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**Religious Conviction and
The Boston Inoculation Controversy of 1721**

A thesis submitted in partial fulfillment of the requirement
for the degree of Bachelors of Arts in History from
The College of William and Mary

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Accepted for _____
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Introduction

“Ultimately, society must recognize that science is not a democracy in which the side with the most votes or the loudest voices gets to decide what is right.”¹ This quote is part of a larger article, “The Age-Old Struggle against the Antivaccinationists,” published on January 13, 2011 in the *New England Journal of Medicine*. Written by Gregory A Poland, M.D., and Robert M. Jacobson, M.D., the article discusses the problem of “antivaccinationists,” or people who use fear to deter society from vaccinating themselves and their families. Now, almost two centuries later, skeptics are still using all means possible to spread misinformation about the risks associated with vaccination, despite its proven safety and efficacy. Convincing people that vaccination is in their best interest is a challenging task that society has struggled with for a long time. To make this point, Poland and Jacobson refer specifically to the inoculation debate in Boston in the seventeenth century, and the hesitancy of many individuals to inoculate themselves and their families shortly after the practice had been invented and introduced.

Another article published by the same journal tells the story of Dr. Immanuel Pfieffer, a Danish immigrant to the United States who claimed in the early twentieth century that healthy individuals were not at risk of contracting smallpox.² Pfieffer himself had not been vaccinated since infancy, yet sought to visit Gallop’s Island smallpox hospital. The Chairman of the Boston Board of Health, Dr. Durgin, to prove a point to the

¹ Gregory A Poland, M.D., and Robert M. Jacobson, M.D., “The Age-Old Struggle against the Antivaccinationists,” *New England Journal of Medicine* 2011; 364:97-99, January 13, 2011.

² Michael R. Albert, M.D., Kristen G. Ostheimer, M.A., and Joel G. Breman, M.D., D.T.P.H., “The Last Smallpox Epidemic in Boston and the Vaccination Controversy, 1901-1903,” *New England Journal of Medicine* 2001; 344:375-379, February 2001.

antivaccinationist, allowed Pfeiffer to visit the hospital in January 1902, despite the hospital's policy prohibiting entry of non-vaccinated visitors. Pfeiffer, contrary to his own theory regarding smallpox infection, subsequently fell ill with smallpox, unlike all of the vaccinated health professionals staffing the hospital. Shortly afterward, a Boston newspaper stated, "It is a salutary lesson to the anti-vaccinationists, and it is destined to live in the annals of preventive medicine."³

Another article, *The Last Smallpox Epidemic in Boston and the Vaccination Controversy, 1901-1903*, details the procedures followed in the early twentieth century, comparing them to last smallpox epidemic in Boston and the course of action adopted by Boston health officials to control the virus. Twentieth-century physicians were instructed to vaccinate any willing citizen free of charge and given a set of instructions that closely resembles the inoculation descriptions written by early inoculators in the seventeenth and eighteenth centuries, such as Dr. Zabdiel Boylston, Dr. Emanuel Timonius and Jacobus Pylarinus. In 1902, city officials subjected noncompliant citizens to a five-dollar-fine or fifteen days in jail because public health officials had reached a consensus on the efficacy of vaccination, despite the public's skepticism. The authorities in Boston were not able to reach a similar consensus in 1721, and a controversy ensued about the appropriate response to the outbreak of the disease. The debate between Boston's religious and medical leaders concerned the effectiveness, safety, and morality of this mysterious new medical technique.

Many today are still hesitant to vaccinate themselves or their children, and this makes the presence of an inoculation debate in Boston in 1721 less than surprising. At first glance, the debate seems like any other: medical professionals arguing against non-

³ Editorial page, *Boston Herald*, February 11, 1902, 6.

medical community authorities about the effectiveness of a new method of preventing a disease. A closer look at the documents published by the leading players in the debate reveals that the debate itself was not as straightforward as one might expect. Numerous pamphlets were published regarding the issue beginning in early summer 1721 and continued through the following year. One complicating factor of the debate is the fact that some of the most influential citizens were Puritan ministers, and these ministers contributed to the debate a divine explanation for the outbreak. One minister in particular, Cotton Mather, took a larger role in the controversy by encouraging inoculation, a new and largely untested technique to prevent the spread of the disease. Mather and a single local physician, Zabdiel Boylston, argued against the rest of the city's medical professionals in support of the procedure. The anti-inoculation contingent was organized and led by a local physician, Dr. William Douglass. At the time, Douglass was the only European trained, degree-holding physician living in Boston.

Key sources from the abundant primary document list can be narrowed down to nine principal pro-inoculation and seven major anti-inoculation publications. The fundamental pro-inoculation documents that shaped this debate include pamphlets, sermons and letters written by Increase and Cotton Mather, Dr. Zabdiel Boylston, and Dr. Benjamin Colman. Because three of these figures were prominent religious leaders, a portion of each of the relevant documents is meant to provide readers with a religious explanation for the epidemic. These leaders considered the pestilence God's punishment for sin, but also believed that God provided inoculation as a means of combating the epidemic. Despite this religious element pervading many of the pro-inoculation sermons and pamphlets from Boston, the documents make quite rational arguments. The Mathers

and Boylston were well read and cited past, as well as current, examples of successful inoculation to make their case. Although these authors did not understand how or why inoculation was effective, they used their knowledge of inoculation to provide statistics and other proof of its value. William Douglass and others who opposed the procedure's pamphlets changed the tenor of the debate by publishing unexpectedly petty and unscientific documents. Douglass published three key documents in 1722 and another two in 1730. One would expect these documents, published by the only European trained medical professional in the city, to contain specific medical examples of failed inoculation or other scientific arguments against the use of the practice. Instead, the documents claim to refute the arguments of Mather, Boylston and Colman without actually addressing inoculation. Instead, Douglass made spiteful comments about his opponents and argued that his opponents lacked the medical authority to make a well-informed statement regarding the efficacy of inoculation. Douglass's documents reveal that the famous inoculation controversy that raged through Boston in 1721 was not a straightforward scientific debate discussing the benefits and harms of the new procedure, and concluding to a logical and widely accepted solution. Rather, it was a complicated and personal argument that focused not on whether inoculation was safe and effective, but instead, on who should decide if it were, and subsequently perform the procedure. Douglass wanted to know more about inoculation, but was unwilling to perform experiments to increase his understanding of the technique. Ultimately, the medical community accepted inoculation because of Mather's faith that God provided inoculation to save his followers from smallpox.

Chapter One

Smallpox broke out in Boston in early spring 1721. Although Boston was one of the largest port cities in the American colonies, its residents had had little exposure to the deadly virus. The pestilence was particularly gruesome and generated great fear within the city. Zabdiel Boylston, a surgeon and apothecary practicing in Boston at the time wrote of the disease:

Purple spots, the bloody and parchment pox, hemorrhages of blood at the mouth, nose, fundament, and privities; ravings and deliriums; convulsions, and other fits; violent inflammations and swellings in the eyes and throat; so that they cannot see, or scarcely breath, or swallow anything, to keep them from starving. Some looking as black as the stock, others as white as a sheet; in some, the pock runs into blisters, and the skin stripping off, leaves the flesh raw... Some have been filled with loathsome ulcers; others have had deep, and fistulous ulcers in their bodies, or in their limbs or joints, with rottenness of the ligaments and bones: some who live are cripples, others idiots, and many blind all their days.⁴

The chance of contracting such a horrible disease created a sense of dread that penetrated every corner of Boston. Once the epidemic broke out that spring, an intense debate began about the cause of smallpox and how to best protect Boston's citizens. As the city considered what to do about the breaking epidemic, two opposing groups formed. A prominent Puritan minister, Cotton Mather, led the pro-inoculation faction. Mather himself did not know what caused the illness, but he had read extensively about a technique utilized in Europe to prevent the spread of smallpox: inoculation. On the other hand, William Douglass, Boston's only European trained physician, did not support the use of this new technique. Douglass believed that inoculation was not yet sufficiently tested and was convinced that, if performed incorrectly, the practice would actually spread the deadly disease throughout the city. Bostonians had a choice to make. They

⁴ Tony Williams, *The Pox and The Covenant: Mather, Franklin, and the Epidemic that Changed America's Destiny* (Naperville: Sourcebooks, Inc, 2010), 19.

could utilize inoculation, a seemingly dangerous and largely untested technique, to protect the city against a potential smallpox epidemic, or they could simply trust that God would protect his faithful Puritan flock from the “Speckled Monster.” Versions of the debate that raged in Boston in the spring of 1721 had occurred throughout Europe following the introduction of inoculation, but Boston’s debate had a unique religious component that dramatically changed the tenor of the discussion. Several of Boston’s most vocal participants in the debate were closely affiliated with the Puritan religious establishment. In a city as God-fearing as Boston, this inevitably had a significant effect on the response of the residents as they tried to evaluate the information presented to them by Mather, Boylston, and Douglass.

Cotton Mather, while well read, had very little formal medical training and was not qualified by practical experience to perform inoculation. He worked hard to educate Boston’s medical professionals regarding the practice, but was able to convince only one surgeon to join his crusade: Zabdiel Boylston. Born in 1670, Boylston was a third-generation American. His father was an apothecary and physician, and Zabdiel began his medical training in Boston at age fifteen under John Cutler. By the early 1700’s, Boylston was a successful and well-known citizen, owning the largest apothecary shop in Boston.⁵ In the spring of 1721 Cotton Mather approached Boylston, asking him to consider inoculating the citizens of Boston to protect them from the dangerous smallpox epidemic.⁶ Boylston agreed to inoculate Boston’s healthy citizens, and, over the course of the next few years, came into close contact with the disease, inoculating and treating many smallpox patients.

⁵ Williams, *The Pox and The Covenant*, 73.

⁶ Williams, *The Pox and the Covenant*, 75.

The early modern smallpox experience was built on a well-founded fear of the Speckled Monster and its deadly effects. This fear was reasonable because no one in the early eighteenth century, not even the most well trained medical professionals, knew what caused smallpox. Understanding what causes an infection to spread is not necessary to treating it, but it does make it easy to explain why a treatment should be used. In the absence of such understanding, Mather had a daunting task. He needed to convince the citizens of Boston that it made sense to intentionally infect healthy people without understanding himself why the method was effective. No one knew what caused the disease to strike, which produced a deep and justifiable fear of contraction and death by smallpox throughout Europe and the New World.

Many feared inoculation also. But, while the method was counterintuitive and risky, it seemed to be the only truly effective means of combating the deadly disease. In England, debates regarding smallpox inoculation were mainly focused on the effectiveness of the procedure and the risks associated with it. The documents produced by this debate were published primarily by people with formal medical training and degrees. The debate in the Boston was catalyzed by fear of the pestilence, but was focused on a different question: who should evaluate the efficacy of, and actually perform inoculation.

A familiarity with the basic history of smallpox is necessary to understanding the perspective of medical professionals and citizens living in the early eighteenth century. Smallpox has plagued humanity for thousands of years. The earliest evidence of the disease is associated with Egyptian mummies dating from 1570 and 1085 BC. The mummies exhibit a rash that is similar to the classic smallpox rash that presents early in

the infection.⁷ Further evidence is found in the *Ebers Papyrus*, dated between 3730 and 1555 BC, which describes a skin illness that resembles the classic rash associated with Smallpox.⁸ Chinese documents refer to “Hunpox,” a skin disease brought to China in 250 BC with the Huns’ invasion.⁹ In the Middle Ages, the disease spread with Arab expansion and the Crusades. European conquistadors infected inhabitants of the Americas, and the slave trade ensured a constant influx of infected individuals from Africa throughout the sixteenth and seventeenth centuries.¹⁰ This influx of infected colonists and slaves ensured that smallpox virus remained a constant trouble for colonists in the Americas.

Smallpox received its name, Variola, in 570 AD, from Bishop Marius of Avenches. The name came from the Latin words “varius” meaning “stained,” and “vaus” meaning “mark on the skin.” In fifteenth century England, the disease was given the name “smallpocks” to distinguish the disease from syphilis, another common illness at the time. The word “pocke,” meaning sac, describes the small fluid filled bumps that covered the bodies of infected individuals.¹¹ Smallpox, or Variola, is caused by a virus and is most often spread through direct physical contact or contact with bodily fluids. While the disease can be transmitted short distances through the air, this is extremely uncommon.¹² There are two types of smallpox, Variola major, the more severe strain, and Variola minor, the milder strain. Variola minor did not emerge until the 1890’s and has a

⁷ Donald R. Hopkins, *Princes and Peasants: Smallpox in History* (Chicago: The University of Chicago Press, 1983), 15.

⁸ Hopkins, *Princes and Peasants*, 15.

⁹ Hopkins, *Princes and Peasants*, 18.

¹⁰ Stefan Riedel, “Edward Jenner and the History of Smallpox and Vaccination,” *Baylor University Medical Center Proceedings* 18 (2005): 21-5

¹¹ Riedel, “Edward Jenner and the History of Smallpox and Vaccination,” 22.

¹² “Smallpox Disease Overview,” Centers for Disease Control and Prevention, accessed November 23, 2010, <<http://www.bt.cdc.gov/agent/smallpox/overview/disease-facts.asp>>

fatality rate of about 1%, contrasting significantly with the 30% fatality rate associated with *Variola major*.¹³

Variola is responsible for millions of deaths, yet is not considered a living cell. Viruses, unlike bacteria, are not considered living cells because they require their host's genetic machinery to reproduce. A virus particle is called a virion and is composed of a capsid, or outer coating, and genetic information, which in the case of smallpox virions, is in the form of deoxyribonucleic acids (DNA). In essence, a virion is simply a tiny package of DNA. The capsid is coated in proteins that allow the virion to recognize and bind to host cells. Once the virion has bound to the receptors on a host cell, it infiltrates the cell's outer membrane, enters the cell's cytoplasm and takes over its host's machinery, using it to create thousands of replicas of its viral DNA and protein components. When this replication process is complete, each infected host cell is filled with thousands to hundreds of thousands of identical virions. These new virus particles are released gradually as the dead host cell disintegrates.¹⁴

A smallpox infection may be broken down into several stages. The first stage, the incubation period, lasts seven-to-seventeen days. The patient is not contagious and usually does not exhibit any symptoms. During this period, the patient does not feel sick or have an idea that a virus is hacking into its cells to create army of *Variola* virions. The prodromal phase follows the incubation stage and typically lasts two-to-four days. During this stage, the patient begins feeling sick, but the classic pocks associated with smallpox are not yet present. Once the patient begins presenting symptoms of illness, the patient is

¹³ Elizabeth Fenn, *Pox Americana: The Great Smallpox Epidemic of 1775-82*, (New York: Hill and Wang, 2001), 20; Center for Disease Control and Prevention, "Smallpox Disease Overview."

¹⁴ Lodish, Berk et al., *Molecular Cell Biology, Sixth Edition* (New York: W. H. Freeman and Company, 2008), 154-8.

considered contagious. Prodromal symptoms include fever, body aches, headaches and vomiting. The next stage, typically lasting four days, is characterized by the appearance of a rash in the mouth and on the tongue. Over time the spots turn into sores, which burst and spread the virions throughout the patient's mouth and throat. This is the most contagious stage of the Variola infection. The rash quickly presents on the face and spreads down the body to the hands and feet. At this point, the fever breaks and the patient may feel better, but soon the rash becomes raised, fills with fluid and the body's inflammatory response produces another high fever. Within the next ten days, the bumps become firm and round, eventually scabbing. Once the scabs have fallen off, leaving pocked scars, the patient is no longer contagious.¹⁵ When a person is exposed to smallpox, their body develops antibodies that combat the disease should they be exposed again. These antibodies prevent the person from becoming infected with the same disease a second time.

In the sixteenth and seventeenth centuries, the cause of smallpox was unknown, making prevention and treatment difficult. Smallpox epidemics broke out in late seventeenth century England every few years, infected those who had never been exposed to the virus, and then declined when potential hosts either died or became immune through surviving the infection. Outbreaks continued through the eighteenth century.¹⁶ Because survivors of a smallpox infection are immune to future infections, the most susceptible section of the population was young children who were not alive during the most recent epidemic. Genevieve Miller, in *The Adoption of Inoculation for Smallpox in England and France*, described the effect of the disease on small children: "By the

¹⁵ "Smallpox Disease Overview," Centers for Disease Control and Prevention, accessed November 23, 2010, <<http://www.bt.cdc.gov/agent/smallpox/overview/disease-facts.asp>>

¹⁶ Miller, *The Adoption of Inoculation*, 33.

following century (eighteenth) so universally prevalent and dreaded was the disease that people considered themselves fortunate if they had contracted a mild case as a child and no longer had to fear its ravages, while parents did not count their children until they had all had it.”¹⁷ The alarmingly high fatality rate associated with the disease left people terrified of its return to their cities and towns.

People everywhere feared smallpox, but that fear took an assortment of forms, ranging from prayer, to flight, to early attempts at inoculation. Dr. Thomas Sydenham, a practicing physician in England during the mid-seventeenth century pioneered a new “cold” method of treatment, designed to keep the patient’s body temperature cool, straying from the already practiced “hot” method.¹⁸ Dr. Sydenham is credited with formally distinguishing smallpox from the measles and categorized two different types of smallpox, discrete and confluent.¹⁹ Dr. Sydenham was educated at Magdalen Hall College, Wadham University and Oxford University.²⁰ Dr. Sydenham realized that complete training must include clinical experience in addition to book learning and he applied this understanding to his clinical study of epidemics in London in the mid-seventeenth century.²¹ In addition to debating an effective treatment for the virus, the cause of the symptoms too was disputed. Sydenham supported the idea that smallpox epidemics were the result of changes in the atmosphere and weather and could not be spread from person to person.²²

¹⁷ Miller, *The Adoption of Inoculation*, 31.

¹⁸ Kenneth Dewhurst, *Dr. Thomas Sydenham (1624-1689): His Life and Original Writings*, (Berkeley: University of California Press, 1966), 122.

¹⁹ Hopkins, *Princes and Peasants*, 33; Dewhurst, *Dr. Thomas Sydenham*, 110.

²⁰ Dewhurst, *Dr. Thomas Sydenham*, 24.

²¹ Dewhurst, *Dr. Thomas Sydenham*, 24, 30.

²² Hopkins, *Princes and Peasants*, 33.

Others believed that the disease was contagious and fled their homes upon receiving word that smallpox had entered their city. Small towns often made attempts to keep infected people from entering and infecting the healthy people within.²³ According to Genevieve Miller, “Once the disease had gained a foothold in a community, there were apparently no further precautionary measures, at least in England.”²⁴ Cities in the American colonies, especially Boston, passed regulations including “compulsory notification of the disease and isolation of the infected household until there was no longer any danger.”²⁵ Cities in England did not take such an active role in preventing the spread of the disease.

While many of the medical practices used by physicians during the seventeenth century to treat smallpox seem antiquated and ineffective, documented early attempts at inoculation were well under way by the early eighteenth century. The word inoculation comes from the Latin “inoculare,” meaning “to graft.” An inoculation is the “subcutaneous instillation of virus into nonimmune individuals.”²⁶ Chinese, Indian and African documents describing inoculation date back to at least the seventeenth century. The English received word of inoculation in 1714 in a letter written in December 1713 by Emanuel Timonius to the Royal Society of London, in which he described an inoculation performed in Istanbul. While many English doctors came to know of this new practice, they were hesitant to stray from their well-established methods of treatment, despite their ineffectiveness. Inoculation was risky and seemed counter-intuitive. People were already terrified of contracting smallpox. The idea of intentionally infecting themselves or their

²³ Miller, *The Adoption of Inoculation*, 34.

²⁴ Miller, *The Adoption of Inoculation*, 38.

²⁵ John B. Blake, “Smallpox Inoculation in Colonial Boston,” *Journal of the History of Medicine and Allied Sciences*, 8 (1953): 285.

²⁶ Riedel, “Edward Jenner and the History of Smallpox and Vaccination,” 22

loved ones carried grave risks that further frightened citizens. The effectiveness of the practice had not yet been well proven and many were willing to take their chances at avoiding the disease rather than risk death by inoculation.

Drawing from knowledge gained while living in Istanbul, Timonius described the history of inoculation: “The practice of procuring the Small Pox by a sort of Inoculation, has been introduced among the Constantinopolitans by the Circastans, and Georgians and other Asiaticks for about Forty Years.”²⁷ Timonius detailed the technique of inoculation that he observed, indicating where the incision should be made, how long it should be covered and even what the patient should eat after the procedure was completed.²⁸ “At the first,” he quoted, “the People were cautious and afraid; but the happy success on Thousands of Persons for Eight Years now past has put it out of all suspicion.”²⁹ This document suggests that inoculation was not initially accepted in Istanbul, but that by 1713, it had been successfully performed thousands of times. This number is significantly larger than the figures cited by later physicians arguing that inoculation was not yet a well-proven, well-established method of controlling smallpox epidemics. Timonius’ message was clear: inoculation’s efficacy had been proven in a multitude of cases and people need not fear it. On the contrary, they should quickly embrace it.

While Timonius was performing inoculation and documenting his results, another physician, unaware of Timonius’ trials, was independently performing the same experiments. Writing from Istanbul in 1721, Dr. Jabocus Pylarinus penned a letter to the

²⁷ Cotton Mather, “Some account of what is said of inoculating or transplanting the small pox. By the learned Dr. Emanuel Timonius, and Jacobus Pylarinus. With some remarks thereon. To which are added, a few quaeries in answer to the scruples of many about the lawfulness of this method. Published by Dr. Zabdiel Boylston,” Boston, Gerrish, 1721.

²⁸ Mather, *Some Account of what is said of inoculating*, 2-3.

²⁹ Mather, *Some Account of what is said of inoculating*, 1.

Royal Society of London documenting his findings. Dr. Pylarinus wrote *A New and Safe Method of Exciting the Small Pox by Transplantation*, in which he described the practice of inoculation and his personal confidence in the practice. Dr. Pylarinus seemed to believe that if the smallpox infection was the result of inoculation, the virus was controllable, whereas if the patient caught smallpox regularly, little could be done to treat and save the patient. “It was hardly ever known, that there was any Ill Consequence of this Transplantation, But the Benefits being well and wisely managed, & the Body being by a skiful Physician well-prepared, you may depend upon it in an ordinary way, there can be nothing but a Good Issue of it.”³⁰ Timonius and Pylarinus were convinced that inoculation could prevent a smallpox epidemic by their own experiments. Today, the same procedure would never be performed on a large scale given the number and nature of experimental trials performed by Timonius and Pylarinus. Numerous in-depth and comprehensive clinical trials would have to occur before the scientific community would begin to seriously consider embracing the procedure. However, in the early eighteenth century, a small number of individuals had seen the efficacy of inoculation in Istanbul and were confident that inoculation saved lives. These early scientists were excited by what they had seen, but they did not understand why inoculation produced a milder, less fatal strain of smallpox and so were unable to convince the general population to participate in their experiments and efforts to control the disease. The practice did not spread rapidly in England because many physicians were not willing to risk their reputations by inoculating patients when they did not understand the beneficial mechanism of inoculation.³¹

³⁰ Mather, *Some Account of what is said of inoculating*, 8.

³¹ Hopkins, *Princes and Peasants*, 47.

Gradually, physicians learned more about the pestilence. England's physicians realized that some strains of the virus were less severe than others, as different patients seemed to develop varying amounts of pocks. Many people also recognized that people who had survived a bout with smallpox could not be infected during a subsequent epidemic. This basic categorization of the various forms of the disease resulted in a very primitive means of preventing death by smallpox. John Arbuthnot, a physician in London, provided descriptions of parents who infected their healthy children with less-virulent strains of the disease in the hopes that their child could survive the mild infection and never again fear the Speckled Monster. "In family groups when it was seen that the disease was spreading from child to child, parents often deliberately exposed the remaining children by bringing them in contact with a brother or sister who had only a mild case, so that their attack might also be mild and produce distinct pocks, rather than the more confluent type."³² Fear tended to push those confronting smallpox to extreme and confusing reactions, in some cases, boldness; in others, paralysis. As smallpox spread, people began to learn more about the disease and draw conclusions about the causes and treatment of the disease. This basic understanding is what led to the idea for and experimentation with inoculation to prevent individuals from contracting the most virulent strain of the deadly disease.

Despite having at least a rudimentary grasp of one aspect of smallpox, most people were still terrified of the disease. Nearly every primary document from the period reveals the same sense of fear. The high fatality rate associated with smallpox caused all

³² John Arbuthnot, "Mr. Maitland's account of inoculating the smallpox vindicated, from Dr. Wagstaffe's misrepresentations of that practice, with some remarks on Mr. Massey's sermon London, 1722," *Eighteenth Century Collections Online*, Gale, College of William & Mary, accessed November 10, 2010, 3.

who had not yet been infected to dread it. This fear had two disparate effects. It paralyzed many into inaction, but in some, provoked a desperate desire to do something. This latter group was willing to take extraordinary risks to protect its families from a raging epidemic, which in some cases meant intentionally infecting themselves with a less-intense form of the disease. The knowledge that a higher survival rate was associated with inoculation gave some the courage to take this chance. An example of this behavior may be found in the highlands of Scotland. “Not only were children placed in bed with their sick relatives, but worsted threads wet with the matter from smallpox pustules were sometimes tied around their wrists, or children were rubbed with a ‘kindly pox.’”³³ These Scottish families took the initiative to inoculate themselves without the help of physicians and with very little medical knowledge.

Clearly some people were willing to assume the risks of inoculation and introduce virus particles into their bodies, but many more people were unwilling to risk death by inoculation and firmly opposed the practice. According to Donald Hopkins, there were less than nine hundred documented inoculations within the eight years after the method was brought to the England.³⁴ Lady Mary Wortley Montagu, the wife of an ambassador who supported inoculation and had her children inoculated, is often credited with causing the acceptance and widespread use of inoculation in England. While the acceptance of the practice by such an important political figure might have contributed to the widespread acceptance of the practice, the change did not occur overnight and she was not the only factor in convincing the general population of inoculation’s effectiveness. Montagu traveled with her husband to Adrianople, where she heard of inoculation and its successes

³³ Monroe, *An Account of the Inoculation of the Small Pox in Scotland* (Edinburgh, 1765), 4.

³⁴ Hopkins, *Princes and Peasants*, 47.

in that area.³⁵ As she learned more, she became a major proponent of the technique, writing to a friend Sarah Chiswell, “I am patriot enough to take pains to bring this useful invention into practice in England; and I should not fail to write to some of our doctors very particularly about it, if I knew any one of them that I thought had virtue enough to destroy such a considerable branch of their revenue for the good of mankind.”³⁶ Lady Montagu knew that inoculation would not be a popular practice and recognized that any doctor who supported it would be in a delicate position, despite its novelty and associated risks, but she still advocated the procedure.

Once she made up her mind that inoculation was effective, Lady Montagu did everything she could to educate others about the practice. Upon returning to England, she recruited Dr. Charles Maitland to inoculate her six-year-old son.³⁷ Later in the spring of 1721, she had her daughter inoculated by the same physician and invited other medical professionals to watch the procedure in the hopes of convincing them of its efficacy.³⁸ The inoculation was successful and its success undoubtedly contributed to the public’s confidence in inoculation because the procedure was performed on such a high-profile member of society. Not only did Lady Montagu choose to inoculate her own children, she also wrote and published anonymously articles supporting the technique in popular London newspapers.³⁹ The acceptance of inoculation by English elite most certainly helped give credibility to the practice, but this one inoculation could not quell the fears of all within England. Historian Genevieve Miller has described the influence a role model,

³⁵ Robert Halsband, *The Life of Lady Mary Wortley Montagu* (Oxford: Clarendon Press, 1956), 70.

³⁶ Halsband, *The Life of Lady Mary Wortley Montagu*, 71.

³⁷ Halsband, *The Life of Lady Mary Wortley Montagu*, 80.

³⁸ Halsband, *The Life of Lady Mary Wortley Montagu*, 105.

³⁹ Halsband, *The Life of Lady Mary Wortley Montagu*, 111-112.

stating that “The Montagu inoculation aroused considerable professional interest,” but also claiming, “A close inspection of all the contemporary documents leads one to the conclusion that the importance of Lady Mary’s role in influencing the royal family and in securing the acceptance of inoculation in England has been exaggerated.”⁴⁰ While some have overestimated Lady Mary’s role in the general acceptance of inoculation throughout England, it is clear that her contributions to the topic cannot be overlooked.

The initial inoculation debate in England was focused primarily around whether or not the procedure was effective and worth the risk. Dr. Charles Maitland was one of the only physicians who performed inoculations during the first twenty years of the eighteenth century. By December 1721, Dr. Thomas Nettleton, another English physician, had become another important player in favor of the procedure.⁴¹ Because Dr. Maitland was one of the only medical professionals in support of inoculation in the early eighteenth century, he wrote most of the period’s relevant primary literature. Maitland realized that the procedure was relatively new to the region and that there was much to learn about why, when and how it was effective. While he acknowledged this fact, he did not see it as a reason to discontinue or prohibit the procedure. John Arbuthnot published documents written by Charles Maitland regarding this subject in *Mr. Maitland’s account of inoculating the smallpox*, which initially appeared in London in 1722. Maitland wrote, “The Letter pretends to be an Admonition to Physicians not to meddle in this Practice of *Inoculation*, ‘till they are better ascertain’d, by Experience, of the Success of it: At the fame Time, it is a most warm Dissuasive, not only to Physicians, but to all Sorts of People, not to practice it at all; and consequently, to deprive them of all Possibility of

⁴⁰ Miller, *The Adoption of Inoculation for Smallpox*, 75, 78.

⁴¹ Miller, *The Adoption of Inoculation for Smallpox*, 91.

coming by Experience. Would it not found somewhat absurd, if any one should say to a young Physician, Pray, Sir, don't Practice 'till you have Experience?"⁴² Maitland's argument was rational and was clearly scientific. He did not focus on the ethics of the practice, but rather stated that experience and knowledge of inoculation could not be gained without actually performing the procedure methodically and carefully studying the results. Maitland's argument was difficult to refute. Later, in a letter to Reverend Mr. Massey, Dr. Maitland referenced the work of another physician, the previously introduced Dr. Nettleton, who performed forty successful smallpox inoculations.⁴³ During this period, Maitland himself performed inoculation experiments and carefully documented his work. He realized that he would need to be able to point to a large number of successful inoculations to make the case for the safety and effectiveness of the practice and was able to compile quite a convincing case for the use of smallpox inoculation after a short number of years.

As is the case in present times, an unsuccessful inoculation was much more harmful to the reputation of inoculation than a successful one was beneficial. Part of what made inoculation so risky is that it really was harmful when performed or managed incorrectly. A careless physician could easily damage the perceived effectiveness that others had worked hard to build with one unsuccessful patient. Both Dr. Maitland and Lady Mary Wortley Montagu acknowledged that inoculation, when performed incorrectly, would have unfavorable and potentially fatal results. News of these lethal procedures traveled rapidly and such stories convinced people who were undecided about

⁴² Arbuthnot, "Mr. Maitland's account of inoculating the smallpox vindicated."

⁴³ Maitland, Charles. "A letter to the Reverend Mr. Massey, Occasion'd by his Late Wonderful sermon against inoculation_London, 1722," *Eighteenth Century Collections Online*, Gale, College of William and Mary, 6, accessed November 10, 2010.

the practice to avoid the practice. Montagu was certain that unsuccessful inoculations had nothing to do with the patient or the disease, but instead were caused by the inoculator's mistakes. She believed that, when performed correctly, inoculation was an effective method of preventing death by the Speckled Monster. She was also very critical of physicians who did not recognize the many cases of effective inoculation and join in the effort to control smallpox epidemics within England: "Out of compassion to the numbers abused and deluded by the knavery and ignorance of physicians, I am determined to give a true account of the matter of inoculating."⁴⁴ Montagu was willing to risk a failed inoculation to protect her child's life and once she saw for herself that inoculation worked and had the potential to protect the lives of anyone willing to undergo the procedure, she did her best to spread her confidence and prevent further smallpox epidemics.

It is interesting that Lady Montagu, an ambassador's wife with very little medical background, embraced the new scientific procedure, while many trained physicians remained skeptical of the relatively well-proved method. Even some physicians who trusted the new technique were unwilling to perform inoculations because they were afraid of jeopardizing their professional reputation. Conservative physicians were comfortable treating smallpox in familiar ways and remained unwilling to embrace the counterintuitive practice of inoculation. Genevieve Miller has commented on the trend: "Credulity and the love of novelty were closely associated, and in medicine particularly were to be avoided. A physician must always be able to show that his practice is based upon solid and repeated experience; the testimony of other physicians helped to bolster

⁴⁴ Robert Halsband, "New Light on Mary Wortley Montagu's Contribution to Inoculation," *Journal of the History of Medicine*, 8 (1953): 390-405.

any changes he might propose.”⁴⁵ Lady Montagu made a decision based on knowledge of a relatively small number of successful inoculations and risked her child’s life to save it. She made her son’s inoculation public in the hopes that skeptical physicians would travel to witness the procedure and realize inoculation’s efficacy as a result. She was certain that inoculation could save lives and worked hard to give others the opportunity to learn more about the innovative practice. Montagu had seen enough successful inoculations to support fully inoculation and believed that any medical professional ought to be similarly convinced. For this reason, she was very critical of English doctors who valued their own reputation over the lives of their patients.

Much like Lady Mary Montagu, Dr. Maitland also realized a poorly performed inoculation could have fatal consequences. Despite this acknowledgment, he argued passionately for the continued practice of inoculation in the hopes that by performing many procedures, both successful and unsuccessful, physicians would learn about medicine, the human body and smallpox and become more able to perform the procedure successfully in the future. In his letter to Reverend Massey, he stated, “But even suppose, in the Infancy of the Practice, there should be some Mistakes committed, and in some few Instances it should prove unsuccessful, this can hardly be thought a sufficient Reason for exploding the Operation altogether.” Maitland acknowledged that mistakes were bound to happen, but that physicians should not be deterred: “We bring no Knowledge of Medicine into the World with us, nor can we expect any be way of Inspiration; the only Means of acquiring it, then, must be by proper Experiments, and just Reasoning from them.”⁴⁶ Maitland stated that the only way to learn more about inoculation and smallpox

⁴⁵ Miller, *The Adoption of Inoculation for Smallpox*, 65.

⁴⁶ Maitland, *Letter to the Reverend Mr. Massey*, 6.

was to practice inoculation. Physicians needed to actually perform the procedure, which required the consent of healthy individuals hoping to avoid a future smallpox infection. Over time, Dr. Maitland performed enough inoculations to carry out a basic statistical analysis of the procedure. The data gathered by this analysis helped Maitland to systematically refute the arguments of his opponents and gain the support of potential patients.

Warnings of the future Boston debate appeared when England's inoculation debate gained a religious tone. The majority of Maitland's arguments refute the dangers and risks of inoculation. However in a letter to Reverend Massey, in order to respond fully to Massey's criticism, he had to address Massey's religious assessment of inoculation. Massey's sermon included a post-script in which he stated, "The Reader will observe, that I meddle not in this Matter otherwise than as it seems to me to be Irreligious."⁴⁷ Maitland took advantage of this particular line, using it to prove that Reverend Massey had no evidence that inoculation itself was dangerous, only that when performed incorrectly could it cause harm. Based on this fact, Dr. Maitland concluded that Reverend Massey's opposition to inoculation was based solely on religious grounds and not scientific principles or concrete experimentation.

The religious element of the smallpox inoculation debate suggested within the documents exchanged between Reverend Massey and Dr. Maitland was not entirely unique, but was only a small part of the overall inoculation debate that occurred in England in the early eighteenth century. Reverend Massey preached a sermon on Sunday, July 8, 1722 titled, *A Sermon against the dangerous and sinful practice of Inoculation*. In this sermon, Massey outlined the reasons why inoculation was contrary to God's will

⁴⁷ Massey, *A Sermon against the dangerous and sinful practice of Inoculation*, 32.

with statements such as, “Diseases are sent, if not for the Trial of our Faith, for the Punishment of our Sins.”⁴⁸ This religious perspective was absent from much of the dialogue in England, which is quite surprising given its significance within the parallel debate that occurred in Boston, Massachusetts during the same decade.

In time, inoculation became a more trusted medical practice, and as a result, it was practiced more commonly in England. By 1722 Dr. Maitland had begun inoculating people “under royal sponsorship,” even publishing visiting hours and locations of patients in the London Gazette to allow curious or skeptical individuals to see for themselves that inoculation produced a milder, more controllable form of Variola.⁴⁹ By making inoculations more public, Maitland hoped to demonstrate that an infection by inoculation was much more manageable and far less fatal than a natural attack by the Speckled Monster. Genevieve Miller has claimed that, “It is clear that the demonstration of the success of inoculation had become an official royal project.”⁵⁰ Maitland and others realized that society would be more willing to trust and adopt inoculation if they saw their leaders undergoing and supporting the procedure. In time, this tactic successfully convinced much of England’s population that successful inoculation was actually a very effective means of preventing large-scale epidemics.

The effort to convince the public of the efficacy of inoculation eventually turned to a modern technique: use of statistics. Today, statistics are used to provide people with “hard evidence” regarding a topic. Simply the presence of statistical information implies that a good deal of research has occurred to learn more about a topic. An argument that is

⁴⁸ Massey, Edmund, *A Sermon against the dangerous and sinful practice of Inoculation*, Sermon at St. Andrew’s Holborn, 12.

⁴⁹ Miller, *The Adoption of Inoculation for Smallpox*, 88.

⁵⁰ Miller, *The Adoption of Inoculation for Smallpox*, 89.

supported with statistics is often easier to comprehend and believe than a solely qualitative presentation. The same held true in the eighteenth century. People were much more willing to undergo the procedure once they were confronted with numbers predicting their chance of survival, which, in the case of inoculation was quite favorable. Everyone knew that infection was practically inevitable for unexposed individuals, so when given a choice between risking a natural infection with a fatality rate of 30% or an infection via inoculation with a fatality rate of 2%, the choice became glaringly obvious.⁵¹

Interestingly, Cotton Mather, a Puritan minister in Boston, along with Zabdiel Boylston, the primary inoculator in the same city, played pivotal roles in this statically analysis of smallpox infections and fatality rates. Mather and Boylston's work contributed to the adoption of inoculation in the New World, but also in the Old. According to Stefan Riedel, "The rapid adoption of variolation in Europe can be directly traced to the efforts of Cotton Mather during the Boston smallpox epidemic in 1721. Although many British physicians remained skeptical even after Mather's success, the data he had published were eventually influential."⁵² Mather and Boylston were not the only physicians to analyze and publish their surprising findings. James Jurin, an English physician practicing inoculations at the time, published a paper in January 1723 claiming that the "risk of dying from smallpox was about two out of seventeen, and that in recent epidemics of smallpox, about one out of every five or six victims died. In comparison, he showed that only one out of every ninety-one persons inoculated in England died of

⁵¹ Riedel, "Edward Jenner and the History of Smallpox and Vaccination," 23.

⁵² Riedel, "Edward Jenner and the History of Smallpox and Vaccination," 23.

smallpox inoculation.”⁵³ Jurin’s data showed that in New England, one in sixty inoculated patients died and in England, one in ninety died.⁵⁴

Additionally, physicians became more skilled and comfortable inoculating people as they gained experience with the procedure. In a letter to a fellow physician, Jurin wrote, “By the end of 1722 at least 182 operations had been performed by 15 different inoculators in various parts of England.”⁵⁵ Once physicians began presenting patients and colleagues with quantitative data, their arguments for inoculation became much more convincing and the practice became widely accepted. Miller summarized the trend well, stating, “The fact...that inoculation was mentioned favorably in nearly every English publication on smallpox during the 1730’s, shows that physicians felt its validity had been established and that the practice was therefore acceptable.”⁵⁶ Inoculation’s advantages were clearly and irrefutably established by the 1730’s, but only after a brutal debate that raged throughout Europe and the New World between doctors, clergy and terrified citizens. The inoculation controversy was arguably most intense in the American colonies, where the effectiveness and, more importantly, virtue of the procedure were called into question in Boston, Massachusetts during an outbreak in 1721. The most remarkable aspect of this debate is not necessarily its intensity, but instead, the unusually high social status of the participants and how they presented their arguments for and against the contentious new method.

⁵³ Jurin, James, *A letter to the learned Caleb Cotesworth, M. D. Fellow of the Royal Society, of the College of Physicians, and Physician to St. Thomas's Hospital...* London, 1723. Eighteenth Century Collections Online,” Gale. Colonial Williamsburg Foundation. 23 Nov. 2010, 5-6.

⁵⁴ Miller, *The Adoption of Inoculation for Smallpox*, 115.

⁵⁵ Jurin, *A Letter to the Learned Dr. Caleb Cotesworth*, 6.

⁵⁶ Miller, *The Adoption of Inoculation for Smallpox*, 122.

Chapter Two

In his pamphlet *Inoculation of the Small Pox as Practiced in Boston*, William Douglass published his argument against inoculation. One might expect his argument to discuss the dangers and risks associated with the technique, but instead, he wrote, “Their Seventh Reason, (which is the only Argument they ought to use and rely on), is its [inoculation] Success.” This statement is odd for two reasons. First, this passage suggests that Douglass thought inoculation worked. This suggests that Douglass’s reasons for opposing inoculation were not strictly related to its efficacy, but instead encompassed a broader, more complex set of concern. The second question raised by this particular passage deals with the structure and content of Douglass’ argument. This is Douglass’ seventh refutation to an equal number of pro-inoculation arguments presented by Mather. One would expect a pamphlet supporting inoculation, such as Cotton Mather’s, primarily to discuss specific cases in which inoculation was successful. Instead, Mather offered an array of reason, both religious and secular, in support of inoculation. Given these two documents, it is evident that the inoculation debate was complicated. Many issues were at hand, not simply inoculation’s efficacy and safety. In fact, Douglass seemed more interested in the credentials of his opponents than the results of their trial inoculations. The dispute, at least from Douglass’ perspective, was focused on who should decide whether or not inoculation was safe and effective, and not whether the technique should actually be used.

This debate was so complicated in part because the figures involved were not simply average citizens who were particularly concerned with the welfare of their fellow

Bostonians, but rather leaders within their respective fields attempting to establish their own authority within the debate. Leading the anti-inoculation faction was Dr. William Douglass. Douglass was proud of his education and had a tendency to consider himself superior to those with fewer credentials. He had trained under Sydenham in Scotland and respected him as both mentor and colleague. Douglass' writings reveal a deep respect for his teacher, perhaps because Dr. Sydenham was so independent and bold in his support for the cold method. His admiration for Sydenham suggests that Douglass was not opposed to innovation, but instead opposed to Cotton Mather and his means of spreading a largely untested procedure. At various places within his pamphlets regarding the smallpox controversy, Douglass quoted his teacher to support his own medical philosophy. In his evaluation of Cotton Mather's medical credentials, for example Douglass interjected a line uttered by Sydenham: "To be more or less Book learned, is not a sufficient Qualification for a Physician."⁵⁷ It is obvious that Douglass was not the only one with an exclusive attitude about the proper qualifications and credentials needed to practice medicine in Europe or the New World. Perhaps Douglass acquired this self-important attitude by training under a European physician like Sydenham.

Of all of the physicians in Boston in 1721, Douglass was the only one who had traveled to Britain to learn the skills required to practice medicine in Europe. Douglass' pride in his formal medical education and degree was certainly warranted. He had, after all, spent years studying under one of Europe's well-respected physicians. Once in Boston, however, Douglass found himself competing for patients with people who had only read about the techniques and procedures that he had spent years studying and

⁵⁷ William Douglass, *The Abuses and Scandals of some late Pamphlets in Favour of Inoculation of the Small Pox* (Boston: Franklin, 1722), 8.

practicing in Europe. If Douglass was proud of his education while living in Europe, he was far more so after comparing his own medical knowledge and credentials with those of Boston's healers. Often the tone in his publications is somewhat pretentious, but, in his defense, his training actually was far more extensive than that of any other medical professional in Boston at the time.

Medicine in the New World contrasted greatly with Europe's highly structured medical system. The seventeenth century European medical profession was broken into classes, with physicians ranking above apothecaries and surgeons. Physicians were well-respected members of European society and received medical degrees upon completing their training. Upon arriving in the New World, Douglass balked at the informal medical education system in Boston. Two aspects of New World medicine disturbed Douglass. First, Boston's physicians, surgeons and apothecaries were, in his opinion, dreadfully untrained. There existed no formal structure to educate medical doctors and surgeons in the colonies and no professional standards. Medical knowledge was largely gained in one of two ways, through reading or informal apprenticeships. No degrees were given upon completion of training. Secondly, Douglass noted that some citizens without formal medical training were especially active participants in public medical discussions. Some puritan ministers, such as Cotton Mather, were especially involved. When the debate over inoculation began in 1721, Douglass felt that neither of his main opponents, Dr. Zabdiel Boylston and Cotton Mather, should have any part in the conversation. According to Douglass, Mather was entirely overstepping the bounds of his profession and Dr. Boylston was not adequately trained to perform the inoculation procedure safely.

Because of his extensive foreign education and medical degree, Douglass was respected and influential within the medical community in Boston. He was a confident leader and quickly became a medical authority in the city. He gained the support of several other local physicians and Douglass rapidly spread the word that inoculation was a dangerous procedure that was responsible for spreading the Speckled Monster throughout Boston. It did not take much effort to convince an already terrified community that intentionally infecting someone with a deadly disease was not a good way to prevent an epidemic.

Douglass' primary opponent in the inoculation debate was the team of Cotton Mather and Zabdiel Boylston. Boylston was recruited by Mather to carry out his plan to prevent an epidemic by inoculating the city of Boston. Boylston, born in Muddy River, Massachusetts in 1679, was the son of a well-known doctor, Thomas Boylston. Young Zabdiel learned much of what he knew of medicine from his father's own practice, but Thomas died when Zabdiel was only fifteen years old. After his father's death, Zabdiel began studying under another respected doctor, John Cutter.⁵⁸ Boylston married Jerusha Minot in 1705 and the couple had eight children. He moved into Boston in 1706 and established what would become Boston's largest apothecary shop.⁵⁹ Like many of Boston's apothecaries, physicians and surgeons, Boylston did not have a formal medical degree because he had remained in the American colonies to obtain his informal medical and surgical training.

⁵⁸ Luis H. Toledo-Pereyra, *Zabdiel Boylston, First American Surgeon of the English Colonies in North America*, *Journal of Investigative Surgery*, 19:5-10, 2006, 6.

⁵⁹ Ola Elizabeth Winslow, *A Destroying Angel: The Conquest of Smallpox in Colonial Boston* (Boston: Houghton-Mifflin, 1974), 40-42.

Medicine was a very different field in 1721 than it is today, especially in the American colonies. During the eighteenth century, few colonists truly had what we might consider a “career” in medicine. Often, people who needed to supplement their income read several books discussing apothecary practices, surgery or medicine and opened a small shop to make money in addition to their normal work. Colonial citizens was willing to try anything to relieve their ailments and, like many in American society today, had no problem turning to local purveyors of miscellaneous remedies to meet their needs. Boylston was well known in the city and published ads for his business in local newspapers. Boylston sold local herbal remedies for common ailments and occasionally performed surgery. By 1721, there were approximately fifteen medical doctors in the city, but only William Douglass held a formal degree. Boylston’s practice, and that of other colonial doctors, was very different from that of European medical doctors, which helps explain William Douglass’ arrogant behavior towards Zabdiel Boylston and Cotton Mather.

The last major player in this debate is the most complicating of all. Cotton Mather was born in 1663 to a well-known and much revered Puritan minister, Increase Mather. Understanding the influence of Puritan leaders within Colonial Massachusetts is critical to fully appreciate Cotton Mather’s childhood. Puritan colonists founded the city of Boston in 1630.⁶⁰ For the rest of the seventeenth century and into the eighteenth, Puritan leaders enjoyed great influence in their towns and cities. Darren Staloff outlined the development of Puritan religious authority in Massachusetts during the seventeenth century in his book, *The Making of an American Thinking Class*. According to Staloff,

⁶⁰ Toledo-Pereyra, *Zabdiel Boylston*, 6.

Puritan ministers were the dominant authority within the new colony and molded the politics of the region to suit their ideals and beliefs: “Far from the metropolitan authorities, the leaders of the settlement were able to inscribe their ideal holy commonwealth on the tabula rasa of the wilderness free from outside interference.”⁶¹ The prevailing authority of the Puritan minister was well maintained throughout the rest of the century and into the next. Staloff points specifically to Increase Mather as an example of a particularly influential Puritan leader, writing, “Increase Mather’s influence was not restricted to ecclesiastic matters. Mather also played an important role in formulating Bay policy and the imperial authorities.”⁶² Increase Mather was able to assert his influence in practically any realm of society, whether religious or secular, and his opinion was respected, and often supported, because of his position within Puritan society.

Cotton Mather grew up during this period of Puritan strength and influence. He watched the God-fearing citizens of Boston listen and follow the words of his father and assumed that his own words would be revered in the same way once he became a minister. Staloff’s words help to explain Mather’s expectations; “Puritan divines were afforded the utmost attention and honor in their public declamations.”⁶³ Cotton believed that his parishioners would grant him the same honor that they had granted his father and many of them did. John Cotton, Increase Mather’s father-in-law, described the authority of a Puritan minister, writing that an ordained minister “may then look at himself as

⁶¹ Darren Staloff, *The Making of an American Thinking Class* (New York: Oxford University Press, 1998), 11.

⁶² Staloff, *The Making of an American Thinking Class*, 183.

⁶³ Staloff, *The Making of an American Thinking Class*, 14.

called by the Holy Ghost ... the people ought to receive him, as sent of God to them.”⁶⁴ Puritan ministers traditionally were seen as the mouthpiece of God and the content of their sermons and writings were rarely questioned, but instead accepted and put into practice. This same rapid acceptance of Puritan teachings was present to a large degree in Boston in 1721, although it was not granted automatically. Cotton realized that he would need to work to establish his authority within the city. He was conscious that, for various reasons, other factions were beginning to assert themselves in Boston’s society, but still yearned to obtain his father’s high status.

As a child, Cotton was surrounded by books and encouraged to read and question the world around him. After studying Classical language and literature he passed his Harvard entrance exams at the age of eleven.⁶⁵ While at Harvard, Mather had access to the Harvard University Library and continued to read extensively on subjects that he studied formally in class, such as philosophy, logic, Latin, Greek and Hebrew. Mather also poured himself into books about topics not covered in his classes, science in particular. Mather was educated during history’s most exciting era for science. Sixteenth, seventeenth and eighteenth century history is filled with figures such as Sir Isaac Newton, Robert Boyle, Nicolaus Copernicus, Antonie von Leewenhoek and Galileo Galilei, and Mather spent much of his time reading about these and other famous scientists’ experiments, theories and inventions. Tony Williams, author of *The Pox and the Covenant*, suggests that Cotton Mather’s pursuit of science might be related to his stutter.⁶⁶ While at Harvard, Mather studied to be a minister, but initially did not believe

⁶⁴ John Cotton, *The Keys of the Kingdom of Heaven* (1644), in *John Cotton on the Churches of New England*, ed. Larzer Ziff (Cambridge, Mass., 1968), 136.

⁶⁵ Williams, *The Pox and the Covenant*, 35.

⁶⁶ Williams, *The Pox and the Covenant*, 35.

that he would have much success in this field, as he would be required to give lengthy sermons at services, sometimes ninety minutes in duration. The budding scholar was concerned that his speech impediment would prevent him from drawing a large crowd at church on Sunday morning. However, Mather's interest in science persisted even after he was admitted in 1679 to Boston's North Church as a young sixteen-year-old. He began giving short sermons, working with his father Increase, and eventually overcame his stammer. In 1685, Mather was ordained at the same church. The boy with a stutter quickly became one of Boston's most popular preachers.⁶⁷

Mather also continued to excel in the scientific realm. Because of his interest, dedication and contributions to experiments in scientific fields, he became a member of the British Royal Society in 1713. The Society was centered at Gresham College in London, but its membership was not limited to citizens of England and its colonies. The Royal Society's purpose is summarized in its Year-Book: "The business of the society in their ordinary meetings shall be, to order, take account, consider, and discourse of philosophical experiments and observations; to read, hear, and discourse upon letters, reports, and other papers, containing philosophical matters; as also to view, and discourse upon, rarities of nature and art; and thereupon to consider what may be deduced from them, or any of them; and how far they, or any of them, may be improved for use or discovery."⁶⁸ Just as modern scientific research relies upon the rigorous review of experiments by colleagues and peers, it seems as though a similar review was expected of those within the Royal Society. The word "discourse," was used numerous times in the formally presented purpose of the society, and seemed to be an integral feature of the

⁶⁷ Williams, *The Pox and the Covenant*, 37.

⁶⁸ *Year-Book of the Royal Society of London* (London: Harrison and Son, St. Martin's Lane, 1900), 52.

Royal Society's culture. Discussion and debate enabled Royal Society members to question and challenge each experiment presented to the organization and allowed any potential mistakes or problems to be addressed in a professional and scientific way.

Cotton Mather, though primarily a Puritan minister, clearly saw aspects of the world through a scientist's eyes. He thought and wrote about many questions in an empirical, logical way and one of the most respected scientific organizations in the western world recognized this fact and offered him membership. Mather was quite an active participant within the society's scientific vetting process and constantly penned letters to Europe responding to the society's most recent publications.⁶⁹ Williams affirms, "He was not a mere passive reader of the Transactions from across the Atlantic, but rather an extremely active contributor to the body of knowledge the Royal Society was building."⁷⁰ The fact that Mather was a Fellow of the Royal Society of London is proof that he himself was scientific a authority of his time, despite his complete lack of formal scientific training.

Cotton Mather read so extensively in medical science that he had approximately the same knowledge of medicine as the average physician in the American colonies at the time. Because the American colonies did not have any formal medical schools, people interested in medicine or surgery read as much information as they could find on the subject in books and pamphlets, and then sought out patients on whom to practice their newfound knowledge. Some men, such as Zabdiel Boylston, were able to serve as an apprentice for a number of years under an experienced physician or surgeon to gain valuable practical skills. Others, like Cotton Mather, acquired medical knowledge by

⁶⁹ Williams, *The Pox and the Covenant*, 42.

⁷⁰ Williams, *The Pox and the Covenant*, 42.

independently reading medical and scientific texts. According to Tony Williams, Mather's "reading in medicine was comparable to the instruction that any physician would have received as an apprentice reading medical texts" and he was "squarely in the mainstream of current medical training."⁷¹ While this does not place Mather on the same education level as William Douglass, it does place him amongst the most qualified colonial doctors, surgeons and apothecaries at the time.

In addition to being exceptional, the participants in Boston's debate decided to support or protest inoculation for unforeseen reasons. Today, patients consider a method's success rate and risks before consenting to the procedure. Mather, however, was convinced for other reasons, which were only partly grounded in science. Mather read the documents written by Pylarinus and Timonius regarding early inoculation and was excited about inoculation's potential benefits. Boston's citizens would be harder to convince without more evidence supporting the risky procedure.

In addition to fearing smallpox, many of Boston's citizens feared God. America's largest city at the time was predominately Puritan and many believed, after hearing sermons preached by numerous ministers in the region, that the 1721 smallpox epidemic was a sign of God's judgment on Boston's sinful citizens. Increase Mather, Cotton Mather and many other ministers believed that their wrathful God had caused the smallpox outbreak that spring and that the only way to be saved from death was to pray, repent, and reform their sinful ways. Cotton Mather's reputation was firmly established by 1721, and his followers were many. His influence was enough to convince much of the city that sin had led to punishment in the form of a deadly smallpox epidemic.

⁷¹ Williams, *The Pox and the Covenant*, 35.

Mather's opinion is well documented in journal entries, letters, and sermons. In his journal he wrote of the "judgment that has in his Providence brought on this land by sending us the smallpox."⁷² In his sermons, such as one titled, "The Lifting Up of the Soul unto God under Distresses," Mather called his flock to reflect upon their actions in the recent past and to confess their sins to God in the hopes of relieving the city from the Speckled Monster. He wrote, "Sickness bringing such an humiliation upon a family, methinks it should also bring a reformation into the family."⁷³ Mather believed that God had infected the city with smallpox as a warning that Boston's citizens' behavior was sinful and needed to be changed. God's grace had allowed people to inoculate themselves to avoid death and have a second chance to live according to God's will. Mather hoped that the epidemic would act as a catalyst to inspire rededication to God and his law and believed that the disease would abate in time as his flock re-devoted themselves and became faithful to their all-powerful deity.

Cotton Mather was not the only minister to preach this message. Other ministers used the smallpox outbreak as a reason to reprimand their congregations and remind them of the importance of obedience. Several ministers impressed upon their congregations their perceived reason for the epidemic, but also preached of God's unfailing mercy that would save them all if they changed their ways.⁷⁴ The ministers had no trouble finding scripture to support their claims. In a letter entitled *A Pastoral Letter, to Families Visited with Sickness*, Mather quoted James 5:16: "Therefore confess your sins to each other and pray for each other so that you may be healed. The prayer of a righteous person is

⁷² Cotton Mather, *Diary of Cotton Mather (1681-1724)* (Boston: The Society, 1911), 2:631.

⁷³ Cotton Mather, *A Pastoral Letter, to Families Visited with Sickness, from Several Ministers of Boston At a time of Epidemical Sickness Distressing of the Town* (Boston: S Gerrish, 1721), 6.

⁷⁴ Samuel Sewall, *Diary of Samuel Sewall* (Boston: The Society, 1878), 981.

powerful and effective.” He also claimed “The Prayer of Faith shall save the sick.”⁷⁵ He reassured his congregation that Jesus had died for their sins and that through faith, their own sins would be forgiven, saying, “Christ has born our sickness... our families may be preserved in Jesus Christ.”⁷⁶ Many faithful believers prayed fervently and confessed their sins, yet the disease continued to spread.

The small number of inoculation that occurred in 1721 suggests that much of Boston’s citizenry did not support inoculation. Most of Boston’s population agreed that God had inflicted the city with the Speckled Monster as punishment for their wicked actions, but the city could not agree whether or not God authorized the use of inoculation to control the epidemic. This smaller debate is contained within documents published by Cotton and Increase Mather, as well as other ministers in 1721. Some ministers, such as John Williams, claimed that inoculation was the work of the devil, as it enabled wicked people to escape the wrath of God. Williams wrote. “I do feriously believe it’s a Delusion of the Devil and that there was never the like Delusion in New-England, since the Time of the Witchcraft in Salem.”⁷⁷ Williams and others believed that God infected everyone for a specific reason and that inoculation was an unlawful way to avoid the misery of a natural smallpox infection and potentially death.

Others, such as Samuel Grainger, a gentleman who penned letters for a friend regarding the topic, argued that humans or the devil could not have invented something more powerful than the force of God, so inoculation must be a gift from God to avoid death. In a letter titled *The Imposition of Inoculation as a Duty Religiously Considered*

⁷⁵ Mather, *A Pastoral Letter, to Families Visited with Sickness*, 12.

⁷⁶ Mather, *A Pastoral Letter to Families Visited with Sickness*, 9.

⁷⁷ John Williams, *An Answer to a Late Pamphlet, Intitled, A Letter to a Friend... By a Minister in Boston* (Boston: Franklin, 1722), 4.

Grainger wrote, “No human means could actually overcome God’s will to punish people.”⁷⁸ The Puritans believed that God was all-powerful and as a result, no human could avoid God’s judgment through his own means. This line of reasoning, that no human could ever outwit God, seemed logical to some, but did not convince everyone. Grainger posed two fundamental questions in his letter. First, when God judges people for their sins, what does he deem a lawful use of preservation from his “desolating Judgments?” Grainger decided that a lawful action is anything that is warranted by God’s word.⁷⁹ His second question was simply whether or not inoculation itself was lawful and he stated, “IT IS LAWFUL TO SAVE LIFE, and a Duty incumbent upon us.”⁸⁰ His judgment was clear. Anything that saves a life is not only permissible, but also necessary. Grainger believed that he had a religious obligation to support inoculation.

A more complicated explanation of the epidemic was discussed by many, including Grainger and was referred to as a “second cause.” The premise was that God did not directly infect people with smallpox, but rather produced an infection by some other, “second,” cause. Some considered this idea to be logical acrobatics to avoid the truth that inoculation took away God’s power to punish and potentially kill sinners. Supporters of the “second cause” explanation contended that because a smallpox infection was the result of a second cause and not God’s own hand, it was lawful to inoculate people to prevent the infection. Some went so far as to claim that an inoculation approved of by a minister and performed by the minister’s agent could be considered the

⁷⁸ Grainger, *The Imposition of Inoculation as a duty religiously considered in a letter [sic] to a gentleman in the country inclin’d to admit it* (Boston: Boone, 1721), 9.

⁷⁹ Grainger, *The Imposition of Inoculation*, 4.

⁸⁰ Grainger, *The Imposition of Inoculation*, 2.

“Work of God.”⁸¹ Grainger addressed this argument in his letter, but did not condone such logic.

The conversation surrounding second causes had several other participants. William Cooper, another minister in Boston, discussed second causes in a letter to a friend in 1721. He described inoculation as “the Subject not only of plenty of Discourse, but of angry Debate and fierce Contention among us in this town.”⁸² Cooper compared inoculation to purging or bleeding, reminding people that doctors often patients temporarily sick in an attempt to improve their overall health. He claimed that anything that “served” health and saved lives was “reasonable and therefore lawful.”⁸³ In discussing second causes, Cooper wrote that second causes were still controlled by God, but removed the direct link between the illness and the Creator.⁸⁴ He was evidently in support of inoculation and answered the question of lawful or not with a provocative question, asking, “If it be a Method of Safety, and a Benefit to Mankind, as hitherto it appears to be, how came the Devil to be the Author of it?”⁸⁵ It is interesting to note that many religious leaders gave God credit for both plaguing their city with the Speckled Monster and also with teaching man about inoculation to save him from death. They explained this by quoting verses dealing with God’s grace and encouraging their congregations to identify their sins and quickly change their ways. They firmly believed that God, in his unfailing mercy had given them another chance to live pure and holy lives by teaching them to inoculate themselves.

⁸¹ Grainger, *The Imposition of Inoculation*, 14.

⁸² William Cooper, *A Letter to a friend in the Country, Attempting a Solution (of the Scruples and Objections of a Conscientious or Religious Nature, commonly made against the New Way of receiving the Small-Pox)*, (Boston: Kneeland for Green, 1721), 1.

⁸³ Cooper, *A Letter to a friend in the Country*, 3.

⁸⁴ Cooper, *A Letter to a friend in the Country*, 6.

⁸⁵ Cooper, *A Letter to a friend in the Country*, 11.

Mather too was motivated by fear, although it was his fear of God, not of smallpox, that allowed him to accept inoculation as an example of God's grace. Both Increase and Cotton Mather believed that inoculation was a gracious gift from God. This confidence allowed them to rapidly adopt inoculation without the usual evidence required to prove a medical technique safe. Increase Mather published a document titled *Several Reasons Proving that Inoculating or Transplanting the Small Pox, is a Lawful Practice, and that it has been Blessed by GOD for the Saving of many a Life*, in which he outline his rationale for supporting the new method. He considered several sources of information in making his decision, including the word of the Royal Society and other European physicians. One of his sources was the Bible. He also cited the sixth commandment as a reason to inoculate the city, writing, "They keep not in good Terms with the Sixth Commandment if they do it not."⁸⁶ The Puritan minister considered it his duty to use inoculation to obey God's command: Thou shalt not kill. Increase Mather wrote, "IT [inoculation] is then a wonderful Providence of GOD, that all that were Inoculated should have their Lives preserved; so that the Safety and Usefulness of this Experiment is confirmed to us."⁸⁷ Two things must be noted. First, Increase considered the practice a gift from God. Second, because inoculation was a gift from the divine, it could be trusted in all cases. Increase did not need statistics to be convinced of inoculation's efficacy. His trust that God would protect his followers led him to believe that inoculation was safe.

⁸⁶ Increase Mather, *Several Reasons Proving that Inoculating or Transplanting the Small Pox, is a Lawful Practice, and that it has been Blessed by GOD for the Saving of many a Life* (Boston: Kneeland for Edwards, 1721), 2.

⁸⁷ Mather, *Several Reasons*, 1.

While Increase Mather wrote this pamphlet, we can safely assume that Cotton Mather had a similar perspective. Increase made quite clear that Cotton was in agreement: “My Sentiments, and my Son’s also, about this Matter are well known.”⁸⁸ Cotton also published documents that spoke of this divine support for inoculation. In the introduction to *A Friendly Dialogue or Dialogue between Boylston and Douglass*, Mather wrote, “To You under the Auspicious Providence of GOD, we are Indebted for the Blessing of INOCULATION.”⁸⁹ This introduction is a note to Boylston, praising him for his actions and ensuring him that, by inoculating Boston’s citizens, he was doing the work of God. This unwavering belief that the knowledge of inoculation had come directly from God enabled Cotton Mather to quickly endorse the largely untested practice. Mather loved science, but his support for inoculation was not based on the limited evidence presented by Timonius and Pylarinus. Rather, his decision was rooted in his religion.

Once Mather had made up his mind, he did not question inoculation. At this point, Mather was completely certain that inoculation was the best and most effective way to save the lives of Boston’s citizens and that God was fully supportive of the procedure. “I now lay before you, the most that I know (and all that was ever published in the world) concerning a matter... If upon mature deliberation, you should think it admissible to be proceeded on, it may save many lives that we set a great store on.”⁹⁰ Mather published numerous documents that carefully outlined every bit of information he could find regarding inoculation in the hopes of convincing Boston’s citizens that inoculation was worth the risk. Mather knew that in time, some physician would be brave enough to use

⁸⁸ Mather, *Several Reasons*, 1.

⁸⁹ Cotton Mather, *A Friendly Dialogue or Dialogue between Boylston and Douglass* (Boston, 1722), i.

⁹⁰ Winslow, *Destroying Angel*, 48.

inoculation to save lives and in doing so, would gather more experimental evidence of its efficacy and would play a role in the gradual, and in Mather's judgment, inevitable approval of inoculation. This evidence was necessary in gaining widespread acceptance of inoculation, but not for gaining Cotton Mather's support.

Mather first heard of the practice from his Africa slave, Onesimus. He wrote about the slave's testimony in his journal.

Many months before I mett with any Intimations of treating the Small Pox, with the Method of Inoculation, any where in Europe; I had from a Servant of my own, and Account of its being practice in Africa. Inquiring of my Negro-Man Onesimus, who is a pretty Intelligent Fellow, Whether he ever had the Small-Pox; he answered, both, Yes, and No; and then told me, that he had undergone an Operation, which had given him something of the Small-Pox, & would forever praeserve him from it; adding, that it was often used among the Guramantese... and his Description of it, made it the same, that afterwards I found related unto you by your Timonius.⁹¹

Mather was not the first to hear that inoculation was common amongst some African Americans, but he was one of the first to actually grant any merit to the claim. Zabdiel Boylston later wrote in *Some Account of Inoculating or Transplanting the Small Pox*, "That abundance of poor Negro's die of the Small Pox, till they learn this Way; that People take the Juice of the Small Pox, and Cut the Skin, and put in a drop; then by'nd by a little Sick, then few Small Pox; and no body dye of it: no body have Small Pox any more...Here we have a clear Evidence, that in Africa, where the Poor Creatures dye of the Small Pox in the common way like Rotten Sheep, a Merciful GOD has taught them a wonderful Preservative." Boylston responded to some others' claims that inoculation could not be a valid practice if it originated in Africa, claiming that there was no difference between learning inoculation from Africans and learning how to treat a

⁹¹ Letter of July 12, 1716 to Dr. Woodward, British Museum, quoted in George Lyman Kittredge, "Some Lost Works of Cotton Mather," *Mass. Hist. Soc., Proceedings*, XLV, 422.

rattlesnake bite from the natives in America.⁹² People who used Onesimus' testimony and support of inoculation as a reason to oppose the practice frustrated Boylston, as is evident from the above passage. Mather and Boylston were committed to evaluating the information they had gathered in a logical way. They determined, through their own experiences and the other scientists' documentation, that inoculation was an effective and necessary way to prevent the spread of smallpox throughout the largely previously unexposed New World.

Once convinced that inoculation was a safe and effective means of controlling smallpox given to humanity by God, Mather still had to find someone to actually inoculate his sinful flock. He had hoped that Boston's physicians would be persuaded as quickly as he had, but that was not the case. The minister had to search hard to find a partner to help him begin the task of saving Boston's citizens from the Speckled Monster. While Mather himself had never performed an inoculation, he knew that far from Boston, it was used to prevent the spread of the very illness that was knocking on the door of his dear city. In his diary, he wrote, "The practice of conveying and suffering the smallpox by inoculation has never been used in America, nor indeed in our nation...How many lives might be saved by it, if it were practiced?"⁹³ Mather quickly set about enlisting the help of as many of Boston's physicians and surgeons as possible. On June 6, he wrote a document entitled, "Address to the Physicians of Boston," that included the details of inoculation provided by Timonius and Pylarinus. He circulated the letter and requested to speak with the city's medical professionals regarding the subject, hoping to convince

⁹² Zabdiel Boylston, *Some Account of What is Said of Inoculating or Transplanting the Small Pox; And of the Benefit and Safety of the Practice, By the Learned Dr. Emanuel Timonius and Jacobus Pylarinus* (Boston: S Gerrish, 1721), 9.

⁹³ Mather, *Diary of Cotton Mather*, 2:620-21.

them to participate. He wrote, “My request is, that you would meet for a consultation upon this occasion and to deliberate upon it, that whoever first begins this practice, (if you approve that it should be begun at all) may have the concurrence of his worthy brethren to fortify him in it.”⁹⁴ Mather made it sound as though he was participating in a race to establish inoculation as legitimate and beneficial in the eyes of the public. He was skeptical, but hopeful that inoculation in America would produce positive results if practiced correctly, under the guidance of a skilled physician or surgeon. His goal was to prevent the widespread epidemics that had swept Europe from ravaging the vulnerable, unexposed New World in the same way. After distributing his “Address to the Physicians of Boston,” Mather did not receive a single response from any of Boston’s physicians. He was frustrated, but did not give up hope. By the end of June, he decided to write again. This time, he wrote personal letters to several medical practitioners in Boston, including Dr. Zabdiel Boylston.

Boylston received Mather’s correspondence and pondered joining ranks with the influential religious leader. In time, he decided to test inoculation. He recalled the last time smallpox epidemic affected Boston and was confident that the new method, if accepted and used correctly, could effectively control the Speckled Monster. Boylston later wrote a document that contained his rationale in deciding to join Mather, *An Historical Account of the Small-pox Inoculation in New England Upon all Sorts of Persons, Whites, Blacks and of all Ages and Constitutions*. In considering whether or not to test the procedure, he reflected on the health of his children. Boylston clearly remembered the last epidemic in the city and wanted his children, five of whom he later

⁹⁴ John Blake, “The Inoculation Controversy in Boston: 1721-1722,” *The New England Quarterly* 25, no. 4 (1952), 491-92.

inoculated, to survive the current one. He wrote, “I began the Practice indeed from a short Consideration thereof; for my Children, whose Lives were very dear to me, were daily in danger of taking the Infection.”⁹⁵ Boylston knew that a smallpox epidemic would likely kill his children, which, for him, was reason enough to begin testing the new technique. Dr. Boylston recognized that the world was waiting to hear of more accounts of successful inoculation to learn more about the technique and the disease that it treated. He knew that any attempt he made at inoculation would need to be documented carefully and would eventually become some of the first medical records from the New World in the story of smallpox. His results might persuade skeptics of inoculation’s effectiveness. Physicians worldwide would read his account and act based on the information he presented in his report.

After reading more and conferring with Mather, Boylston joined the pro-inoculation side of the debate, writing in his journal that he “resolved in [his] mind to try the experiment.”⁹⁶ Timonius and Pylarinus’ accounts to the Royal Society in London were the basis upon which both Mather and Douglass began to form their respective opinions regarding the merits of inoculation. Cotton Mather wrote a letter to John Woodward of the Royal Society on July 12, 1716 after reading Timonius’ description of inoculation, a sign that the idea of inoculation was planted in Mather’s mind almost five full years before the virus reached the port of Boston on the HMS Seahorse.⁹⁷ Douglass, too, acknowledged that he had read the report from Timonius, later writing that, “The

⁹⁵ Boylston, Intro to *An Historical Account of the Small-Pox Inoculated in New England, upon All Sorts of Persons, Whites, Blacks, and of all Ages and Constitutions* (Boston: S. Gerrish, 1730), ii.

⁹⁶ Zabdiel Boylston, *An Historical Account of the Small-Pox Inoculated in New England, upon All Sorts of Persons, Whites, Blacks, and of all Ages and Constitutions* (Boston: S. Gerrish, 1730), 2.

⁹⁷ Otho T. Beall and Richard Harrison Shyrock, *Cotton Mather* (Manchester: Ayer Publishing, 1979), 98.

communications of Timonius and Pylarinus in England were regarded as Virtuoso-Amusements until April, 1721.”⁹⁸ Indeed Cotton Mather and Zabdiel Boylston were some of the first people in the world to embrace this technique before its results were tested widely enough to gain general support amongst both medical professionals.

Although Mather had convinced Boylston to try inoculation, much of the city was still dreadfully afraid of both the pestilence and of the new method to prevent its dispersal. The terror may seem irrational at first glance because today, immunizations are United States federal law, but consider the situation from an eighteenth century colonist’s perspective. The concept of vaccination is still a very controversial topic and doctors understand exactly how and why it works. Physicians can clearly explain the basic immunology principles that govern both disease and vaccination to their patients, helping them understand that the vaccine causes the body to mount a response, which is later “remembered” by the body’s immune system in the case of a subsequent infection. In contrast Boylston and Mather read the vague notes of several other physicians and then simply began placing the pus from one patient’s pocks into the healthy bodies of others, claiming that it would ultimately prevent death from the disease. Boylston had never witnessed an inoculation, successful or unsuccessful. He had no formal medical degree. He had no idea what caused a smallpox infection. He had no idea why an inoculated infection produced less-severe symptoms than the more serious “confluent” smallpox. He could offer no explanation for why the mortality rate was so much lower in inoculated patients than confluent patients. As Benjamin Colman, a Boston physician stated, “For when the Malignity comes to a Height, we find that we know very little or nothing what

⁹⁸ Raymond P. Stearns, “Remarks Upon the Introduction of Inoculation for Smallpox in England,” *Bull. of the Hist. of Med.*, XXIV (March, 1950), 113.

to do.”⁹⁹ Tony Williams describes their emotions well, writing, “They just wanted to escape the judgment of the Almighty and of the smallpox rather than have a lone doctor tinker with forces beyond their control (and their understanding).¹⁰⁰ Boston’s citizens’ fear was completely justified.

Cotton Mather was correct in his evaluation of inoculation, however he took a considerable risk in supporting the technique with such a small amount of information supporting it. First and foremost, he was right that inoculation worked. The procedure did result in a lower death rate, which, coupled with the fact that the disease could only affect a person one time, could prevent the spread of an epidemic. In time, the concept blossomed into a practice that is now mandated by the United States government: vaccination. Mather took a potentially lethal chance by quickly implementing a technique that had only just been proposed to the society. Mather presented this information to Boston’s physicians and convinced only one to try this practically untested technique. Mather was a minister and Boylston an apothecary who had shadowed his physician father. Perhaps Douglass’ worry was in fact warranted. Even if inoculation, when performed correctly, worked, Douglass was unconvinced that these two under qualified medical trailblazers could successfully perform the procedure and manage their patients as they recovered. He worried, perhaps rightly, that knowledge of inoculation “might prove dangerous Edge-Tools in the hands of Fools.”¹⁰¹

⁹⁹ Benjamin Colman, *Some Observations on the New Method of Receiving the Small-Pox by Ingrafting or Inoculating*, (Boston: Gerrish, 1721), 12.

¹⁰⁰ Williams, *The Pox and the Covenant*, 78.

¹⁰¹ Douglass, *Inoculation of the Small Pox*, 4.

Boylston began inoculating immediately after agreeing to assist Cotton Mather. He was immune to the pox so he could come into very close contact with his sick smallpox patients at no risk to his own personal health. It was not uncommon for physicians to test new methods on themselves, but Boylston's smallpox immunity prevented him from doing this. The doctor's first patient was one of the people he wanted to protect; his five-year-old son, Thomas. Boylston performed his first inoculation on June 26, 1721, carefully following the procedure laid out in the Royal Society's Transactions. The same day he also inoculated two slaves, Jack, an adult, and Jackey, a two and a half year-old child.¹⁰² Thomas and Jackey's health began to decline after several days and Boylston was very concerned, as any parent would be, that the procedure would kill them both. Within a few days, the boys' health began to improve, until they were completely well again. Boylston's experiment was off to a promising start. His first three inoculations were all successful.¹⁰³

Boylston's notes would eventually become the evidence would contribute to the widespread adoption of inoculation in subsequent years. He vigilantly observed his patients and compared their symptoms to those outlined by Timonius and Pylarinus, making notes of the similarities and differences. Over the course of the next year, Boylston inoculated a total of 247 patients.¹⁰⁴ In time, he gained confidence and slightly altered the procedure based on his own hypotheses about the disease and the inoculation technique. He made sure to test the method on people of all ages, races, genders and physical states to learn more about the disease and inoculation itself. Of the 247 patients that Boylston inoculated in the following year, only six died. All of their stories are told

¹⁰² Boylston, *An Historical Account of the Small-Pox Inoculated*, 2.

¹⁰³ Boylston, *An Historical Account of the Small-Pox Inoculated*, 3.

¹⁰⁴ Boylston, *An Historical Account of the Small-Pox Inoculated*, 32.

in detail in his account. Each of these six individuals was a unique patient with a significant extenuating condition or circumstance, distinct from inoculation, that caused their death. According to Boylston, not one of his patients died as a result of the inoculation. In several of these tragic instances, the patient was inoculated shortly after already being infected the “natural” way and so Boylston could do little to help those patients survive. Their infection ran the normal course of an unplanned infection and Boylston’s inoculation efforts were too late. He claimed, “Out of 286 [the total number inoculated in the Boston area], six died, though they had not all the Small-Pox only by Inoculation, as we have Reason to believe, but were some of the infected in the natural Way, before Inoculated.”¹⁰⁵ He compared these results to the mortality rates of regular smallpox cases and concluded that 5,759 people in Boston had suffered from the smallpox and 844 of them died, “so that the Proportion that died of the natural Small Pox there, appears to be one in six, or between that of six and seven.”¹⁰⁶ This rate, 14.7%, when compared to his own inoculated rate of 2.1%, quantified his results in a very convincing way. He began compiling his results and making the case for what he already knew. Inoculation was an effective means of preventing death from a smallpox infection and as a result, was the most promising way to preempt and control a widespread epidemic in the largely unexposed New World. Boylston traveled to London for two years, from 1724-1726, to present his results to the Royal Society in London. He was offered membership into the society for his work with the new technique.¹⁰⁷

Boylston’s publications regarding the disease and technique to lessen the symptoms and mortality rate are rigorous and convincing. After spending more than a

¹⁰⁵ Boylston, *An Historical Account of the Small-Pox Inoculated*, 34.

¹⁰⁶ Boylston, *An Historical Account of the Small-Pox Inoculated*, 33.

¹⁰⁷ Toledo-Pereyra, *Zabdiel Boylston*, 8.

year studying this deadly virus and watching people recover from their inoculated form of smallpox, Boylston reached several conclusions. He published these results in 1730 in *An Historical Account of the Smallpox Inoculated*. In this document, he clearly presented several conclusions drawn from his hundreds of inoculations and used these results to make a case for the efficacy of the technique. First, he stated that the path by which the disease enters the body plays a key role in whether the patient will survive the illness. Secondly, he concluded that the inoculated disease, traveling through the blood, infects the patient faster and “bring[s] the Small-Pox out in about two Thirds of the Time that the Natural usually does.”¹⁰⁸

In addition to publishing his encouraging results, Boylston also invited other doctors to visit his patients and see the mild and fleeting symptoms for themselves. He considered it his duty to spread the word about his discoveries and thought that some skeptics might need to see the positive results to be convinced. When other physicians published negative reviews of the technique after visiting his patients, Boylston was confused and discouraged. “Instead of... reporting their Circumstances justly and fairly, as it was their Duty, and the People’s Right, for them to have done, some of them made it their Business to invent, collect, and publish idle, unjust, and ridiculous Stories and Misrepresentations of the People’s Circumstances under it, and the Practice.”¹⁰⁹ Boylston’s disappointment in his colleagues provides insight into both his own and his colleagues’ motives. Boylston did not inoculate others to gain fame or prestige as a physician, although ironically, he is now well known for his role within this controversy. Conversely, his opponents were concerned about damaging their own reputations by

¹⁰⁸ Boylston, *An Historical Account of the Small-Pox Inoculated*, 24.

¹⁰⁹ Boylston, *An Historical Account of the Small-Pox Inoculated*, 4.

performing the new technique, despite Boylston's convincing results. Throughout 1721 and the following years, Boylston's practice was transparent. He treated patients to the best of his ability and published his results. He evaluated those results honestly and without massaging his data to something false and so was disheartened when others claimed that he was not being truthful or forthright.

Reflecting on the year's inoculations in his notes, Boylston acknowledged the worth of his experiment, writing, "Now if there be any one that can give a faithful Account of History of any other Method of Practice that has carried such a Number, of all Ages, Sexes, Constitutions, and Colours, and in the worst Seasons of the Year...with better Success, then I will alter my Opinion of this; and until then, I shall value and esteem this Method of inoculating the Small Pox, as the most beneficial and successful that ever was discover'd to, and practiced by Mankind in this World."¹¹⁰ He knew that in the course of the last year, he had successfully performed hundreds of inoculations and learned a great deal about an exciting and effective new technique. He knew that by effectively inoculating people of different ages, races and temperaments, he had performed an experiment that controlled for an assortment of variables and was hopeful that if he convinced enough other doctors to perform the same procedure, smallpox could be easily defeated. Boylston is associated with the use of inoculation in Boston and is credited with providing much needed information regarding the success of the method. He reviewed the information surrounding a new and potentially dangerous medical technique and decided to take a risk. Rather than test this method on volunteers, he risked the life of his own son. It is easy to make Zabdiel Boylston look like a hero, but perhaps that is because Boylston truly was different from the other physicians in Boston. He was,

¹¹⁰ Boylston, *An Historical Account of the Small-Pox Inoculated*, 32-33.

after all, the only person brave enough to risk his reputation to assist Cotton Mather. He too was scared of the disease, but the fear of losing his children trumped his fear of the Speckled Monster.

One of the most notable aspects of this debate, however, is that much of the anti-inoculation material published by William Douglass did not actually discuss why inoculation was a dangerous practice. Rather, Douglass attempted to prove that the city's inoculators had no right to meddle in medical affairs. One of Douglass' main arguments against Boylston was that he was not trained to perform the procedure and that inoculation, and that, when practiced and managed imprecisely, could in fact spread the disease throughout the city. Douglass' claim planted a seed of doubt in the minds of many citizens, transforming Boylston from a hero into a villain. Inoculated individuals experienced less severe symptoms and had a much higher survival rate, but inoculated patients still carried the smallpox virus. As a result, even inoculated individuals were contagious for a short period of time. If not supervised correctly, these people could travel throughout a city doing daily, mundane tasks and unintentionally infect others in the "normal" way, thus subjecting them to the more severe strain of the virus. In time, people began to argue that inoculations were lawful, but demanded that inoculation patients be quarantined during the contagious period of their infection to prevent the spread of disease throughout the entire city. Many people, including Douglass, suspected that Boylston was responsible for the continued spread of the pox and he probably was partly responsible for some cases of infection. While Boylston might have performed every one of his inoculations perfectly, Douglass' point has merit. Without making a

concerted effort to quarantine his patients immediately after the procedure, Boylston could not possibly have ensured that all 247 of his sick patients did not come into contact with any healthy individuals before recovering to a non-contagious state.

While entering documents into the inoculation discourse, Douglass first focused not on the merits of inoculation, but on the merits of his opponents. As a result, Douglass's responses do not always directly refute his opponents' inoculation-focused arguments. Douglass responded to the pro-inoculation publications published shortly after the epidemic broke out in spring 1721. Mather had published information regarding inoculation and republished the accounts of both Timonius and Pylarinus as proof that the technique was used elsewhere in the world and Douglass responded to these documents. Douglass wrote in a very logical and organized manner and structured all of his arguments in a similar way, but he addressed far more than just the efficacy of the technique. Each document began with a brief introduction in which he addressed his motivation for writing and publishing the pamphlet. These introductions are obviously the first thing read by the reader, and Douglass used the introduction to establish his main purpose within the reader's mind. At the end of each introduction, Douglass included a brief outline for the rest of the pamphlet. His method usually involved first giving the reader some background knowledge of the subject, then presenting his opponents' arguments, refuting those arguments and lastly, ending with a brief section of "remarks" on the topic at hand.

Douglass' first pamphlet was a response to Cotton Mather's father, Increase's publications, "Several Reasons Proving that Inoculation... is a Lawful Practice" and "Some further Account from London, of the Small Pox Inoculated," both of which were

published in 1721. Douglass titled his work *Inoculation of the Smallpox as Practiced in Boston* and published it in 1722. His introduction began with a vilification Mather, who “without argument... and reiterated praying, preaching & scribbling,” was trying to spread the inoculation of the smallpox throughout Boston.¹¹¹ Douglass wanted his readers to begin reading the pamphlet with a mental picture an out of control minister trying to impose his will upon others through praying and preaching, not rational argument. Douglass wrote that the “rigour of a formal Discourse would not allow” the arguments of such hooligans to stand.¹¹² Mather, according to William Douglass, did not often form and present arguments that were subject to the aggressive vetting process used by *real* scientists to determine merit. To Douglass, Mather’s “discourse” was not formal because he did not have adequate medical training, and thus his opinion was not legitimate enough to be worth much consideration.

The first section of Douglass’ publication was entitled *The Rise, Progress & Success of his novel Practice...in Boston* and in it, he outlined the process by which Cotton Mather learned of inoculation and persuaded only Boylston to join him in performing the experiment in Boston. His explanation for why Boylston decided to join Mather is quite different from Boylston’s own explanation, “at length one of them (more bold than wise or knowing in his Business) finding by his bad Success in the cure of his first natural Small Pox Patients, that he should make but a poor hand of it, embraces the Project.”¹¹³ Boylston himself was surprised by the efficacy of the procedure, but Douglass’s account seems to indicate that Boylston was unsuccessful in his “rash and

¹¹¹ Douglass, Introduction to *Inoculation of the Smallpox as Practiced in Boston*, i.

¹¹² Douglass, Introduction to *Inoculation of the Smallpox as Practiced in Boston*, i.

¹¹³ Douglass, *Inoculation of the Small Pox as practiced in Boston*, 2.

unlucky” first attempts and was quickly “publicly expos’d” for his dangerous experiments.¹¹⁴

Douglass did not have to look far to find compromising information related to Cotton Mather and the Puritans. Next, Douglass considered the track record of his opponents and pointed out a trend in what he deemed “infatuation,” that recurred in a new form every thirty years.¹¹⁵ In an attempt to discredit their authority, Douglass pointed out significant mistakes made by Puritan leadership. First, he noted the persecution of the Quakers in 1658. Next, he referenced to the witch-hunts and trials in 1692, which occurred about thirty years later. Cotton Mather was involved in the Salem Witch Trial of 1692, and his participation certainly did not help his credibility. While Mather later admitted his error, at the time he publicly supported these events and some of his writings contributed to the hysteria in Boston. Douglass suggested that, as another thirty years had passed since these trials, the city must be wary of another religious craze, inoculation, that might result the death of innocent people. The ministers of Boston, according to Douglass, had been left *sui juris*, or “of one’s own right,” and a result had begun to meddle in the affairs of other trades, namely, and most frustratingly, his own.¹¹⁶

Douglass, interestingly, did not mount the same attack on Increase Mather that he did on Cotton. William Douglass penned *The Abuses and Scandals of some late Pamphlets in Favour of Inoculation of the Small Pox* as a response to many of the aforementioned publications condoning inoculation, but he seemed most irritated and threatened by the actions of Cotton Mather. Increase Mather, Cotton’s father, published several documents and preached numerous sermons about inoculation. He was on the

¹¹⁴ Douglass, *Inoculation of the Small Pox as practiced in Boston*, 2.

¹¹⁵ Douglass, Introduction to *Inoculation of the Smallpox as Practiced in Boston*, ii.

¹¹⁶ Douglass, Introduction to *Inoculation of the Smallpox as Practiced in Boston*, ii.

same side of the debate as his son, yet Douglass maintained a certain amount of respect for Increase that he did not grant Cotton. Douglass stated this opinion early in *The Abuses and Scandals*, writing, “The old, venerable Dr. I.M. deservedly esteemed by all in his Country, his Name and Character with me shall be sacred, no Provocation can oblige me to show him any disrespect; but the Son... the Hero in this Farce of Calumny, is used with a Philosophical Freedom.”¹¹⁷ Oddly enough, Increase Mather published several documents during the epidemic describing his support for the technique. It is evident from these pamphlets that Increase did not have the same respect for his Douglass. Writing from Boston in 1721, Increase criticized Douglass, saying that he charged Boylston of felony, but would never do the same for physicians practicing inoculation in London.¹¹⁸ Later he attacked Douglass’ behavior towards Boylston, writing, “A worthy Person who knows Scotland very well, said lately, that if Douglas should do by the Ministers in Scotland as he has done by those in New-England, they would put him into the Pillory, and after that the People would show other marks of their displeasure at him.”¹¹⁹ Increase suggested that Douglass’ behavior was unacceptable anywhere, whether in the New World or in the location of his training, Scotland. Douglass’ continued respect for Increase seems peculiar based on these criticisms. Increase and Cotton Mather both agreed that inoculation was a gift from God, but Cotton actively recruited Boylston to perform inoculations on his behalf. As a result, Douglass viewed Cotton as more of an opponent than his father, who merely published pamphlets supporting the practice and insulting Douglass.

¹¹⁷ Douglass, Introduction to *The Abuses and Scandals of some Late Pamphlets*.

¹¹⁸ Increase Mather, *Some Further Account from London, or the Small-Pox Inoculated* (Boston: Edwards, 1721), 6.

¹¹⁹ Mather, *Some Further Account from London*, 7.

The debate turned ugly when Boylston, Mather and Douglass began responding to each other's publications. This discussion was not the logical, fact-centered debate that we might hope for. Cotton Mather published a transcript of "A Friendly Debate or a Dialogue between Academicus [Boylston] and Sawny and Mundungus [Douglass], Two Eminent Physicians about some of their late Performances" in 1722 and the transcript includes an introduction written by Mather. In it, he wrote that William Douglass had published a good, "full of LYES and EQUIVOCATIONS."¹²⁰ He also included a beaming evaluation of Boylston, claiming, "To you under the Auspicious Providence of GOD, we are Indebted for the Blessing of INOCULATION: for you can claim the undivided Honour of Introducing it among us."¹²¹ Obviously Mather was not afraid to include his own opinion of inoculation within the document supposed to contain a debate in which he himself did not participate. It is ironic that the title of the document is "A Friendly Debate," because neither Mather nor Douglass felt any connection to the other party and the debate was far from friendly.

Neither Boylston nor Douglass remained professional throughout the debate and tensions eventually rose to the point of violence. Rather than simply state the Douglass had his facts wrong, Boylston said, "What a graduated Lyar art thou to declare, That this Method has been among the Learned, universally known in England above twenty Years, but being deemed wicked and felonius was never practic'd there; when the famous Dr. Harris, one whose books you are not worthy to carry after him, has declared that the first communications of it unto the learned was from Dr. Timonius about six or seven years

¹²⁰ Cotton Mather, *A Friendly Debate or A Dialogue Between Academicus (Boylston) and Sawny & Mundungus (Douglass), Two Eminent Physicians about some of their late Performances* (Boston: B. Green, 1722), 2.

¹²¹ Mather, *A Friendly Debate*, 3.

ago.”¹²² This single sentence contains two insults aimed at Dr. Douglass. First, he spoke of the Learned in England, mocking Douglass for believing himself a better physician than any in Boston because of his training in England. Second, he claimed that Dr. Douglass was not good enough to carry the books of one Dr. Harris, a physician who practiced inoculation in England at the same time that Boylston inoculated many in Boston. The debate raged and on November 14, 1721, someone threw a bomb into Cotton Mather’s home. A note attached to the bomb read, “Cotton Mather, you dog, dam you! I’ll inoculate you with this; with a pox to you.”¹²³ This was undoubtedly the most physically dangerous event faced by any of the voices in this debate, with the exception of the disease itself, and is a testament to the intensity of Boston’s citizens during the controversy.

As this debate raged on, it became more obvious that Douglass resented the amount of attention the Cotton Mather received from Boston’s citizens in his discussion of smallpox simply because of his religious status. Douglass did not understand why colonial society was so willing to trust a minister to give sound medical advice and addressed the issue in his pamphlets. He wrote that members of Mather’s congregation “bestow[ed] upon him Quackish Characters high enough to make the most celebrated Physician in England blush,” to justify the fact that “the clergy were drawn in to support the Inoculator [Mather], and consequently Inoculation itself.”¹²⁴ William Douglass, always the scientist, knew that while he disagreed with Mather and Boylston’s actions, performing inoculation was a way to learn about the technique of inoculation, but also the

¹²² Mather, *A Friendly Debate*, 11.

¹²³ Barrett Wendell, *Cotton Mather, the Puritan Priest* (New York: Dodd, Mead and Company, 1891), 280.

¹²⁴ Douglass, *Inoculation of the Small Pox*, 2.

disease itself. Boylston still had to care for his patients, even those who had been inoculated, while they recovered from the infection. Douglass knew that his adversary would take notes on each individual case and the methods he used to infect and treat his patients. Douglass promised his audience to publish Boylston's results, writing, "When the Confusion is over, I shall be able to learn some Remarkables in their Cares, and transmit them to you."¹²⁵ He knew that any information he could find would help illuminate the disease and the dangers or advantages of the new procedure and hoped that these results would prove him right about the new procedure.

After discrediting the qualifications of his opponents, Douglass pointed a finger directly at the pro-inoculation faction and blamed them for the large number of deaths during the smallpox epidemic in 1721. "In this Town several Hundreds have escaped, and it is probably many more might have escaped (as was the Case Ninteen [sic] years ago) if Inoculation had not rendered the Infection so universal and intense."¹²⁶ Douglass made the case that the actual practice of inoculation did not cause the increase in death rate, but rather that the inoculators themselves spread the infection throughout the city by performing the procedure incorrectly and not properly managing their patients immediately following the inoculation. He never attempted to refute the effectiveness of the practice and never referred to the documents written and published by Timonius and Pylarinus containing detailed directions for the actual procedure. Instead, he simply blamed the "rashness and headstrong irregular procedure" of Mather and Boylston in an attempt to discredit the authority of the well-known team.¹²⁷

¹²⁵ Douglass, *Inoculation of the Small Pox*, 3.

¹²⁶ Douglass, *The Abuses and Scandals of some late Pamphlets*, 10-11.

¹²⁷ Douglass, *The Abuses and Scandals of some late Pamphlets*, 16.

Only in the next section of the document did Douglass begin addressing the arguments of his opponents. In *The Motives and Methods used to induce People to this Practice*, the second part of Douglass' publication, he presented and evaluated the arguments used by Increase and Cotton Mather in support of inoculation. As stated previously, Cotton Mather was a member of the British Royal Society in London and was an active member of the Society. He periodically received and responded to publications presented to the Society and through his membership, he learned of the inoculation experiments performed by Timonius and Pylarinus. In this case, however, he criticized Mather's willingness to believe that inoculation, because it was presented to the Royal Society, was a safe and effective means of combating smallpox epidemics. Douglass knew that worthless, even harmful, essays were sent to the Royal Society, such as Mather's documents regarding witchcraft. He did not believe the current evidence to sufficiently prove inoculation's efficacy. Douglass' opinion of the publication was quite different and he advised his readers to be wary of anything published without a significant number of successful results, writing, "If all that is published by the Philosophical Transactions... ought to be put into Practice, the World would be soon turned upside down."¹²⁸ Douglass's attitude towards new techniques is not necessarily a bad one. The information presented to the Royal Society by Timonius and Pylarinus, while provocative, left many questions unanswered and many medical professionals throughout Europe shared in Douglass' skepticism. Cotton Mather took a large risk when he chose to encourage the use of inoculation. The method was not well tested and while Mather was convinced, the amount of knowledge he possessed before making his decision would persuade few modern scientists. At the same time, Douglass was so

¹²⁸ Douglass, *Inoculation of the Small Pox*, 3.

focused on slandering Mather and Boylston that he made no contribution to the medical community's understanding of the virus.

Today, medical knowledge is constantly increasing and changing. The same held true in the early eighteenth century. In critiquing Mather's use of Pylarinus and Timonius' records, Douglass next outlined all of the outdated information (or what he claims to be outdated information) within their documents. The first of these is the claim that no one had ever died of a smallpox inoculation. Douglass often referred to a population of people who died as a result of their inoculation. Douglass also pointed out that the European doctors believed that pus must never come from an inoculated person, but rather always from someone infected in the natural way. Douglass's inclusion of this fact as incorrect proves that he believed that inoculation, if practiced correctly, was effective. Lastly, Douglass blamed the translators of Timonius and Pylarinus' documents for making errors that significantly changed the meaning of the document. Douglass called these "fatal translations," and provided the example, "it was hardly ever known that there was any ill consequences of this Transplantation," as proof of an incompetent or untrustworthy translator.¹²⁹

In addition to mistrusting translators, William Douglass did not consider the testimony of black slaves who claimed that Africans had been practicing inoculation in their home countries for generations. Mather's second source of knowledge regarding inoculation was from his slave Onesimus, a fact that he included in his sermons and publications. Douglass, whether he believed Onesimus or not, used society's mistrust of black slaves to his advantage. He suspected that Mather's slave fabricated the story after

¹²⁹ Douglass, *Inoculation of the Small Pox*, 5.

hearing his master discussing it, writing, “There second Voucher is an Army of half a Dozen or half a score of Africans, by others call’d Negroe Slaves, who tell us now (tho’ never before) that it is practiced in their own Country.”¹³⁰ Douglass knew that many Bostonians did not consider a black slave to be a trustworthy source of information and might have believed the same. Regardless of his reasons, he used this bias to discredit another of Mather’s sources.

Douglass continued in his attempt to disparage Mather’s credentials and sources until he reached the inoculator’s seventh, previously mentioned, reason for supporting the practice. This particular section of the pamphlet is surprising and provides a very interesting insight into Douglass’ true motivation for opposing smallpox inoculations in Boston during the 1721 debate. “Their Seventh Reason, (which is the only Argument they ought to use and rely on), is its Success.”¹³¹ This claim solidifies the idea that Douglass knew inoculation could be an effective tool in controlling smallpox. This idea proves false many conclusions that have been drawn about William Douglass’ opinion regarding smallpox inoculation, suggesting that he did not think the practice beneficial. Douglass’ statement is blunt and reveals that Douglass himself knew that inoculation results in a much lower mortality rate in smallpox patients. The more difficult question to answer is why did he go to such great lengths to prevent the use of the practice in Boston. It seems as though Douglass did not actually oppose inoculation because he believed that it was ineffective. The evidence shows that Douglass, as the only European-trained physician in Boston, was not willing to risk his impressive reputation with a new

¹³⁰ Douglass, *Inoculation of the Small Pox*, 6-7.

¹³¹ Douglass, *Inoculation of the Small Pox*, 11.

technique that he had not been trained to perform. He did want the practice to be performed incorrectly by the “quack” doctors in the colonies.

Douglass likened the inoculation experiment to any unknown technique, revealing a paradox present in any medical research. He acknowledged that further inoculation was the only way to learn more about the practice, but that in doing so, physicians must risk the lives of their patients. “My humble Opinion of Inoculation is as of all bold Experiments of Consequence in the Practice of Physick, That whatever the Success or Consequences may be, (and the more Tryals the more Light) they may be of a publick Advantage, tho’ at the Risque of the first Patients.”¹³² Douglass conceded that if, upon further use, inoculation proved to be an effective and safe way of managing and preventing the spread of smallpox, generations of people would be grateful to those doctors and patients who took risks for the sake of knowledge. Even so, if inoculation proved to be harmful to humanity, the doctors who practiced the procedure would be regarded as murders for eternity. Douglass never addressed the fact that the data he demanded could only be gained through experimental testing. The only way to gain medical information is to take a risk and Douglass was unwilling to take that chance with inoculation.

Douglass published another pamphlet, *The Abuses and Scandals of some late Pamphlets in Favour of Inoculation of the Small Pox*, in which he reprimanded the Boston ministers for their inappropriate involvement in the discussion. He used an almost identical format in this pamphlet as the last. Douglass opened this pamphlet with an interested observation, “If a Stranger to the Affair were to read their Writings he could

¹³² Douglass, *Inoculation of the Small Pox*, 13.

not think otherways than that all the Ministers of Boston are Inoculators, all at Variance with the Practitioners in Physick.”¹³³ While this statement is not entirely accurate, as only six of the sixteen ministers in Boston expressed a pro-inoculation opinion in the debate, it does reveal a trend that William Douglass considered threatening. These ministers had significant influence within their community and were able to convince most Bostonians that inoculation was a gift from God to the disease stricken city. Douglass disagreed with the ministers, but did not consider their pro-inoculation efforts malicious. He knew that, if performed incorrectly or managed poorly, inoculation could actually exacerbate the epidemic, but he did not accuse the ministers of knowingly harming the city’s citizens. He wrote, “Most of their vile Calumnys I impute rather to an unguarded Passion, than to their Ignorance of the World and good Manners, or a Propensity and Inclination to be malicious.”¹³⁴ Douglass knew that some of Boston’s ministers had a very strong opinion regarding inoculation and only wanted to help their flock in supporting the use of inoculation. Even so, he found their behavior unforgivably inappropriate.

While Douglass did not condemn the intentions of the ministers, he did not approve of their methods of convincing people that inoculation was acceptable in God’s eyes. He criticized their use of the Bible to rally supporters, writing, “To compare the Difficulties they meet with in their Promoting of the spreading of Infection, to those our Saviour met with in the Propagation of the Gospel, is not this an Abuse of the Scripture?”¹³⁵ Douglass believed that Boston’s ministers took advantage of their authority within the city as religious leaders to persuade people to support inoculation. He disapproved of this tactic, writing, “Some of our here, like the Roman Catholic Clergy of

¹³³ Douglass, Introduction to *The Abuses and Scandals*, i.

¹³⁴ Douglass, Introduction to *The Abuses and Scandals*, ii.

¹³⁵ Douglass, *The Abuses and Scandals*, 3.

old, would have the People believe, that they are the only proper Judges in all Cases of Literature.”¹³⁶ Douglass knew that ministers could gain support for their cause by including the topic of inoculation within their Sunday sermons and other sacred avenues and he did not consider this an appropriate exertion of religious authority. Furthermore, Douglass did not want physicians to be viewed like Post-Salem ministers, as crazed quacks who support popular theories and methods without satisfactory proof.

Douglass did not believe that, by 1721, inoculation was a safe, well-studied procedure and as a result, he regarded Cotton Mather and Zabdiel Boylston’s behavior as dangerous and reckless.¹³⁷ He admitted that religious leaders like Mather meant no harm by participating in the debate, but still considered their decision to publicly support the new technique inappropriate. He attempted to discredit their arguments, writing, “To compare the Difficulties they meet with in their Promoting of the spreading of Infection to those our Savior met with in the Propagation of the Gospel, is not this an Abuse of the Scripture?”¹³⁸ This is quite a bold claim. Cotton Mather was one of the most respected and popular ministers in the largest city in the American colonies and Douglass publicly alleged that Mather abused the Bible to promote the spread of inoculation. Boston was a predominately Puritan city and its citizens followed closely the words of their religious leaders. Douglass challenged the well-established idea that Puritan ministers were powerful leaders, not just religiously, but also politically and socially. Douglass’ challenge came at a time when the influence of the Puritan minister was receding, and his direct challenge to Mather’s authority was one of the first times when a medical

¹³⁶ Douglass, *The Abuses and Scandals*, 6.

¹³⁷ Douglass, Introduction to *The Abuses and Scandals of some Late Pamphlets*.

¹³⁸ Douglass, *The Abuses and Scandals*, 3.

professional publicly claimed that a Puritan minister should not meddle in health-related affairs.

Douglass would not have been upset had Mather been preaching about morality or a Bible story. Douglass was angry because Mather was taking a stand on a medical, scientific issue and Douglass did not consider the minister properly qualified to have an opinion on such a medical, non-religious matter. This particular sentiment could have inspired a large component of Douglass' argument against Mather. Rather than dispute Cotton Mather's argument for inoculation, Douglass focused on why Mather did not have the proper authority to make a decision about the effectiveness of smallpox inoculation. Douglass turned to history to debate Mather's authority on such matters. He claimed that recently Puritan ministers had lost their right to serve in various secular roles within the community, such as within civil affairs, as judges, justices, or representatives because of an increased population that was able to fill these roles with regular citizens.¹³⁹ He asserted that because of this fact and "For the same Reason, the Ministers... in this great Town, should cease pretending to Physick, there being Practitioners sufficient in Number and Qualifications to supply the Place."¹⁴⁰ Douglass directly attacked the training of these ministers, especially Cotton Mather, writing, "To be more or less Book learned, is not a sufficient Qualification for a Physician."¹⁴¹ Mather himself had no formal training as a physician, but had read extensively. While he knew quite a bit about medicine, he did not have any practical experience as a physician; something that Douglass deemed absolutely necessary to be a successful doctor. Douglass quoted an unnamed "eminent modern Physician" who wrote, "That many Gentlemen of universal Reading, and old Women by

¹³⁹ Douglass, *The Abuses and Scandals*, 7.

¹⁴⁰ Douglass, *The Abuses and Scandals*, 8.

¹⁴¹ Douglass, *The Abuses and Scandals*, 8.

long Nursing, know as much of Physick as to kill themselves and Neighbours when sick, by the preposterous indiscreet Use of some noted Medicines.”¹⁴² This quote makes Douglass’s already obvious opinions even clearer. He considered untrained doctors and nurses to be a hazard to the health of their patients and charged them to “devote themselves to the Duties of their Calling as Ministers, and to study the Scriptures.”¹⁴³

William Douglass’s message to the people of Boston was simple. When there were not enough doctors in Boston to help the sick, it was acceptable for ministers to act as physicians, however that time had passed. The inoculation controversy in 1721 allowed him to criticize not the technique itself, but the ability of longstanding authorities in Boston to effectively evaluate and perform the medical procedure. At least according to Douglass, by 1721 there was no longer a deficiency of physicians in Boston. It was high time for Puritan ministers to surrender their informal medical influence, retreating from the newly forming medical sphere back into a more restricted role as a religious leader.

¹⁴² Douglass, *The Abuses and Scandals*, 8.

¹⁴³ Douglass, *The Abuses and Scandals*, 8.

Conclusion

After reading about inoculation in 1721, William Douglass found himself in an impossible situation. He was unconvinced by Timonius and Pylarinus' evidence for inoculation, yet was unwilling to risk his patients' lives to learn more about the technique. As a result, he was powerless to do anything but wait for someone else to act. Ironically, the first person in his community willing to proceed with the experiment was not a trained medical professional, but a God-fearing minister with an exceptional interest in science. Mather played a critical role in the process, because he acted when Douglass did not. His faith in God enabled him to take the risk that Douglass was unable to take. He had no medical reputation to lose and could not fathom the failure of a method produced by God. The caution is evident in Douglass' writing. Douglass wanted more evidence to prove the efficacy of the practice, however he believed inoculation too risky to test, and so was unable to acquire this crucial data. Mather's assurances that God supported inoculation were not enough to convince Douglass or many others in Boston, but it allowed the minister to perform preliminary procedures and gather the evidence necessary to scientifically prove inoculation's efficacy. Technically, Mather was correct in his estimation of inoculation, however his reasons for accepting the technique were rooted in religion, not quantitative scientific data. Mather made an assumption that enabled him to execute experimental inoculations that few others felt comfortable performing with the same information and his contribution to the general acceptance of inoculation is great. Douglass may have considered Mather a religious quack, but

Mather's faith made possible the essential first inoculation, the results from which made an immense impact on the medical community's understanding of the technique.

Bibliography

- Albert, Michael R., Kristen G. Ostheimer, and Joel G. Breman. "The Last Smallpox Epidemic in Boston and the Vaccination Controversy, 1901-1903." *New England Journal of Medicine* 344 (2001): 375-379.
- Beall, Otho T and Richard Harrison Shyrock, *Cotton Mather*. Manchester: Ayer Publishing, 1979.
- Blake, John B. "Smallpox Inoculation in Colonial Boston." *Journal of the History of Medicine and Allied Sciences* 8 (1953): 284-300.
- Blake, John. "The Inoculation Controversy in Boston: 1721-1722." *The New England Quarterly* 25 (1952): 491-92.
- Boylston, Zabdiel. *An Historical Account of the Small-Pox Inoculated in New England, upon All Sorts of Persons, Whites, Blacks, and of all Ages and Constitutions*. Boston: S. Gerrish, 1730.
- Boylston, Zabdiel. *Some Account of What is Said of Inoculating or Transplanting the Small Pox; And of the Benefit and Safety of the Practice, By the Learned Dr. Emanuel Timonius and Jacobus Pylarinus*. Boston: S Gerrish, 1721.
- Centers for Disease Control and Prevention. "Smallpox Disease Overview." Accessed November 23, 2010.
- Colman, Benjamin. *Some Observations on the New Method of Receiving the Small-Pox by Ingrafting or Inoculating*. (Boston: Gerrish, 1721).
- Cooper, William. *A Letter to a friend in the Country, Attempting a Solution (of the Scruples and Objections of a Conscientious or Religious Nature, commonly made against the New Way of receiving the Small-Pox)*. Boston: Kneeland for Green, 1721.
- Cotton, John. *The Keys of the Kingdom of Heaven* (1644), in *John Cotton on the Churches of New England*. Ed. Larzer Ziff. Cambridge: The Belknap Press of Harvard University Press, 1968.
- Dewhurst, Kenneth. *Dr. Thomas Sydenham (1624-1689): His Life and Original Writings*. Berkeley: University of California Press, 1966.
- Douglass, William. *The Abuses and Scandals of some late Pamphlets in Favour of Inoculation of the Small Pox*. Boston: Franklin, 1722.
- "Editorial." *Boston Herald*, February 11, 1902.

- Fenn, Elizabeth. *Pox Americana: The Great Smallpox Epidemic of 1775-82*. New York: Hill and Wang, 2001.
- Grainger, Samuel. *The Imposition of Inoculation as a duty religiously considered in a letter [sic] to a gentleman in the country inclin'd to admit it*. Boston: Boone, 1721.
- Halsband, Robert. "New Light on Mary Wortley Montagu's Contribution to Inoculation." *Journal of the History of Medicine* 8 (1963): 390-405.
- Halsband, Robert. *The Life of Lady Mary Wortley Montagu*. Oxford: Clarendon Press, 1956.
- Hopkins, Donald R. *Princes and Peasants: Smallpox in History*. Chicago: The University of Chicago Press, 1983.
<http://www.bt.cdc.gov/agent/smallpox/overview/disease-facts.asp>
- Increase, Mather. *Several Reasons Proving that Inoculating or Transplanting the Small Pox, is a Lawful Practice, and that it has been Blessed by GOD for the Saving of many a Life*. Boston: Kneeland for Edwards, 1721.
- John Arbuthnot, John. "Mr. Maitland's account of inoculating the smallpox vindicated, from Dr. Wagstaffe's misrepresentations of that practice, with some remarks on Mr. Massey's sermon." London MDCCXXII (1722). *Eighteenth Century Collections Online*. Gale. College of William & Mary. Accessed November 10, 2010.
- Jurin, James, "A letter to the learned Caleb Cotesworth, M. D. Fellow of the Royal Society, of the College of Physicians, and Physician to St. Thomas's Hospital." London MDCCXXII (1723). *Eighteenth Century Collections Online*. Gale. Colonial Williamsburg Foundation. Accessed November 10, 2010.
- Lodish, Berk et al. *Molecular Cell Biology, Sixth Edition*. New York: W. H. Freeman and Company, 2008.
- Maitland, Charles. "A letter to the Reverend Mr. Massey, Occasion'd by his Late Wonderful sermon against inoculation." London MDCCXXII (1722). *Eighteenth Century Collections Online*. Gale. College of William and Mary. Accessed November 10, 2010.
- Massey, Edmund. "A Sermon against the dangerous and sinful practice of Inoculation." Sermon. St. Andrew's Holborn July the 8th, 1722.
- Mather, Cotton. "Letter of July 12, 1716 to Dr. Woodward." British Museum, quoted in George Lyman Kittredge. "Some Lost Works of Cotton Mather." Massachusetts Historical Society. *Proceedings*. XLV, 422.

- Mather, Cotton. *A Friendly Debate or A Dialogue Between Academicus (Boylston) and Sawny & Mundungus (Douglass), Two Eminent Physicians about some of their late Performances*. Boston: B. Green, 1722.
- Mather, Cotton. *A Pastoral Letter, to Families Visited with Sickness, from Several Ministers of Boston At a time of Epidemical Sickness Distressing of the Town*. Boston: S Gerrish, 1721.
- Mather, Cotton. *Diary of Cotton Mather (1681-1724)*. Boston: The Society, 1911.
- Mather, Cotton. *Some account of what is said of inoculating or transplanting the small pox. By the learned Dr. Emanuel Timonius, and Jacobus Pylarinus. With some remarks thereon. To which are added, a few quaeries in answer to the scruples of many about the lawfulness of this method. Published by Dr. Zabdiel Boylston*. Boston: Gerrish, 1721.
- Mather, Increase. *Some Further Account from London, or the Small-Pox Inoculated*. Boston: Edwards, 1721.
- Monroe, Alexander. *An Account of the Inoculation of the Small Pox in Scotland*. Edinburgh, 1765.
- Poland, Gregory A and Robert M. Jacobson. "The Age-Old Struggle against the Antivaccinationists." *New England Journal of Medicine* 364 (2011): 364-99.
- Riedel, Stefan. "Edward Jenner and the History of Smallpox and Vaccination." *Baylor University Medical Center Proceedings* 18 (2005): 21-5.
- Sewall, Samuel. *Diary of Samuel Sewall*. Boston: The Society, 1878.
- Staloff, Darren. *The Making of an American Thinking Class*. New York: Oxford University Press, 1998.
- Stearns, Raymond P. "Remarks Upon the Introduction of Inoculation for Smallpox in England." *Bulletin on the History of Medicine* 24 (1950): 103-122.
- Toledo-Pereyra, Luis H. "Zabdiel Boylston, First American Surgeon of the English Colonies in North America." *Journal of Investigative Surgery* 19 (2006): 5-10.
- Wendell, Barrett. *Cotton Mather, the Puritan Priest*. New York: Dodd, Mead and Company. 1891.
- Williams, John. *An Answer to a Late Pamphlet, Intituled, A Letter to a Friend... By a Minister in Boston*. Boston: Franklin, 1722.

Williams, Tony. *The Pox and The Covenant: Mather, Franklin, and the Epidemic that Changed America's Destiny*. Naperville: Sourcebooks, Inc, 2010.

Winslow, Ola Elizabeth. *A Destroying Angel: The Conquest of Smallpox in Colonial Boston*. Boston: Houghton-Mifflin, 1974.

Year-Book of the Royal Society of London. London: Harrison and Son, St. Martin's Lane, 1900.