still in Africa. Mather’s letter noted that while the inoculation gave Onesimus “something of ye Smallpox,” the result was that the slave was “forever preserved” from getting the disease again. Just five years after Mather sent this letter, a smallpox epidemic overtook Boston, killing almost nine hundred people by the year’s end.

With the knowledge that variolation had protected Onesimus from further bouts of smallpox and news of Lady Montagu’s success in England, Mather attempted to provide that same protection to the rest of the Massachusetts colony. At the time of the 1721 outbreak, Mather called upon every doctor in Boston to perform variolation on the colonists to protect the city from further harm, but prejudices ultimately prevented widespread use of the procedure. Because Mather’s knowledge came primarily from a slave, and because practice of the procedure was done only in Eastern, non-Christian countries, all but one of the Boston doctors resisted the experiment—much as the conservative English doctors had done around the same time.

The one doctor that took Mather’s risk, however, contributed much to making inoculation widespread throughout the colonies. Dr. Zabdiel Boylston inoculated 244 individuals with smallpox, only 6 of whom died. This mortality rate of two and a half percent, compared with the mortality rate of colonists who did not undergo variolation at fourteen percent, demonstrated the effectiveness of variolation.

Further, the careful records of Mather and Boylston quantified this effectiveness, providing hard evidence that opposed Western prejudices against the procedure. As smallpox outbreaks occurred in areas throughout the colonies, more and more doctors trusted the evidence of the 1721 Boston outbreak. As their successes mirrored Boylston’s, variolation became widespread throughout the colonies, though it was not universally accepted. Born in Virginia on April 13, 1743, Thomas Jefferson reached maturity in the midst of these smallpox outbreaks and debates over variolation. Jefferson was a brilliant man, well educated in an incredible number of topics, with interests ranging from gardening to politics. Jefferson’s education, though he did briefly attend the College of William and Mary, was primarily conducted of his own volition,
through correspondence with the experts of his
time in every conceivable field. Jefferson
certainly tried to satiate his thirst for
knowledge throughout his lifetime, keeping
constantly abreast of technological and
scientific progress in a wide variety of fields,
including medicine, even from a young age.¹¹
Not every doctor was as proactive in
discovering and analyzing medical advances;
indeed, most of the doctors during Jefferson’s
lifetime, and particularly his youth, were of the
same sort as the conservatives in England and
in Boston who were reluctant to take risks with
their patient’s health on new ideas. Jefferson
often expressed a preference for
self-treatment, generally preferring to call a
doctor only “when he felt he was suffering
more than a common illness.”¹² Indeed, in 1799
Jefferson wrote to friend William Green
Munford that the “state of medicine is worse
than that of total ignorance.”

“It was not, [Jefferson] was wont to observe,
to physic that I object so much as to
physicians,”¹³ explained Jefferson’s friend and
original University of Virginia faculty member,
Dr. Robley Dunglison in his Personal
Memoranda. This observation is perhaps the
best way to understand Jefferson’s approach to
eighteenth- and nineteenth-century medicine.
He trusted absolutely that which he
understood and saw evidence for (physic),
though he did not place blind trust into the
practitioners of medicine themselves
(physicians). It was a testament to the
scientific validity of a new medical procedure,
therefore, when Jefferson did put his trust into
the operation. One such procedure that proved
rational and quantified enough to pass
Jefferson’s scrutiny was variolation. Though
variolation was well known throughout the
colonies by the time Jefferson reached
maturity, it was not universally accepted, and
brought with it some considerable risk.
Jefferson’s decision to undergo the procedure
was a bold one, putting his health at risk based
solely on his faith in science and medicine.

In 1766, roughly forty years after the efforts
of Lady Montagu, Onesimus, and Mathers
brought variolation into prominence in the
Western world, Jefferson himself experienced
variolation. Because of Virginia’s strict laws
governing the practice, Jefferson took his first
ever trip out of the Virginia colony and
traveled alone to Philadelphia, where he was
meant to meet his close friend, Frank Willis.¹⁴
There, Jefferson underwent the variolation
procedure performed by prominent doctor
William Shippen, Jr.¹⁵

Jefferson’s trust in
the procedure is
incredible not only
when considering his
skepticism of the state of
medicine, but also when
considering the procedure
itself.

Variolation, as a form of inoculation that
uses the smallpox virus itself, is incredibly
dangerous when compared with the future
method of vaccination, another form of
inoculation that did not use the actual
smallpox virus. Inoculation took advantage of
the fluid-filled vesicles symbolic of a smallpox
infection, using that virus-containing fluid to
soak a thread or thin piece of cloth so that the
thread becomes impregnated with a weak
version of the virus itself. Allowed to dry for at
least twenty-four hours before use, the thread
itself could be preserved for months before its
use in variolation. To inoculate an individual, a
physician would make small incision normally
on the arm, just deep enough to expose the
blood. A physician would place the smallpox
soaked thread into the incision site, then cover
the wound for at least a day with cloth or
plaster. In the most successful cases, the
inoculated person would develop a mild case of
smallpox and subsequently be kept
quarantined, cared for only by those previously
infected or inoculated. Dr. Shippen’s inoculation of Jefferson was one of these successful cases, producing a mild bout of smallpox in Jefferson and granting him lifelong immunity. This personal experience with smallpox inoculation proved influential through Jefferson’s life, as he defended the practice, applied it to his own family, and looked towards its improvements with hope and confidence.

The value of inoculation in securing Jefferson’s health was not lost on him, and he felt strongly that consenting individuals ought to be able to undergo this procedure just as he had. These convictions led Jefferson, while he was still practicing law, to take on a controversial legal case in Norfolk, Virginia in 1769. Restrictive Virginia laws, founded in fear and ignorance of the process of variolation, encouraged the public’s beliefs that inoculation was dangerous. These fears were taken to a violent extreme in 1768, when several angry citizens of Norfolk formed a mob and rioted against a local doctor who performed inoculations, burning his house down. Jefferson took on the duty of defending the doctor, Dr. Archibald Campbell, representing not only the victim but in effect “the side of science and modern medicine.” Though he lost the case, Jefferson continued to defend the right of doctors and their consenting patients to practice inoculation as he served on the Virginia General Assembly. As a legislator, Jefferson and other assemblymen worked to repeal at least parts of the Act of 1769, which effectively outlawed any variolation procedure by prohibiting the import of “any variolous or infectious matter” to be used in inoculation. These efforts culminated in the Virginia General Assembly’s “Bill concerning Inoculation for Smallpox,” presented in 1777. While the extent to which Jefferson was involved in the formation of this bill is unknown, its character and phrasing bears an unmistakable resemblance to other Jeffersonian documents testifying to the rights of man to progress, such as the Declaration of Independence. In part, the 1777 bill reads, “it hath been proved by incontestable experience that the late discovery’s [sic] and Improvements therein [i.e., variolation] have produced great Benefits to Mankind.” One wonders if the “incontestable experience” to which the bill refers is, at least in part, Jefferson’s own.

The value of inoculation was quickly becoming clear to the colonists, particularly those elite and influential colonists that we today refer to as “founding fathers.” Indeed, the disease itself played an important part in the American Revolution. Given the usage of smallpox blankets to deliberately infect the Ottawa Indians by British troops during the French and Indian wars, Revolutionary leaders feared and even expected to be treated the same way. Their fears were not unfounded; in 1775 and 1776, as the British lay siege to Boston, a smallpox outbreak occurred within the city. There is no evidence that the British caused this outbreak, but they exploited the opportunity, allowing—or forcing—some of the infected individuals to leave the city so that the disease might spread. Washington, all too aware of the contagion and dangers of smallpox (he himself had suffered a bout while in his teens) did not allow any of his troops to make contact with the infected individuals and quarantined all those who showed any symptoms that could be smallpox-related. In response, Congress created a 1776 investigating committee on which Thomas Jefferson served. Jefferson’s committee interviewed several individuals, one of whom claimed that “the small pox was sent out of Quebeck by Carleton...for the purpose of giving it to our army.”

Convinced by Jefferson’s investigating congressional committee that the threat of biological warfare was real, Washington considered his options. Jefferson and other influential figures in the American Revolution, such as John Adams who was inoculated in 1764, encouraged the use of inoculations for
everyone. Indeed, in 1776 Adams demanded that his wife and children be inoculated as the outbreak occurred in Boston.\textsuperscript{26} While Washington trusted his fellow Revolutionary leaders and noted that smallpox was responsible for several of his military retreats and losses, he was reluctant to perform any kind of mass inoculation of his soldiers. Variolation, after all, confers a mild case of smallpox, but it is a case of smallpox nonetheless, and Washington feared large numbers of his soldiers would be rendered incapable of fighting. Nevertheless, he eventually realized the value of inoculation and began a campaign in which all new soldiers would be inoculated, gradually creating a smallpox-immune army that was up to British attacks.\textsuperscript{27}

Smallpox continued to ravage the continent wherever outbreaks occurred even after the thirteen colonies became the United States, and thus still weighed heavily on Jefferson's mind. Jefferson seems to have become increasingly concerned for the health of his family and household, beginning with a decision to inoculate his slave, James Hemings, against smallpox in 1775.\textsuperscript{28} Jefferson then requested that his wife, Martha, accompany him to Philadelphia to be inoculated in 1776\textsuperscript{29} Martha, however, was unable to make the trip. Two years later, another of Jefferson's slaves, Bob Hemings, was inoculated successfully as well.\textsuperscript{30} After Martha's death on September 6, 1782, which devastated her overworked husband, Jefferson mourned so deeply that friends and acquaintances took notice. Perhaps afraid of losing his daughters as well, Jefferson, only two months after Martha's death, traveled with them to Chesterfield County. There, they stayed with family friend Archibald Cary while Jefferson had his daughters and some of Cary's family inoculated; Jefferson himself, already immune, served as their nurse. James Madison, who took note of Jefferson's grief and suspected that going abroad would help him heal, asked Jefferson for a second time to be the United States' negotiator of peace to France.\textsuperscript{31} Jefferson accepted, and once again
demonstrated confidence in the power of inoculation in 1787: when he knew that a third slave, Sally Hemings, would accompany his daughter Polly on her trip to his home in Paris, he ordered that Sally, like the rest of his household, be inoculated, so as to prevent the introduction of smallpox into his Parisian home.32

Twelve years after Jefferson required Sally Hemings to be variolated with the smallpox virus—until then, the only method of inoculation of which to speak—English physician Dr. Edward Jenner made a groundbreaking discovery. After years of fascination with the common lore that milkmaids, who often contracted cowpox, could not contract smallpox, Jenner came upon an opportunity to test that theory. In May 1796, milkmaid Sarah Nelmes became infected with cowpox and developed characteristic cowpox vesicles. Using the same method of inoculation as variolation, Jenner ran a thread through one of Nelmes’s vesicles and used it to inoculate James Phipps, an otherwise healthy child. To test Phipps’s immunity against smallpox, Jenner performed a variolation on the boy just six weeks later; instead of developing a mild case of smallpox, as a variolated individual is wont to do, Phipps remained healthy and uninfected. When Jenner repeated the variolation months later and again produced no infection, he excitedly wrote to the Royal Society, expressing his discovery in hopes of finding support. Instead, he was met with disbelief, criticism, and even threats; told “not [to] promulgate such a wild idea,” Jenner nevertheless decided to self-publish his findings.33 Instrumental in bringing those findings to prominence in America, and especially to the eyes of Thomas Jefferson, was Rhode Island doctor Benjamin Waterhouse.34

Waterhouse encountered Jenner’s self-published article and was immediately taken with the idea. Variolation, while still preferable to contracting smallpox in the natural way, came with serious risks. Between two and three percent of variations were unsuccessful, resulting in the death of the variolated individual, the deaths of those tending the variolated individual (or even a new outbreak), or the development of other illnesses that were present in the individual from whom the variolation thread came.

While vaccination, or the use of the cowpox vaccine rather than the smallpox vaccine in inoculation, did not prevent the risk of contracting unintended illnesses from the donor, it did eliminate the risk of death and epidemic.

Cowpox was a much milder disease, even less likely to harm through inoculation than in its natural state.35 Convinced by Jenner’s article, Waterhouse vaccinated his own family in July 1800, then confidently exposed them both to variolation and patients with smallpox to demonstrate the vaccine’s effectiveness. Waterhouse’s efforts provoked a storm of controversy in his day, but he was nevertheless anxious to spread Jenner’s new discovery throughout his own country. To do so, Waterhouse went to the very top, writing to then-president John Adams in 1800. When Adams’s response was not enthusiastic, Waterhouse turned to the next best thing: vice president Thomas Jefferson.36

In his December 1 letter to Jefferson, Waterhouse enclosed Jenner’s pamphlet on vaccination with cowpox (commonly referred to as “kinepox,” “kine-pock,” and the like). Jefferson, who received Waterhouse’s letter on Christmas Eve, was apparently fascinated, for he read the pamphlet and drafted his reply to be sent on Christmas day.37 Thus began what
would be a long and fruitful correspondence between Jefferson and Waterhouse. Jefferson, for his part, immediately took to the idea of vaccination; he saw in it the merits he saw in inoculation, with the benefit of being safer. In July 1801, Waterhouse wrote to Jefferson, who was now president, stating that he received letters from throughout the country, both requesting samples of the vaccine and decrying that vaccination could only be infective. In order to persuade the public one way or the other, Waterhouse proposed that “a series of experiments may be directly instituted by [Jefferson]” because “if [the results] came from Mr. Jefferson, it would make, like a body falling from a great height, a deep impression.” These experiments, Waterhouse proposed, might be done on Jefferson's slaves in Virginia, and he even included images and information on the expression of the disease in African Americans. Jefferson, anxious to see vaccination in person and unable for the time to leave Virginia, requested that Waterhouse send the vaccination materials to Dr. Edward Grant in Washington instead. When the vaccination did not occur, Jefferson proposed a new way of transporting the material—“how might it answer to put the matter into a phial of the smallest size, well corked, & immersed in a larger one filled with water & well corked”—which succeeded in preserving the material enough that the vaccinations in Washington conducted by Dr. Grant were a success.

Once he returned to Monticello, Jefferson conducted his own experiments with vaccination. After writing personally to Edward Jenner requesting that samples of Jenner’s vaccine be sent to the Jefferson family physician, Jefferson arranged for that same physician, Dr. William Wardlaw, to visit Monticello when Jefferson would arrive in the summer of 1801. Keeping close records and all the while reporting back to Dr. Waterhouse, Jefferson’s vaccine experiments, at first intended to encompass the slaves of his household, eventually extended to his family and throughout the neighborhood. In a November 1801 letter to John Vaughan, Jefferson estimates the toll at “about 70 or 80 of my own family, my sons in law about as many of theirs, and including our neighbors who wished to avail themselves of the opportunity our whole experiment extended to about 200 persons.” In all, Jefferson's experiments were an overwhelming success. The careful data that Jefferson collected not only influenced those who knew him to support vaccination, but was also used by Waterhouse in his campaign to popularize vaccination in the United States, culminating in an 1802 medical article in which Waterhouse explicitly cited Jefferson’s 1801 experiments at Monticello as evidence for the efficacy of the practice.

Perhaps one of the most notable events of Jefferson’s presidency was the westward expedition of Captain Merriweather Lewis and Second Lieutenant William Clark. Such was the wide influence of smallpox and vaccine technology that even this expedition, commissioned by Thomas Jefferson shortly after the Louisiana Purchase in 1803, was affected by Jenner's discovery. After Jefferson sent a copy of the first draft of his instructions to his Attorney General, Levi Lincoln, Sr., Lincoln read and responded, in almost a passing comment, “As Capt Lewis may have in his company, some who have not had the smallpox, would it not be best to carry some of the matter for the kinepox with him?” For this suggestion to be so logical and casually mentioned, with no need for clarification or qualifying with warning, would have been impossible just two years before. The successes of vaccinations were becoming well known, and vaccination thus more widely accepted, especially by the educated and those in Jefferson’s inner circle. Jefferson took Lincoln’s suggestion and included it in his instructions to Lewis, telling him to take a sample of the cowpox vaccine with him and to educate his party on “it’s [sic] efficacy as a preservative from the smallpox; and instruct & encourage
Although Jefferson’s correspondence and notes about smallpox, variolation, and vaccination began to decline upon his retirement, his influence in establishing vaccination as a valid and superior medical procedure remained.

His 1806 letter praising Jenner for the pending extirpation of “the loathsome small-pox” was perhaps too modest; Jefferson himself, along with the likes of Waterhouse and all those with whom he corresponded, did much to hasten smallpox’s demise as well. Within Jefferson’s lifetime, Congress, under his successor President James Madison, drafted an Act to Encourage Vaccination, signed into law in 1813. The act established a National Vaccine Agency and gave franking privileges, or free postage, to anyone shipping vaccine matter in the United States, providing both a governmental and financial incentive to perform vaccinations. In 1855, nearly one hundred twenty-five years after the devastating 1721 smallpox outbreak, Boston became the first city to require mandatory vaccination for public schoolchildren. Instances of smallpox became more and more rare as scientists and the general public developed the concept of herd immunity. Finally, in 1980, more than two hundred years after Jefferson took a gamble and traveled to Philadelphia to undergo variolation, the 33rd World Health Assembly declared that smallpox was globally eradicated.

NOTES:


7 Barquet and Domingo, “Smallpox: The Triumph over the Most Terrible of the Ministers of Death.”


10 Ibid.
11 Text not included in bibliography: citations in the format of “Boles, Number” refer to chapter numbers in Dr. John B. Boles’s Thomas Jefferson biography manuscript.


13 Holmes, Thomas Jefferson Treats Himself, 27.


15 Boles, 1.


17 Boles, 1.

18 Ibid., 3.


20 Boles, 3.


22 Ibid., 2:122-124.


27 Thompson, “Smallpox.”

28 Boles, 11.

29 Thomas Jefferson Encyclopedia, “Inoculation.”

30 Boles, 11.

31 Ibid., 9.

32 Ibid., 11.

33 Barquet and Domingo, “Smallpox: The Triumph over the Most Terrible of the Ministers of Death.”


35 Barquet and Domingo, “Smallpox: The Triumph over the Most Terrible of the Ministers of Death.”

36 Byrd, “Thomas Jefferson and Smallpox Vaccination.”

37 Ibid.


39 Boles, 22.


41 Boles, 22.


43 Boles, 22.


BIBLIOGRAPHY:


Editors' Note:

The following essay ["Consumerism, Commodification, and Beauty: Shiseido and the Rise of Japanese Beauty Culture" by Jessica Guerra] was originally accompanied by eighteen images, which the author discusses in detail throughout the piece. Unfortunately, the Rice Historical Review was unable to obtain permission to print these images alongside the essay. Nonetheless, we felt this essay had great value and deserved to be included in the journal. We encourage readers to view the images in the online gallery from MIT Visualizing Cultures, about which more information can be found in the bibliography.