1990

A Fatal Enigma?: The Reception of Smallpox Inoculation in Colonial Massachusetts

Monika Drake Patten
College of William & Mary - Arts & Sciences

A Fatal Enigma?
The Reception of Smallpox Inoculation in Colonial Massachusetts

---

A Thesis

Presented to

The Faculty of the Department of History

The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree of

Master of Arts

by

Monika Drake Patten

1990

APPROVAL SHEET

This thesis is submitted in partial fulfillment of

the requirements for the degree of

Master of Arts

Monika Drake Patten

Approved, April 1990

Dr. James L. Axtell

Dr. Michael McGiffert

Dr. James P. Whittenburg

For LJP, GFP, and CMNV, all of whom gave me
their own kind of encouragement.

TABLE OF CONTENTS

Seventeenth- and eighteenth-century spelling, grammar, and capitalization does not conform to present-day usage. To avoid using "sic" each time this occurs, quotations are used are printed verbatim without further explanation.

ABSTRACT

The earliest recognition of smallpox has been traced to Central Africa and India. Smallpox is an acute infection transferable only by direct contact with a live strain. Early advice on treatment was based on superstition and misunderstanding. Red-draped rooms, "hot" treatments and "magic powders" were found in both the East and the West. Early settlers to the Americas brought many new diseases to the indigenous populations, the most damaging being smallpox. Epidemics appeared with regularity, taking the lives of colonists and natives alike.

The Massachusetts Bay Colony reacted to these epidemics with legal methods which are milestones in the history of public health. Laws requiring quarantine—for people, incoming ships, and personal belongings—began what became a campaign to eradicate the disease entirely. The attempted introduction of inoculation brought, instead of excitement and gratitude, a huge outcry from moralists, legalists and medical men alike. Cotton Mather and Dr. Zabdiel Boylston stood up against Dr. William Douglass in a war of pamphlets and name-calling. Going against direct orders from the Boston selectmen, Boylston began inoculations in Boston.

As the success rate increased, the public first broke the law, then demanded that it be changed, creating easier access to the doctors willing to practice inoculation. This practice raised con-

troversial religious issues. Did one have the right to prevent a death, or was this meddling with the divine intentions of God? Was it better to save a life and thereby allow that life to spend more time on earth serving God? While these debates continued, the technique of inoculation became more refined, thereby increasing its success rate. Soon, Edward Jenner would introduce vaccination, and the eradication of smallpox became no longer a dream but a certainty.

A Fatal Enigma?

The Reception of Smallpox Inoculation in Colonial Massachusetts

CHAPTER I
ORIGINS AND EARLY TREATMENT OF SMALLPOX

"The VARIOLAE were, from the very Womb,
crafty and insidious, ever unwilling to
engage on an equal footing, but slily
wanting all oppurtunities of taking their
hapless unsuspecting Brethren at a Disadvantage."

(*An Essay on the Expediency of Inoculation...*
Dr. L. Macleane (1756)

Along with their private hopes and personal belongings, the first American immigrants also carried with them a darker legacy—smallpox. Long a curse of the English homeland, the disease was neither new nor surprising to these settlers. Smallpox had, to a great extent, replaced the terror of the plague during the seventeenth-century, and all of Europe had suffered under its cyclical epidemics.

Early sixteenth-century medical interest in smallpox had centered on learning how to differentiate the disease from syphilis, since both involved pustular eruptions and could result in gruesome death. It was due to this concern with identification that what had been loosely known as the "pox" became feared as the "smallpox" referring to the comparative size of the rash sores themselves. The word "small" does not identify the ferocity and relentlessness of this particular disease, nor the great numbers who were to succumb to its contagions.

The origins of the disease extend far back in time. Medical historians have even proposed that the Plague of Antoninus which spread through Rome in 189 A.D. was not bubonic plague as then believed, but, instead, smallpox.[1] The earliest definitive identification of smallpox has been traced to Central Africa and India. Moslem literature describes the disease in the sixth century. The

very first name given to the disease by Latin-speaking monks was variola, from varus, "pustule."[2] The disease spread with the expansion of the Arab empire, and Gregory of Tours wrote of an outbreak of "variola" in 581.[3] Rhazes, a ninth-century Arab physician, wrote "A Discourse on Smallpox and Measles"—in an attempt to end the common practice of confusing the two diseases.[4] Misidentification of other symptoms continued into the eighteenth century.

What was most significant about the European smallpox was its strength. Smallpox is an acute infection, transferable only by direct contact with a live strain, and is therefore considered a disease of the crowd, a factor which limits the beginnings and growth of new outbreaks to areas of dense population. In order for the disease to survive, it seeks a population which has never been exposed to the virus, since one encounter will provide lasting immunity. The strain of smallpox which became prevalent in Europe was the strongest of three original strains. While historians continue the debate over the original home of this lethal strain, it is not unlikely that the increase in trade between East and West; complemented by the general lack of public health and sanitation, led to a cross-fertilization of numerous, perhaps considerably weaker, strains at various ports of call. In a macabre way, it was the coming of age of what had, until that point, been merely one of many eruptive and epidemic rashes afflicting the European people. Some scholars suggest that this "strengthening" actually came as late as the fifteenth or sixteenth century via new contacts with the Far East, where a local and virulent strain was responsible for the introduc-

tion of smallpox to India at about that time.[5] The growth of towns and ports with concentrations of people as a potential breeding grounds has not been intensely highlighted by most medical historians thus far. It seems more than likely that the conditions of these new urban centers would have been an important factor in the spread of smallpox. While the eighteenth-century industrial centers of Europe have since been considered a health problem, it would be a mistake to neglect the effect of close quarters and crowding in late-medieval towns and cities.

As with the growth of every epidemic disease which has threatened mankind, there appeared excessive advice on how to prevent the sickness, some of which proved useful but most of which was based on superstition and misunderstanding. In 1314 John of Gaddesden wrapped Prince John in red cloth and hung his bed and room with red drapes in order to cure the pox and lessen the scarring.[6] Avicenna, a contemporary of Rhazes, originated the "hot" treatment, which was said to drive the disease from the body.[7] These treatments should only be considered in light of their times. Not only late-seventeenth and eighteenth-century Christians believed that sickness and death was sent among men as willful punishment from God, but so, too, did the inhabitants of ancient India and Egypt. Repeatedly, ideas and rituals based mostly in folklore were to paralyze attempts to understand and control smallpox. Yet it was also just such tradition which ultimately became the godsend for which people had prayed with the appearance of each new epidemic.

It was only when Rhazes proposed his "innate seed theory" that mankind began to receive some of the blame for the contagious role of smallpox. He believed that the blood had the tendency to "ferment" and to "expell the consequent waste through the pores of the skin."[8] This at least served to introduce the concept of disease as something transferable from human to human. The potential of contagions to spread via unsanitary conditions was only recognized in the mid-sixteenth century. Consequently, treatment in early modern Europe centered around a combination of "folk" remedies and religious belief. As late as 1658, an English pirate wrote of a magic powder he possessed which would cure any contagious disease when mixed with water and allowed to soak into a piece of the patient's clothing.[9] There are even records of popular poems dedicated to a saint protector against the "variolam."[10]

However *Variola Majora* arrived in Europe, it was particularly cruel to its victims, not least in England, where the post-1731 London Bills of Mortality show that smallpox was the leading cause of death. The possible inaccuracies in these records have been thoroughly discussed by the historian Charles Creighton, who showed that the increased percentages of deaths attributed to smallpox may equally be explained by the decrease in deaths from the plague. Even taking this into account, the numbers are impressive. Estimates for eighteenth-century deaths caused by smallpox run to 400,000 per year.[11] Along with this increase came the recognition that this deadly disease was much different from the one once expected only in childhood. In Germany, it was even known as the "kinderblattern" (children's pox). What was not un-

derstood was that this predominance of the disease among children indicated that a natural immunization process was occurring. Those who suffered and survived the disease would not catch it again, but their children would in turn wage their own battle against the pox, so the largest percentage of the population sick at anytime was likely to be children. Still, although the disease claimed many lives before maturity, it was not confined to the young and was considerably more severe among older victims.

For those lucky enough to survive the disease, which claimed sixty million European lives in the eighteenth-century alone, there was still the awful and lengthy ordeal itself and the subsequent disfigurement.[12] This permanent branding was mentioned in many descriptive passages of contemporary fiction. It also heralded an age which accepted pockmarked faces as the norm and was stunned by the beauty of those unmarked. Lady Mary Worthy Montagu, the woman partly credited with bringing inoculation into English vogue, expressed the emotional effect of the disease in her *Town Eclogues*:

> The wretched Flavia, on her couch reclin'd
> Thus breath'd the anguish of a wounded mind,
> A glass revers'd in her right hand she bore,
> For now she shunn'd the face she sought before.
> How am I chang'd! alas! how am I grown
> A frightful spectre to myself unknown![13]

This passage was probably autobiographical, since Lady Montagu, a once-celebrated beauty, was herself badly scarred by smallpox.

Ben Johnson spoke out against the scarring of the pox through his poetry in this eloquent appeal: "Envious and foul disease, could there not be One beauty in an age, and free from thee?"[14]

One among many of Elizabeth I's courtiers provided her with an excuse to refuse his marriage suit when the gentleman recovered from smallpox with "a face deeply pitted, eyes bloodshot nose almost doubled in size he, found he no longer had a part in that world in which handsome faces and virile bodies were given first place."[15] Charles Maitland, one of the first European inoculators, wrote in 1723:

> And if they had the good Fortune to escape with their Lives, what an ugly change from what they were before? What Pittings, Seams, and Scars in their Faces? What Films and Fistulas and sometimes Blindness in their Eyes?[16]

The prevalence of smallpox disfiguration is perhaps best appreciated when thought of in terms of an eighteenth-century description of a criminal whose distinguishing feature was his lack of pockmarks. Yet, the threat of one's looks being compromised was a far lesser evil than the usual death sentence that smallpox carried.

Naturally, as the incidence of smallpox epidemics grew in number and frequency, and as more lives were claimed, it became both desirable and lucrative to find a cure, or a preventative, for this ruthless enemy. Before the controversial introduction of inoculation in the 1720's, treatment took two forms: one medical (and, in many eyes, magical) and the other legislative. For the most part, the latter was far more effective, but cures and treatments came in a wealth of forms.

In order to understand the contemporary medical approach to smallpox, we must appreciate the framework of knowledge in which the early modern European physicians practiced. The four humors—blood, yellow bile, black bile, and phlegm—were considered responsible for the condition of the body. All alterations in the normal functioning of these humors were indicative of illness. Tied to this was the tendency of the body to restore itself to its "healthy" balance. This was what caused symptoms such as profuse sweating and excessive excrement, or, as with smallpox, the oozing, via pustules, of the blood itself. By extension, the disturbing excess of bleeding and purging which accompanied medical treatment was a way of speeding up what was to be the "natural" humoral distribution.[17] Different regimens were recommended for the period of the disease and for a certain time after it was over.

Dr. William Buchan, widely known for his medical treatise, *Domestic Medicine*, held that "all that is generally speaking necessary during fever is to keep the patient cool and easy, allowing him to drink freely of some weak diluting liquors."[18] Staying in bed was discouraged, as was "too quick confinement." Contemporaries realized that the disease was both contagious to others and that a victim already suffering from draining pustules could get even sicker. Dr. Buchan was not alone in warning against the "ill consequences of placing several children with smallpox in the same bed."[19] This practice, and that of "allowing children in the smallpox to keep on the same linen during the whole period," were discouraged in order to secure the most hygienic conditions possible.[20] This was difficult to implement at a time when personal

space was scarce, changes of clothing were infrequent, houses were overcrowded, and the layman's conception of hygiene was limited. For the well-to-do, even these measures carried out to their fullest were not enough to spare their practitioners, for smallpox did not confine itself to the crowded poor. It is this factor which was key in the later success of the inoculation movement, since it took the trust and support of public figures to place a stamp of approval on the controversial practice.

William Hillary, the author of *A Practical Essay on the Small-pox* in 1741, suggested preparing the body for the disease with a preparation of

> Gruel, Panada, Pudding, Milk, Whey and the like...to Adults and those who are advanced in years.... Fruits, if in season, as Apples, Pears, Peaches,...and such like especially in the hottest season.[21]

Treatments before and after the outbreak of the pox were often quite different from Hillary's. While purges were increasingly discouraged as a preventative measure, they were strongly advocated as a cure, since "nature generally attempts a discharge, either upwards or downwards, which if promoted by a gentle means, would tend greatly to abate the violence of the disease."[22] Fresh air and special foods, the latter light and plain, were strongly advised, both as preparation against and treatment for the pox.

Dr. Buchan's definitive work was much in keeping with Dr. Thomas Sydenham's provocative introduction of a "cold method." Before Sydenham's eighteenth-century work in this area, treatment was of a "sweating sort," like that practiced in Europe for many

centuries. Dr. William Clinch wrote about this in his essay on *The Rise and Progress of the Smallpox*:

> For tho' it be certain that this Distemper is in itself Inflammatory. Consequently a great Degree of Heat must heighten and increase it yet this Inconveniency is greatly qualified by a constant and liberal perspiration whereby great Loads of Matter are carried off...which would otherwise clog and interrupt the motion of the Spirits....[23]

Generally, heating treatments, which originated with the ninth-century physician, Avicenna, were employed to expel the poisonous material from the body by force. Patients were kept in hot. closed rooms and given only hot liquids. Sydenham's treatment called for keeping the patient out of bed for as long as possible and even when put to bed, he or she was to remain without bedclothes and near open windows. One of Sydenham's pupils later wrote of his own experience with such a treatment in 1732, in clearly supportive words:

> In the beginning I lost twenty-two ounces of blood. He gave me a vomit.... I went abroad by his direction till I was blind and then took to my bed. I had no fire allowed in my room.... He made me take twenty bottles of small beer acedulated with vitriol every twenty-four hours. I...never lost my senses one moment.[24]

This was in shocking defiance of accepted medical practice. In his 1676 publication of *Observations Medicae*, Sydenham vehemently opposed all previous modes of care and blamed the high mortality rate of the smallpox on such misguided treatment.[25] He outlined his own method, which not only recommended a course of light liquids and foods but also placed great emphasis on the difference in age and constitution of each patient. The importance of

Sydenham's work was its innovation of studying the "natural" process of the disease. Consequently, his presentations drew a volley of verbal abuse from fellow physicians. One doctor accused him of "ascribing sense, appetite, and judgement unto the blood."[26]

In many ways this was true, but what Sydenham really did was to allow his observations of the body to dictate medical treatment. This was in contrast to his colleagues who tended to restrict medical progress along guidelines set down by folk cures. Dr. James Kilpatrick, a London physician who discussed smallpox in a long 1743 essay, based his ideas on Sydenham, claiming that the problem with smallpox and inoculation was in failing to consider each individual's constitution when preparing a treatment.[27] Like Sydenham, he believed that certain seasons were better for inoculation. Sydenham had been somewhat more specific in his ideas. He said the best explanation for the cause of smallpox was related to the epidemic constitution of the air, meaning that epidemics rose from the atmosphere's particles. This concept of "meteorological" causation was obviously amiss, but it did allow for the realization that disease could be spread more easily under certain conditions. To his credit, Sydenham also discovered that smallpox epidemics usually began in the late spring and reached their height in early fall, which caused more consideration to be given to methods of public awareness at these times.[28]

Although appearing in higher numbers in Europe, medical treatises were not confined there. Dr. Thomas Thacher's 1677 pamphlet, *A Brief Rule to Guide the Common-People of New England How to Order Themselves and Theirs in the Smallpocks,*

or Measels, was the first medical document printed in America. He took a safe middle line between the advocates of the heating method and Sydenham's cold school. He was against the "hastening of Nature" unless the "boyling of the blood was weak and dull," in which case "cordials" might be used to drive the poison out.[29] Although he admitted that the breaking of the fever was "heightened by too much clothes, too hot a room," he also believed that it might be hindered by "preposterous cooling." He was not alone in this suggestion, but he did contribute to the American scene Sydenham's idea of basing treatment on the season of the year and the age and lifestyle of the patient.

Dr. William Douglass, a Scottsman who was to take the strongest anti-inoculation stand, wrote in favor of a course of gentle purges, complete abstinence from alcohol, and a cool, thin diet. This was much like the advice of Dr. William Hillary, who believed that "the best Preparance for the Small Pox, is to keep the mind as chearful, and the body as healthful as we can."[30] Ironically, this laissez-faire prescription was probably one of the least damaging in early modern professional medicine.

Beyond such physical and emotional recommendations, a simultaneous collection of "medicinal" curatives developed. A number of physicians ordered the use of Peruvian bark "in as large doses as the patient's stomach can bear."[31] Those who employed this cure-all bark believed that it hastened the draining of the pustules. One Boston doctor suggested "large doses of antimony and mercury," although the frequency and method of administration was unclear.[32] One philosopher-physician swore by the qualities of

"tarwater" (evergreen residue and water). He cited as proof of its quality the affidavit of a captain whose cargo of black slaves had survived the disease, with the exception of one who had refused to take the water.[33] Calomel was sometimes used in place of mercury and was thought to be useful in preventing infection. The popularity of such concoctions encouraged the entrepreneurial development of "special powders," each claiming to be the definitive cure for smallpox. Like their patent-medicine descendants, they created a lucrative business for the aspiring fortune-seeker.

Various "chemical methods" were also encouraged, like that of a certain Dr. Bacon who offered a "six hour cure," although what it entailed remains a mystery.[34] Another doctor swore by an infusion of white wine and fresh sheep dung.[35] Herbal remedies remained a favorite for all types of maladies; sumac, saffron and snake-root were among the most popular.[36] An anonymous colonial recipe promised to cure smallpox in three days by if one ounce of cream of tartar was dissolved in a pint of water, and taken at intervals.[37] Cotton Mather, in an essay evaluating mid-eighteenth-century smallpox treatments, spoke of "an Instance that one taken with the Small-Pox was thought seized with only a fever. They plied the Soles of his Feet with Pigeons: and the Consequence of it was that he had no Small-Pox Above his Waste [waist]."[38]

It is unnecessary to stress the uselessness of these early treatments. Inoculation was the first and only successful attempt at controlling smallpox undertaken in colonial America. Its development and acceptance did not come easily. Inoculation was to suffer through many years of discouragement and controversy before it

would claim at least partial triumph in a battle not truly won until 1977.

CHAPTER II
SMALLPOX IN AMERICA:
EARLY REACTION AND LEGISLATION

"For, as a Seed sown in its proper soil, never fails to produce a plentiful Harvest, so this Disease, which is highly Inflammatory in its Nature, having got into a suitable Clime, became so very Epidemical, that, in less than a Century, it had destroyed a very great Part of the Inhabitants...."

Dr. W. Clinch: *An Historical Essay on the Rise & Progress of the Smallpox* (1725)

As smallpox epidemics increased and the numbers of dead escalated accordingly, so too did the realization that existing cures were worthless placebos. Inoculation was not exactly new, but not until epidemics began to destroy the American colonies did it become an issue of great debate. The practice was best able to survive initial discouragement and skepticism almost purely as the result of desperation, and colonial America provided fertile soil for the implementation of inoculation.

The first introduction of smallpox to America is unknown. As early as the fifteenth-century, new conquests by European explorers in South America and the West Indies also brought new afflictions into disease-free territories. Smallpox certainly raged in the early Spanish settlements. This concentration of new germ-strains was heightened by the introduction of the Negro slave trade. Both whites and blacks visited new diseases on the indigenous populations to which they were introduced. Along the east coast of North America, the constant traffic of sea vessels helped spread and maintain small-pox in the early days of colonial settlement. John Winthrop's fleet of vessels was not only filled with new settlers, but also transported the smallpox. Francis Higginson thanked God for showing mercy to his infected daughter, who was suffering immensely with "lamentable pain in her belly.".[39] The 1629 epi-

demic in Salem, Massachusetts, was directly linked to a shipboard infection. A vessel arriving in 1631 reported fourteen deaths during its voyage. One passenger recalled, "we were wonderous sick as we came at sea with the smallpox."[40] In 1675, another traveler noted in his account of a voyage "smallpox hath carried away an abundance of [our] children."[41]

Epidemics appeared with disheartening regularity among the early colonists, often "refreshed" by Negroes imported from the West Indies. One Virginia merchant reported receiving a shipment of slaves in 1686, some of whom infected his family with the smallpox. William Byrd I wrote to a merchant in the same year, acknowledging the receipt of slaves and noting that "the negroes proved well, but two of them may have the smallpox w'h was brought into my family by the Negro's I received from Gambo."[42] He further noted that a number of the slaves had already died on shipboard.

The Indians suffered the most from the introduction of smallpox. Increase Mather later noted that in 1631 Indians who had second thoughts about the wisdom of a land sale to the English were soon wiped out by smallpox, the Lord having obviously proved the error of their ways.[43] An especially bad epidemic developed in the Connecticut Valley, spread on purpose by the Dutch traders there.[44] Jesuit missionaries in North America noted a number of outbreaks, although not all as colorful as this particular 1640 description of one Indian male:

> He was soon seized with a violent fever, and thereafter the current malady, smallpox covered his whole body in a manner so extraordinary that on all his members there appeared but one crust of foulness.[45]

The first recorded epidemic of smallpox in America was among Indians in Massachusetts in 1633. According to Thomas Hutchinson in his *History of the Colony of Massachusetts*, published in 1764,

> The smallpox made terrible havock among the Indians of Massachusetts.... They were destitute of everything proper for comfort...and died in greater proportion than is known among the English.[46]

In 1634 William Bradford, governor of Plymouth Colony, made extensive notes about an outbreak among local Indians.

> They that had this disease have them in abundance and for wants of bedding and linen and other helps they fall into a lamentable condition as they lye on their hard matts; ye poxe breaking and mattering and running one into another, their skin cleaving to the matts they lye on...a whole side will flea off at once...they will be all of a gore, blood...they dye like rotten sheep.[47]

In the same year John Winthrop noted in his journal, "such of the Indians' children as were left were taken by the English. Most whereof did die of the pox soon after."[48]

Worse than all of this was the proven incidence of the eighteenth-century introduction of germ warfare. One British commander issued an order to a fellow officer indicating that the best way to lessen the drain on resources caused by attacking Indian tribes would be to give them smallpox-infected blankets. In compliance with these orders, two infected blankets and a handkerchief were sent as gifts to Indian chiefs. Such intentional and other accidental disseminations of smallpox led, ultimately, to the elimi-

nation of approximately one-half of the American Indian population.[49]

Governor Bradford also commented on the Connecticut Indians' misfortune in terms suggesting gratitude for timely divine intervention.

> ...it pleased God to visit these Indians with a great sickness and such mortality that of a thousand, above nine and a half hundred of them died, and many of them did rot above ground for wont of burial.[50]

Bradford further noted with pleasure that "by the marvelous providence of God not one of the English was so much as sick or in the least measure tainted...."[51] Apparently this attitude survived to some extent in the writings of the historian Samuel Woodward of Massachusetts who said as recently as 1932 that "smallpox was the blessing in disguise that gave our emigrant ancestors an opportunity to found the state."[52] This rather disturbing comment is better understood through medical historian Joel Shurkin's work *The Invisible Fire.* He argues that the crippling effects of the disease upon the American Indian population may well have been among the most determining factors in the Spanish, French, and English colonizing successes.[53]

The experience of the Indians did not, however, lessen the sufferings of the white colonists. Thomas Thacher's *Brief Rules* described the pox as beginning with "beating pain in the head, forehead and temples, pain in the neck...sleeplessness, short breaths...dry coughs...sense of pricking over the body...." An early appearance of the pox, combined with a relatively small number of

soft round pustules, was a hopeful sign. Deadly signs included "flux of the stomach and bloody urine."[54]

Speaking personally of this discomfiture, Wait Winthrop wrote to his brother John in 1678,

> I have not bin out of dore this fortnight within two or three days, and am labouring under some sore biles under my left arme, that are the breaking away of my distemper which I feare would have killed me, if it had not pleased God to send it out that way...."[55]

The sickness did not differentiate between young and old, a factor which caused public commentary. In the September 20, 1690, issue of *Publick Occurances*, published in Boston, this news item appeared:

> The smallpox which has been raging Boston...is now much abated.... It seized upon all sorts of people that came in the way of it, even infecting children in the bowels of their mothers that had themselves undergone the disease many years ago...."[56]

Even though the colonies were not densely populated and communities were often separated from one another, [by some distance], once smallpox entered a community there was little that could be done to prevent its spread. This was largely because the general understanding of contagious diseases was still in its infancy; even the noble profession of medicine was largely in the dark. The first documentation that smallpox was a contagious disease is attributed to the thirteenth-century, at which time the immunity conferred by the disease was also noted. While the colonists, like their European counterparts, were aware of this, they did not understand the relation that contagions bore to daily sanitation. Until legislation was created to deal with sanitation and other issues of

public health, smallpox and other infectious diseases were able to find ample breeding grounds.

The legal reactions to smallpox epidemics were milestones in the history of public health. Legislation proved to be the most effective attack waged on smallpox in the pre-inoculation years. The first health regulations were made in seventeenth-century Massachusetts. The law required the cleaning up of dirt and human waste in the streets, as well as refuse control by food businesses.[57] This law later developed into a more general law which assigned various trades to different areas of town, with the hope that this would concentrate the problems of sanitation solely among those creating them, thus requiring more personal responsibility.

Quarantine and other forms of avoidance were the first attempts to control the smallpox or other diseases. In the mid-seventeenth-century, the Boston Court prevented ships from docking as a safety measure against shipborne contagions. Cargo was to be removed and aired.[58] This act was temporarily successful, although it is unclear what disease initially caused it to be passed. In 1698 all ships from the West Indies were ordered to anchor three miles from Boston Harbor, and the Council required three of its members to give permission for people or cargo to come ashore.[59]

In 1699 a series of laws were passed specifically aimed at preventing the spread of smallpox. One act put the moral responsibility entirely on the individual. The captains of incoming vessels and the commanders of local garrisons were particular targets,

> All masters or commanders of ships or other vessels not belonging to this province may be duly informed of their duty by this act required...the chief officers of every fort or fortification in any port or harbor within the same are...commanded to examine and inquire of all ships and other vessels.[60]

The law went on to state that the Council had the power to send those infected back, and complicated sea travel further by requiring a license to land.

While some ships were detained and inspected before they were allowed to dock, others were sent to various island stations where they might be quarantined for a prescribed period until all chance of infection had cleared. Boston initially chose Spectacle Island as its quarantine station, where the town built "a convenient House of one Room...two stories high...for the Reception of the Co. or Passengers belonging to infectious Vessels that are themselves in Health....[61]" By 1735 such attempts proved unsatisfactory. At that time "a good and convenient house hath been provided on...Rainsford's Island for persons with any contagious sickness."[62] Patients were kept there until they were believed "safe." Although not only ships' passengers were sent to Rainsford Island, it was the most important station for any illness arriving by sea for many years. As late as 1771, Ashley Bowen, a Salem resident, noted in his diary the arrival of a ship from London "which had the smallpox on the passage."[63] This shipload of people was sent on to Boston, where Rainsford Island was becoming the over-burdened gateway to many local communities.

When such measures failed, as they did on more than one occasion, other options were followed. In 1701 the Boston selectmen

were given power to "take care and make effective provision in the best manner they can for the preservation of the inhabitants, by removing and placing the sick...in a separate house...providing nurses, etc....at the charge of the patients themselves."[64] The most useful of the in-town laws dealt with individual quarantine. In 1678 the Salem selectmen ordered a smallpox victim not to go aboard until three weeks after they issued the command "and that he be very careful that when that time expired he shift his clothes."[65] A colonel in Northampton warned residents with smallpox not to leave their homes in 1667 "until their full cleansing, that is to say thirtie days after their receiving the sd. smallpox...."[66]

In 1662 fines and penalties were imposed on Indians of East Hampton, Long Island if they were caught out in public while infected with smallpox.[67] Likewise, Englishmen and Indian servants were similarly punished if they were discovered visiting the Indian wigwams. William Clark, a Bostonian, was brought to court in 1718 for allowing a Negro with smallpox to go ashore "without acquainting her majesties' governour and having his direction therein."[68] Twenty years later, in Boston, William Beard, a mariner, was charged £11-18s. "for bringing in the infection of the Small Pox contrary to law."[69]

While ultimate responsibility, however, was clearly placed on the townspeople to report smallpox within their own families, frequent inspections by public officials were carried out. Boston constables and clerks were ordered by the court of 1729 to inspect and report smallpox cases.[70] Marblehead, too, ordered inspections. Once a case was reported, the patients were most often required to

remove themselves from town and if not, their houses would be publicly marked as a source of infection. In Marblehead, this took the form of a red flag "at least one yard long and a half foot wide."[71] Cotton Mather spoke of isolation in 1702 when he "kept this day...as...two the last week, in my study...with respect unto the condition of the town...."[72]

Such behavior may only exhibit behavior warranted by continued official inspections, but it is also apparent that there existed a certain type of self-imposed quarantine. When Massachusetts resident Wait Winthrop wrote to his brother Fitz-John in Boston during the summer of 1768, he indicated the effect of this technique. In reference to the Salem outbreak of that year he said, "the small-pox spreads much, soe that we all keep at Salem, and many are gone out of towne."[73] Unfortunately, even this sort of voluntary seclusion was not enough to contain that particular outbreak, which reached epidemic levels within the month.

Newcomers to a town in Massachusetts were responsible for reporting their arrival within two hours. Persons attending a small-pox victim outside of town were forbidden re-entry until "reasonably judged that they will not...bring the Infection with them."[74] Obviously, this regulation relied entirely on the honesty of the individual. Guards were posted at the incoming roadways and ferry landings. Occasionally ferry boats stopped running entirely, as occurred with the Boston-to-Charlestown ferry in 1751. People on Martha's Vineyard were forbidden to leave town or come to the mainland by ferry during a 1737 epidemic. In 1764, the Salem and Marblehead selectmen were given the right "to fence across the

highway and...appoint watches to prevent the spread of smallpox."[75] Some preventive legislation arose in response to particular epidemics, as in the 1773 Marblehead outbreak when "all the dogs were to be killed."[76]

One of the most interesting developments to result from the smallpox epidemics was the pesthouses and smokehouses. Initially these shelters were merely another form of isolation, but somewhat more "medicinally" oriented than the island pesthouses. Smokehouses were built away from the towns and burnt sulphur and brimstone. Sulphur was thought to have the power of bringing out and neutralizing contagious matter. Citizens were chosen or volunteered to run them, and thereby came from those among the community who had survived a previous epidemic.

The original idea of a smoking treatment had its roots in Europe. People and their animals were smoked, as were their possessions and clothing. Sometimes trips were even made to private homes to provide a smoking there. In 1792 Ashley Bowen recorded his experience working in the smokehouse in a series of journal entries:

> ...agreed to take charge of smokehouse—smoked it on the first evening and a stranger
>
> Captain Joseph Hinkley and Will Stacey from Boston, smoked...
>
> ...from Boston Mr. Bradstreet and well smoked.
>
> This day smoked a man on a white horse from Boston.[77]

This process must have been time-consuming and expensive, since new smoke had to be made for each person. Smoking "hours" were set up during especially bad outbreaks, but the numbers of daily smokings would have been limited by the time it took to prepare the house for each person. Entire carriage contents and passengers were also required to be fully smoked before coming into the town. Refusal to do so meant being barred from entry entirely.

Within the city limits, the selectmen of Boston were expected to "take care and make effectual provisions...for the preservation of the inhabitants, by removing and placing the sick...in separate houses."[78] Ashley Bowen, a local resident of Marblehead, recalled that, "The smallpox again reared its head in Marblehead during 1769, causing a pesthouse to be erected in one of the pastures behind the town and a fence with a guard...placed on the highway to prevent it being brought in...."[79] Rainsford's Island, already used for ships' quarantines, was also provided with an additional "small house...twenty feet long, eighteen feet wide...."[80] The Marblehead authorities convened in 1773 to allow "certain private subscribers to erect and operate a hospital on Cat Island," and all those with smallpox symptoms were confined there indefinitely.[81] Unfortunately, the exact conditions of being a "private subscriber" are unclear, and this arrangement was unusual.

The Boston selectmen also reserved the right to "take" houses to use as quarantine stations. The selectmen were also the providers of nurses, assistants, "and other necessities" for the comfort of the people thus impressed. While the expense ideally was to be borne by the individuals themselves, in cases where they

were too poor to do so, the province was required to pay.[82] In 1751, in Eastham, Massachusetts, special monetary provisions were created for those families suffering with smallpox. Between 1764 and 1765, the Boston court recorded the request for seventeen special "personal allowances" for support.[83] The allotment of such alms were not discriminatory, nor always generous. Those who fell sick while visiting in a town other than their own would be cared for, but only at the expense of their own local government.[84]

Not so important in the development of smallpox legislation, but nonetheless interesting was the selectmen's practice of self-protection. In 1702 the Massachusetts General Court met at citizen Stephen Minot's house on Boston Neck in order to avoid the smallpox.[85] Nineteen years later, during the especially severe epidemic of 1721, the court completely adjourned. In that same year, three men were hired to post guard outside the door of the House, "to hinder any person from the Town of Boston coming into the House...whereby the Small-Pox may be brought among the members...."[86]

While in retrospect these legislative measures seem somewhat premature, it is also clear that, for the most part, the practice of quarantine was the most effective step taken prior to the introduction of inoculation. Equally important was the realization that infection was capable of transference. It can be safely stated that without this knowledge and the use of quarantine, smallpox would have claimed a far greater toll than it did in eighteenth-century Massachusetts.

CHAPTER III
RELIGIOUS AND MORAL DEBATE BROUGHT ON BY INOCULATION

"Let it therefore suffice, that the Powers of Nature and the true Causes of Things are too difficult to be resolved, and probably will forever remain a secret with the great Giver and Disposer of all Things...."

(*The Practice and Theory of Inoculation*)
T. Frewen (1749)

Well-meant as the legislative and preventative measures were, they were not successful in battling smallpox. The introduction of inoculation to America was the only effective step which could be taken, but this did not happen without the practice becoming a complicated issue for jurists, moralists, and medical men alike. Instead of evoking hope and gratitude, the process raised speculation and fear. But the ravages of the disease eventually caused desperation to allow for the slow trial of this innovation. The concept of attempting immunity through willfully taking the disease was not new. Inoculation of different sorts had unofficially been practiced for thousands of years, but proved harder to sell as a medically sanctioned method.

In his early nineteenth-century *History of the Smallpox*, James Moore wrote of the Chinese method:

> They took a few dried Small Pox crusts, as if they were seeds, and planted them in the nose. A bit of musk was added, in order to correct the virulence of the Poison, and perhaps to perfume the crusts; and the whole was wrapt in a little cotton to prevent its dropping out of the nostril.[87]

Hindustanis also practiced their own form of inoculation by binding cotton soaked in smallpox matter into cuts on the body, the entire process accompanied by religious ritual and a generous dosing of holy water from the Ganges. Children in Wales were noted to have

"bought the pox" from one another for centuries before inoculation was introduced to England. Mothers in Scotland often intentionally put well children into bed with those who were sick.[88]

As with many medical developments in history, it took the notice of an influential person to legitimize what had long been an "unofficial" treatment. The wife of the British ambassador to Turkey, Lady Mary Wortley Montagu (see Chapter I) first brought inoculation into the light of European medical practice. Within one year of her arrival in Constantinople, Lady Montagu had her young son treated for smallpox according to local practice. Her own misfortunes with the disease no doubt prompted her confidence in the new method, and in April, 1717, she wrote home to a friend,

> the small-pox...is here entirely harmless, by the invention of ingrafting.... People send to one another to know if any of their family has a mind to have the small-pox...they make parties for this purpose...the old woman comes with a nut-shell full of the matter of the best sort of smallpox and asks what vein you please to have opened.[89]

Lady Montagu went on to discuss the details of the operation and the subsequent outbreak of the pox. She also mentioned a comment by the French ambassador who had said, "they take the smallpox here by way of diversion, as they take the waters in other countries...."[90] Also made clear in her letter was Lady Montagu's determination to popularize the practice in England.

Six years later, Charles Maitland, an English surgeon, published his *Account of Inoculating the Smallpox.* In this study he outlined his own observation of the Turkish practice, made at the same time as Lady Montagu's. According to his account, he himself

performed an inoculation procedure in Turkey as early as 1717. Evidently the woman performing an inoculation he observed used too dull an instrument and caused her patient undue pain. Maitland stepped in and finished the job himself.[91] He was also solely responsible for the successful inoculation of Lady Mary's daughter back in England. This was the first known inoculation to be performed there, and Maitland was careful to document the occasion with a testimonial from a fellow physician. Maitland played a further role in promoting the practice by acting as inoculator to seven condemned Newgate prisoners. While this might be seen as a "guinea-pig" experiment, it was an important step for the Western world because it proved completely successful. It was particularly so on an eighteen-year-old female prisoner. She was repeatedly exposed to smallpox patients after her inoculation and remained healthy. This served as an exhibition of the continuing immunity conferred by inoculation.[92]

While this kind of public display, combined with royal patronage, served to spread the practice through Britain and Europe, inoculation was simultaneously reaching the New World through other channels. Dr. Emanuel Timonus had already published the first medical account of inoculation in 1714 in the *Philosophical Transactions of the Royal Society of London.*[93] Like Maitland, Timonus based his observations on practices witnessed in Constantinople. Timonus' account was joined by a later paper by a Dr. Pylarinus in 1716. Both these accounts came into the hands of Cotton Mather, whose religious leadership of the Massachusetts colony had already placed him in a position of authority.

Mather had been interested in the practice of inoculation for a long time,but he did not make this public until the 1721 epidemic. While in correspondence with Dr. John Woodward of the Royal Society of London about the potential of inoculation, Mather noted in his journal, "The practice of conveying and suffering the smallpox by Inoculation, has never been used in America, nor indeed in our Nation. But how many lives might be saved by it...?[94]" In his letters to Woodward he told of his Negro Onesimus' account of inoculation in Africa. When Mather had asked his servant if he had suffered from smallpox, "he answered both yes and no...he had undergone an operation which had given him something of the smallpox and would forever protect him from it."[95] This conversation had occurred around 1706. The operation was very similar to that which Mather read about in the *Philosophical Transactions*, and the two incidents prompted him to propose that local doctors get together and consider this option for the inhabitants of Boston.

The doctors proved unresponsive, however, and Mather initially found kinship with only one of them, Zabdiel Boylston, who was to become the first American inoculator. Boylston was quick to join Mather in his belief that smallpox did not need to be such a constant killer. Under the protectorship of the minister, the doctor published Timonus' and Pylarinus' joint account of inoculation, making it available to the public in 1721.

> They make choice of as Healthy a young person as they can find that has the smallpox...on the twelfth or thirteenth Day of his Decumbiture [sickness] with a needle they prick some of the larger pustules and press out the matter...a considerable quantity...thus collected, is to be stop'd close and kept warm...the patients being in a

> warm chamber is to have several small wounds...and immediately let there be dropt out of the matter...and mixed well with the blood. The wound should be covered with half a Walnut shell.[96]

Along with this method it was recommended that the patient abstain from meat for about three weeks. The outbreak would be slight, "commonly ten or twenty Pustules" which would run out for a few days, with an unusually thin pus, "whence it rarely Pitts."[97]

The very idea of giving oneself the smallpox was one which evoked extreme emotion from the moment it was suggested. Had Mather and Boylston known what controversy was to follow their early work, perhaps they would not have been so enthusiastic. As the historian John Blake has noted, "to the older possibilities of smallpox or no smallpox was added a third, inoculated smallpox, which was always a premeditated act."[98]

The late spring of 1721 brought an epidemic of such proportions that it ultimately served to show that the legislative measures in use were not enough. It is unclear whether the captain of the *Seahorse* neglected to report the sickness, or whether quarantine regulation was experiencing a lax period of enforcement. On May 8 a Negro from the *Seahorse* was discovered sick with smallpox and walking through the city of Boston. Too late, the selectmen sent the offending ship to an isolation island. Initially, it appeared that this action would save Boston from an onslaught such as they had suffered in 1702. Within a month, *The New England Courant* reported one hundred deaths, "and very few families spared."[99] "The Grievious Calamity of the Small-Pox has now entered the

Town,"[100] Mather noted. It was also at this point that his appeal to the physicians went unheeded.

As Dr. William Buchan, author of *Domestic Medicine*, was to remark a century later, "the fears, the jealousies, the prejudices, and the opposite interests of the faculty, are and ever will be, the most effectual obstacles to the progress of any salutary discovery."[101] So it was that when Mather and Boylston presented their united front in support of inoculation, they were met with confusion and doubt. When the worst of the 1721 epidemic was over, Boylston had inoculated almost 250, only six of whom died.[102] Numbers to the contrary, debates began among the physicians, the clergy, and even the town councils. Mather noted,

> The Destroyer [Satan], being enraged at the Proposal of any Thing, that may rescue the Lives of our poor People from him, has taken a strange Possession of the People on this Occasion. They rave, they rail, they blaspheme; they talk not only like Ideots but also like Franticks, And not only the Physician who began the Experiment, but I also am an object of Their Fury."[103]

Dr. William Douglass, who ironically had lent Mather a copy of the *Philosophical Transactions* in 1716, became the leader of the opposition. Douglass was the only academically trained doctor in Boston, a fact of which he was both proud and protective. This gave him, in his mind and in the minds of his fellow medical men, a position of some status among the medical ranks. His first official attack was made in July 1721 in a letter signed "W. Philanthropos" and published in the *Boston Gazette.* This incoherent piece, concerned more with name-calling and insults than with constructive commentary, launched a year-long war of pamphlets and letters.

Douglass's main objection to inoculation was that those artificially infected ran the danger of infecting healthy individuals with smallpox which continued to discharge even after the patient was up and around.

> ...in short I reckon it a Sin against Society to propagate Infection by this Means and bring on my Neighbor a Distemper which may prove fatal and which perhaps he might escape in the ordinary Way.[104]

The doctor was not amiss in his suggestion that inoculation could spread fresh cases of smallpox. This was the fault, not of the practice nor even of the method that initiated it, but rather of those who did not consider the necessity of confining the inoculee. Yet accusation did not stop here and Douglass's discussion turned to petty detail which could well have lost him his credibility. According to him, Boylston was guilty of "felony," and he advised that the inoculator's friends "bring him to trial."[105]

Fortunately for Boylston, he had the support of five ministers in addition to his own religious patron, Cotton Mather. These gentlemen became known as the "inoculation ministers;" they included Increase Mather and Benjamin Colman, the popular minister of the Brattle Street Church. They took up arms against Douglass's attack on Boylston in their own public letter written in late July 1721. Although they addressed their letter to the town, it was clearly aimed at Douglass, especially at the tactless way in which he had criticized Boylston's medical knowledge. They were also, of course, defending themselves, since Douglass had earlier taken them to equal task. They wrote,

> Whether the trusting move the extra groundless Machinations of Men, than our Preserver in the ordinary course of Nature, may be consistent with that Devotion and Subjection we owe to the All-wise Providence of God Almighty.[106]

Appealing to the religious rationality of their fellow citizens, they admitted,

> Who knows not the profanity and impiety of trusting in men or means more than in God?...But...what in fact is true among us at this Day, that men of Piety and Learning after much serious tho't have come into an opinion of the Safety...of Inoculating...it may be a means of preserving a Multitude of lives...a Kind Providence to Mankind....[107]

Their letter argued persuasively for the then unchallengeable Christian theology that God had given them the knowledge of the inoculation process to begin with. Had He not desired men to save themselves, he would not have granted this ability.

Even before Douglass's campaign had a chance to establish itself, the Boston selectmen brought together the town physicians. This was summoning, in effect, the same kind of consultation that Mather had pleaded for somewhat earlier. Mather recalled this meeting bitterly in his *Account of the Method and Success of Inoculating the Small-Pox in Boston.* Dr. Boylston was summoned in front of the selectmen and "severely reprimanded for spreading the Smallpox (which was already spreading in the Common Way) and with high Menaces warned him against proceeding with his practice any farther."[108] It is clear that Mather and Boylston had lost even before they began.

The meeting of the physicians was complemented by the presence of a French physician. He testified against inoculation,

drawing on his putative observations of a French army inoculation campaign which had resulted in a thirty percent mortality rate.[109] He also spoke of these military men as being "in Frenzy...swelled all over.... Lungs found ulcerated..." and "the Effect of that Corruption...which occasioned his (a soldier's) sudden Death."[110] As Mather appropriately pointed out in his record of this day,

> This notable Testimony was corroborated with one or two more, which amounted to little more than this, that a Man in the Mediterranean many Years ago, was told by *somebody*, that *somebody* heard, etc.[111]

It is unfortunate that this collective of doctors was now so eager to condemn a practice which they had been originally unwilling even to consider. A supporting word from these men could have saved many lives much earlier. Considering the results of their meeting, and Dr. Dahonde's words, the physicians issued the following statement of July 21, 1721:

> That the Inoculation of the Small-Pox had proved the Death of many Persons, soon after the Operation; and brought Distempers on many others, which have, in the End, prov'd Fatal to them; which appear'd by numerous Instances: that the natural Tendency of infusing such Malignant Filth in the Mass of Blood, is to corrupt and putrify it, and lay a Foundation for many dangerous Diseases. That the Operation tends to spread and continue the Infection in a Place longer than it might otherwise be, and that the continuing the Operation among us, is likely to prove of most dangerous Consequence.[112]

In this round, Douglass emerged the victor. Acting on the opinions of the doctors, the Boston selectmen officially prohibited Boylston from conducting any more inoculations. By publicly denouncing his practice, the selectmen and the physicians were almost institutionalizing Douglass's personal attack on Mather and

Boylston. It must have created confusion and discomfort among the Boston public to have several of their greatest religious figures so in favor of the practice, and their public officials and medical minds so against it.

It was even more damaging that the meeting of physicians and the resolutions of the selectmen were closely followed by a paper by Dr. John Williams entitled *Several Arguments proving that Inoculating the Small-Pox is not contained in the Law of Physick.* He addressed this piece to "the worthy" selectmen of Boston and stated that the unnaturalness of inoculation made it "unlawful and unholy."[113] In response to Increase Mathers' written defense that "good" Englishmen were in favor of inoculation, Williams sarcastically answered that he would not change his faith just to die in English "style."[114]

As commentary on Williams, Dr. J. Kilpatrick wrote from London in 1743, "the novelty of seeking security from a Distemper by rushing into the Embraces of it, could naturally have very little tendency to procure it a good Reception on its first Appearance."[115] While this is true, the feelings of the Boston public were certainly not helped along by Douglass's cynical attitude. Historians Weaver, Barett, and Blake have argued that much of Douglass's reaction was based in jealousy and regret that he had not seen ahead to advocate this new method himself.[116] Certainly, Douglass valued his position as a "real" doctor in a colony otherwise populated with physicians whose training consisted only of adolescent apprenticeships with older doctors and some apothecary training.

Cotton Mather, while still supporting Boylston, removed himself somewhat, apparently battling with underlying religious misgivings. This comes through in his handling of a personal dilemma where the issue was not so much a scientific matter as a moral decision. His son, Sammy, then at Harvard, wanted to be inoculated. Obviously, were Mather to refuse, it would show a lingering doubt as to the efficacy of inoculation. If Sammy were inoculated and died, then Mather would play into Douglass's hands. His diary recorded his indecision,

> If he should after all dy by receiving it in the Common Way, how can I answer it? On the other side, our People...will go on with infinite Prejudices against me and my Ministry...if I suffer this Operation upon the Child.[117]

Sammy was inoculated and survived. Cotton Mather emerged from his son's "Deliverance" even more determined to push forward the method of inoculation.

Benjamin Colman, one of the signers of the "inoculation minister's" letter upbraiding Douglass, was one of inoculation's most influential supporters. A good friend and neighbor of Boylston's, he took it upon himself to oversee the doctor's practices personally. He recorded his findings in an independent publication, *Some Observations on the New Method of Receiving the Small Pox by Ingrafting or Inoculating*, published in July 1721. Colman readily admitted, "I would as soon be against Inoculation but I have seen it work."[118] His unbiased reporting of Boylston's methods stressed the details involving passage of the contagious matter itself and the expected course of physical events which followed. For the benefit

of the physicians he wrote, "What is important is that it moderates the first fever and seems to prevent the second which is often the fatal one."[119] For the benefit of the religious, whose arguments were becoming increasingly central to the controversy, he spoke of "the kind Providence to Mankind" and "the Saving of Lives that may resound unto the name of God."[120] For the benefit of both, he said that within a few months patients were

> in as good a state of health as every they enjoyed in their Life: Nay some have found a much better complexion and stomach than ever they had before, and particularly my own child has found so thro' the favour of God.[121]

For his own part, Boylston was not to be deterred from his inoculation practice. While Mather continued to anguish over the religious and moral issues, the doctor continued to hope for possible medical advances based on the success of inoculation that he knew would come with time. He stressed the immunity inoculation conferred, which had been proven through repeated encounters between inoculees and new outbreaks of the "Natural Pox." He tried to bring out basic physical facts about the practice, such as its support by respected men of medicine in many other countries. He published an account of his own recent refinement of the Turkish method. Boylston had developed this innovation with his fifth patient, when he decided to make a deeper incision and to lay a piece of pus-saturated lint inside the cut, instead of mixing the pus directly with the blood via scratches in the skin.[122] Unfortunately, by this time, the issues had gone beyond a factual level, and even with

a success rate to the contrary, Boylston continued to face abuse, both mental and physical.

Like most people, even Boylston could not resist addressing some of the religious misgivings being expressed. He warned the public, "You presume on Providence...for the Prevention of the Small-Pox, for you don't know whether you shall have the Small-Pox or no."[123] He singled out the irrationality of such action when there was another choice. He was aware that people would send up prayers that "a Dangerous and Destructive Small-Pox may not spread," but they equally did not ask that a cure be kept from them. He wondered if this could not be seen as God's answer to their pleas. What he did not understand was that while he was able to make the required connection from one to the other, this process was not so easy for someone with no knowledge of medical theory. As far as the public was concerned, Boylston was giving them the disease, not fighting it.

Dr. Williams argued that by bringing the disease to one's neighbor, one was taking the maxim "all things whatsoever ye would that men should do to you do yee even so the them" too far.[124] This issue of willfully giving or taking the disease was fought by doctors and ministers, and eventually by the townspeople. It brought up dangerous questions about God's control over mortals. Since disease was still seen as His punishment, to tamper with divine judgement evoked comparisons with witchcraft and the Devil.

Edmund Massey, an anti-inoculator, delivered one of the most eloquent summaries of this theological debate in a sermon early in

1722. He made a powerful analogy with the Bible, maintaining that the story of Job and Satan was the earliest example of inoculation.

> So went Satan forth from the Presence of the Lord, and smote Job with Sore Boiles, from the Sole of his Foot Into his Crown....[125]

He also asked the man who was holy to think about "for What Causes Diseases are sent amongst Mankind" and "who is it that has the power of inflicting them."[126] Massey himself addressed both queries. To the first he gave the reply that it was either a trial of faith or a punishment of sins. With regard to the second, Massey found it necessary to prove that those inflicting diseases on their fellow man could not consider themselves Christians. After all, as Massey confidently contended,

> ...The Holy Scriptures give us frequent Instances of God's giving Power unto Men to heal Diseases;...But that one was ever granted to inflict Disease, will I think hardly appear....[127]

Massey remained convinced that only God, to whom people must constantly prove their faith, had the right to inflict punishment. Essentially, God should be the only inoculator. Like most emotional attacks on the practice, Massey was unable to maintain a separation of law and morality:

> A natural or Physical Power does not always infer a moral one...a man cannot lawfully do everything that is in his power to do.[128]

The issue of "lawfulness" was brought up often as a deterrent to inoculation. Reverend Samuel Grainger addressed the legality of inoculation in his 1721 "letter to a friend," entitled *The Imposition of Inoculation As a Duty Religiously Considered.* He argued that

while it is lawful to save life, to endanger your neighbor's life while doing so is debatable. He did allow that it was natural to seek relief, but questioned whether inoculation was a lawful way to do so. He also feared that if smallpox could be conveyed via inoculation, it might bring "those inseparable Evils in Consequence."[129] Now the public could also actively fear having their souls altered, through a smallpox "possession." Few wanted to change their spiritual estate this far along in life.

One anonymous author asked, "can any man infect a Family in the morning...and pray to God in the evening that the Distemper may not spread?"[130] In Dr. Williams's opinion, anyone who took the smallpox voluntarily was violating the moral law of God. Two deaths from inoculation caused the Reverend Massey to sermonize in 1722, "the fear of disease is a happy restraint to men. If man were more healthy tis a great chance they would be less righteous."[131] For the anti-inoculators, it was easy to pull such emotional strings at a time when God was expected to subject mankind to afflictions and disease.

Yet, as with most moral arguments, those in favor of inoculation were able to turn the same issues to their defense as well. Reverend William Dodd preached, "There is...need to support...all those efforts, which tend to Population, by the Preservation of Life."[132] In his opinion, "we may suppose anything sooner than that a God infinite in Wisdom and Goodness cannot create only to destroy, or take Delight in the Miseries and Death of his People."[133] Dodd praised "Human art" which had discovered a way in which to tame the horrors and consequences of smallpox. He

substantiated his feelings with the medial fact that the disease was going into a prepared body at an appropriate season. Turning tables on the anti-inoculators' accusations of un-Christianness, Dodd exhorted,

> What Christian, who hath a just Idea of the Value of a soul, of the greatness of Futurity, but would rejoice to prevent, if possible, the dire, the unutterabler Miseries which must follow from such a departure?[134]

He pointed out that rather than indicating disregard for their fellow man, the inoculators were showing their love for both God and their neighbor by trying to save life.

Others argued on a more factual basis. Charles Maitland, of the Newgate inoculation experiment, wrote *An Account of Inoculating the Smallpox* in 1723. Although directly referring to his work in England this was nonetheless an important pamphlet in Boston, and he was more medically oriented than most of the participants. Perhaps for this reason, he brought extremely refreshing views to the argument. He appealed to both humanistic and rational thought when he argued that inoculation was "intended Only to prevent the malignant Infection and to preserve Life not to Give a Disease."[135] He also took the medical profession to task for its hesitancy and arguing. "Why then do they Bleed, Vomit, or Purge, or use any other Remedy to prevent a fever?" he asked.[136] This concern was also felt by Edward Strother, who wrote at about the same time. He expressed the fragility of developing medical knowledge when he said, "We are not sure that cutting off a Cancer, or a Limb will save Life, and yet we attempt it and advise it daily."[137] It seems that what he really meant was that inoculation

was as much worth the risk of error as any other current medical practice. To his misfortune, he rather refuted his argument in the eyes of the anti-inoculators by likening inoculation to "giving Poison." Ultimately it was too easy for the disbelievers to rally around the cry, "Thou shalt not kill."

William Douglass addressed these issues when the Reverend William Cooper published his extensive *Letter to A Friend...Attempting Solution of Scruples and Objections...made Against Receiving the Small Pox.* Cooper argued that making the earthly decision to save life was made everyday "among People without any Scruples in Purges and Vomits, and other things in Medical use."[138] Douglass retaliated, correctly pointing out that these particular methods did not risk the spread of disease; nor did they produce as violent an outcome and were rarely fatal if administered correctly. Cooper's writing was still very successful, since he dealt with medical and religious issues in a rational way, removing himself from the lofty philosophizing which had become the norm. He quoted fittingly from Jesus, "I will ask you one Thing, is it Lawful to save Life or to Destroy it?"[139] Cooper went on to argue that if he made himself sick in such a way as to save his life, it was lawful. In a more pessimistic vein, he suggested that contrary to Douglass's claim, everyone would eventually get the disease, so it seemed wise to bring it on in a lesser and controlled degree.

Dr. Kilpatrick sympathized with Cooper in fighting the argument that inoculation might bring disease on those meant to be spared,

> ...if he does, he may, I think fairly say tis a bad Chance. Very few in populous Places, arrive at the Age of forty, without undergoing that Disease; some have said not one in fifty.[140]

Cooper's publication was significant in the controversy because it dealt with so many of the points under debate. He said that even if smallpox were the punishment of God, certainly both smallpox received naturally and that taken by inoculation were each received not divinely but secondhand by human means. Furthermore, these secondhand causes were invariably due to the carelessness of humans, such as their ignoring of quarantine, their carelessness with sanitation, and their general ignorance about health. With this in mind, why was spreading a disease under controlled and beneficial circumstances sinful, while the careless liberties during administration were not?

Religious objections went even further. It was generally argued that making such a method available would take away all fear of the "distemper" and this would cause spiritual doubt. The inevitable response to this was that living through the disease was a spiritual experience and, of course, inoculation had not removed the menace of the disease. One of the strongest objections understandably centered around predestination. If God had predetermined and fixed the period of everyone's life, as was commonly believed, nothing should be allowed to change this. Obviously, the rebuttal of this was that if the time were truly ordained, then nothing could change it, not even the best medical aid available. More significantly, anyone subscribing to this argument might as well forego any type of medical attention. The controversy was like a philo-

sophical treatise and there was no end to the arguments and counter-arguments.

While these debates continued to issue forth on paper and be preached from the pulpit, Boylston, with only a short recess, continued his inoculating. He decided to dabble only slightly in the religious issue when he wrote,

> I take the case to be this. Almighty God in his great mercy to mankind has taught us a remedy to be used when the dangers of smallpox distress us; may not a Christian employ this medicine and humbly? Thank God for his good Providence in discovering it to a miserable world? I have made my experiments...and a greater number than I judge proper, considering the unaccounted rage of uncountless people.[141]

Fortunately for Boylston, the early support lent to him by Mather and Colman continued. The "inoculation ministers" also retained their belief in his work, even as they were accused of having "defective morals," with being the "cause of divisions" and men of "wicked desires."[142] The religious leaders responded with Biblical references claiming that, "After all, we have often heard that maxim, that a Power to do good not only gives a right to the doing of it, but makes the doing of it a duty."[143]

What makes their 1722 *Vindication* so significant is the challenge they presented to the selectmen. First, they put the selectmen in the position of being unfit leaders by citing their record of dealing with the smallpox. As examples, they mentioned that guards had been removed from infected houses at the beginning of the 1721 epidemic because the selectmen determined that the disease was spreading regardless. The ministers criticized this action, which they held responsible for the fact that infected people

were allowed to walk the street, visit neighbors, and thereby encourage the spread of smallpox. It was only due to these shortcomings, claimed the ministers, that they had been forced to step in and "intermeddle with Civil Affairs."[144] According to them, it was done for the good of the people, and only this one time, because they felt they had a proven way to help.

Douglass was clearly unhappy with this, and he attacked their words with determination.

> Six gentlemen of Piety and Learning, Profoundly ignorant of the Matter, after serious consideration one of the most intricate practical cases in Physick, do on the Merits of their Characters, and for no other reason assert that inoculation is a perfectly safe and effective treatment.[145]

At the same time, he was forced to admit at the end of 1721 that the smallpox suffered through inoculation was not as harsh as that received naturally. In his publication *Inoculation of the Small-Pox as Practised in Boston*, Douglass admitted that the inoculees had enjoyed immunity and good health after their inoculation. He would not admit the competence of other physicians, and indicated that these good results were little more than luck. Douglass now had proof and could no longer do battle against the effectiveness of the procedure. Yet even in this moment of backing down, Douglass had saved himself by his early assertion that with inoculation, as with "all bold Experiments of Consequence in the Practice of Physick...," the more often experiments were conducted, the more chances that generations to come might be saved.

While the ministers and the physicians waged their war of words, the interests and response of the general public were per-

haps better reflected by the actions of the selectmen. A mixture of general public and influential public pressure finally forced the selectmen to take a stand on the inoculation issue. They began with a reprimand of Boylston and of a few ministers, especially those actively encouraging people to come in from the country to be inoculated. Their first official resolution required all such people to be sent directly to one of the pest-houses.

In November 1721, the selectmen recorded their displeasure that many people were coming to Boston for the purpose of inoculation "and that they know how to come in and where, and then went on to instruct the town justices to issue warrants to search for such people," and "remove them to their respective houses or to the province hospital."[146] In 1722 they issued the command that "persons so Inoculated shall not come up to the town of Boston during the present session."[147] This was a change from the earliest days of the 1721 controversy, when people were expected to decide for themselves whether they wished to be inoculated or not. Ultimately, for the average man, that remained the issue, since most of the theological and medical rhetoric of the prominent meant little, if anything, to someone whose family was threatened by smallpox.

The selectmen continued to post guards outside infected houses. Eventually, when the controversy settled, houses where inoculation took place had to be cleared by the selectmen first. This was to insure that their location would be simultaneously safe and accessible for smallpox victims. A special petitioning was required if the house was within one-half mile of any dwelling.[148]

What would have no doubt surprised the eager pamphleteers and sermonizers of 1721 was that, by the time of the Revolution, not only were inoculation hospitals set up but citizens petitioned the court for the right to be inoculated. In fact, their interest and trust in the practice were so high that they voluntarily reported any doctors whose inoculation practices appeared unsafe compared to the public expectations. During one period the town was so congested with troops that the proposition was made for a public campaign of required immunization.[149]

The statistics of Boylston's campaign were evidence enough to have forced Douglass's acquiescence. During the epidemic of 1721, Boylston and two like minded doctors, had inoculated 280 in Boston, Cambridge, Roxbury, and Charlestown. Only one in forty-six died, as opposed to one in six or seven of those who "caught" the smallpox.[150] The medical historian, De la Comadine was to note some thirty years later in his *History of the Smallpox* that life was merely a lottery; but through the practice of inoculation, "the conditions of this lottery are changed, the number of fatal tickets is diminished."[151]

CHAPTER IV
CONCLUSIONS

The last natural occurrence of smallpox worldwide was as recent as 1977.[152] Since there is no animal "reservoir" for the disease, it is thought that it will not appear again. What is made less public is the fact that the virus is still maintained as a laboratory culture. The escape of the virus from one such laboratory in Birmingham, England caused the death of two individuals in 1978 and the subsequent suicide of the laboratory director.[153] The World Health Organization still continues to be on the lookout for smallpox, even though it is generally accepted as defeated. Even this has not prevented the virus from being stored, ostensibly for research purposes. As with all "warehoused" viruses, there is always the nagging fear that the smallpox strain may one day be misused as a chemical weapon. In light of the threatening proportions of the AIDS epidemic, it is haunting to consider the historian Joel Shurkin's words. He noted with concern in 1979 that the possibility exists that another virus will "mutate and take over the ecological niche" once held by smallpox.

The effect of the years of colonial controversy on the eventual eradication of smallpox was perhaps less impressive than these pages might suggest. In the years following the debates and pamphlet wars, even with the resolution of certain arguments, there were other elements of the problem which persisted. Inoculation

was still seen as a treatment, something to turn to in the event of an outbreak. The concept of inoculation during disease-free periods came later. The process was also not free of charge, and, predictably, there was a medical profession willing to offer its patients competitive prices. Equally, the number of laymen claiming to be "proper" and "licensed" inoculators grew. Eventually, the problem of people creating their own, private inoculation "parties" caused local governments to step in. Much like the English practice of retiring to country homes and "taking" the pox together, New Englanders were securing their own doctors, or, worse yet, performing their own inoculations. Responding to this, the Boston selectmen in 1776 ruled in favor of inoculation hospitals, hoping to contain and monitor all those who desired inoculation. The Revolutionary War brought the introduction of a mandatory program of inoculation.[154]

Even as inoculation became more commonplace, it was still basically distrusted. Not only was the inoculated case sometimes as bad as the natural one, but what were actually related infections were sometimes seen as successful inoculation "takes." Since the inoculated smallpox was "true smallpox," it could indeed be spread and, "while inoculation protected the individual, it endangered the community."[155] As most people know, it was the discovery of vaccination which eventually controlled smallpox and, in time, other epidemical diseases. By 1796 Edward Jenner was publishing accounts of his successful use of cowpox to prevent humans from contracting smallpox. Beyond the obvious advantage of not involving the transfer of live smallpox matter, this method was quick, simple,

cheap and only minimally painful. There was no danger of cowpox spreading, and mortality from the practice was almost non-existent.[156] Due to the involvement of one man, vaccination was introduced to the United States. The English-educated physician Benjamin Waterhouse requested and realized a good share of the profits from this introduction.[157] By the turn of the century, successful "tests" of vaccination had been promoted, accepted, and concluded. Prevention was becoming a way of life.

Ironically, even this practice was seen as a point of debate and, while the characters and the years changed, some issues remained largely the same. They centered on control, morality, and the ever-increasing infiltration of "modern science." It is the consensus of many medical historians that it was predominantly the efficacy of the procedure which caused the most distress. For a medical community which had at length secured for themselves the final say in matters of their own discipline, vaccination meant the loss of a lucrative practice. It took away much of the prestige and mystery surrounding their profession to have a new method which was so safe, so fool-proof, and so uncomplicated. Religious disfavor centered on the mixing of animal and human substances, with the obvious intention that man should fear contamination from a life lower on God's list of preference. Not to be left to rest were the old issues of changing God's will and meddling with fate. These proved less viable as arguments, since vaccination greatly lowered in death rates. In any case, all this is relatively unimportant in light of what vaccination meant to the late-eighteenth- and nineteenth-century world. Jenner expressed this with an appropriate simile:

"The wolf, disarmed of ferocity, is now pillowed in the lady's lap."[158]

What did come of the 1721 epidemic in Boston was, obviously, the introduction of a new method of treating smallpox. By extension, this created change in the treatment of other epidemic diseases. It did this by widening the understanding of how the spread of disease could be both lessened and survived. More specifically, it showed medicine to be more than vomits and purges. It showed that disease could be controlled by man and that death had a movable date. This was the vital effect, because on this issue religion and medicine merged. Inoculation stood dangerously close to the edges of religious heresy and admirably close to the achievement of "scientific" medicine. It tested not just public reaction, but also the public's ability to cope with and accept ideas which had no comparable precedent. While all the changes would no doubt have happened eventually, something as widespread and devastating as the Boston epidemic was a provocative catalyst to successful medical innovation. Most medical historians like to credit the famous personalities involved with the adoption of inoculation. While this is unquestionably true, it is not necessarily fair, since so much of their success lay in the mental and moral acceptance of the practice by laymen, to whom it was a question of life or death.

Footnote and Bibliographic entries conform to the *Chicago Manual of Style.* In cases where the publisher is unknown, the notation "N.p." has been employed. Likewise those documents without pagination are distinguished by the use of "n.p.".

NOTES

CHAPTER I

1. Harry Wain, *A History of Preventative Medicine* (Illinois: Charles C. Thomas Publisher, 1970), 168.

2. *Ibid.*

3. Fredrick I. Cartwright, *A Social History of Medicine* (New York: Longman, 1977), 75.

4. John Duffy, *Epidemics in Colonial America* (Baton Rouge: Louisiana State University Press, 1953), 18 and Genevieve Miller, *The Adoption of Inoculation for Smallpox in England and France* (Philadelphia: University of Pennsylvania Press, 1957), 8.

5. Cartwright, *Social History of Medicine*, 77; see also Charles Creighton, *A History of Epidemics* (London: Cass and Co., 1965).

6. Cartwright, *Social History*, 77.

7. Duffy, *Epidemics in Colonial Amer*ica, 18.

8. Donald Hopkins, *Princes and Peasants: Smallpox in History* (Chicago: University of Chicago Press, 1983), 9.

9. Wain, *History of Preventative Medicine*, 170.

10. Miller, *Adoption of Inoculation*, 28.

11. Creighton, *History of Epidemics*, 22, and Hopkins, *Princes and Peasants*, 41-42.

12. Wain, *History of Preventative Medicine*, 172.

13. Peter Razzell, *The Conquest of the Smallpox*, (Firle: Caliban Books, 1977), 4.

14. Creighton, *History of Epidemics*, 173.

15. I. Mahoney, *Madame Catherine* (New York: Coward, McCann and Geohegan, 1975), 173.

16. Charles Maitland, *Dr. Maitland's Account of Inoculating the Smallpox* (London: J. Peele, 1723), 13.

17. For further reading on "humoral balances" see Laughlin Macleane, *An Essay on the Expediency of Inoculation and the Seasons Most Proper for It*, (London: Woodward, 1731) and see William Buchan, *Domestic Medicine* (1772; reprint, London: Garland Printing, 1985).

18. Buchan, *Domestic Medicine*, 272.

19. *Ibid.*, 274.

20. *Ibid.*, 275.

21. William Hillary, *A Practical Essay on the Smallpox*, 2nd ed. (London: N.p., 1740), 59.

22. Buchan, *Domestic Medicine*, 278.

23. William Clinch, *An Historical Essay on the Rise and Progress of the Smallpox* (London: A.R., 1725), 47.

24. Dr. Kenneth Dewhurst, *Dr. Thomas Sydenham 1624-1689* (Berkeley: University of California Press, 1966), 38.

25. *Ibid.*, 39-40.

26. *Ibid.*, 35.

27. James Kilpatrick, *Essay on Inoculation*, (London: N.p., 1743).

28. For more details, see Thomas Sydenham *The Works of Thomas Sydenham*. 2 vols. (London: N.p., 1788).

29. Thomas Thacher, *A Brief Rule to Guide the Common People of New England*, (Boston: N.p., 1702).

30. Miller, *Adoption of Inoculation*, 41.

31. Buchan, *Domestic Medicine*, 280.

32. Rhonda Traux, *The Doctors Warren of Boston* (Boston: Houghton Mifflin Co., 1968), 23.

33. Lester King, *The Medical World of the Eighteenth Century*, (Huntington: Kreiger Publishing Co., 1971), 39.

34. Allen Debus, *Medicine in Seventeenth-Century England*, (Berkeley: University of California Press, 1974), 126.

35. Miller, *Adoption of Inoculation*, 52.

36. Phillip Cash, *Medicine in Colonial Massachusetts* (Colonial Society of Massachusetts, University Press of Virginia, 1980), 265.

37. Margaret Coffin, *Death in Early America* (Nashville: Thomas Nelson, Inc., Publishers, 1976), 222.

38. Otho Beall and Richard Shryock, *Cotton Mather: First Significant Figure in American Medicine* (Baltimore: John Hopkins Press, 1954), 170-171.

CHAPTER II

39. T. E. Cone, "Reverend Higginson Anguishes..." *Pediatrics*, No. 61 (1978), 392.

40. Ola E. Winslow, *The Destroying Angel*, (Boston: Houghton, Mifflin Co., 1974), 25.

41. J. Josselyn, *An Account of Two Voyages to New England*, (1675; reprint, Cambridge: Massachusetts Historical Society Collections 3, 3, 1833), 333-334.

42. W. Blanton, *Medicine in Virginia*, (Richmond: W. Byrd Press, Inc., 1930), 126.

43. Wain, *History of Preventative Medicine*, 182.

44. Hopkins, *Princes and Peasants*, 41-42.

45. Reuben G. Thwaites, ed., *The Jesuit Relations and Allied Documents*, 73 vols., (Cleveland: Burrows, 1896-1901), vol. 19.

46. T. Hutchinson, *The History of the Colony and Province of Massachusetts*, Vol. 1, (1764; reprint, Cambridge: Harvard University Press, 1936), 32.

47. W. Bradford, *Of Plymouth Plantation*, (Boston: Wright and Potter Printing Col., 1901), 388.

48. *Winthrop Papers* (Massachusetts Historical Society Collections, 1929-1944), vol. 1, 119.

49. Wain, *A History of Preventative Medicine*, p. 183.

50. Bradford, *Plymouth Plantation*, 387.

51. *Ibid.*, 389.

52. Samuel Woodward, "The Story of Smallpox in Massachusetts," *New England Journal of Medicine*, No. 206, 23 (1932), 3.

53. See Joel N. Shurkin, *The Invisible Fire*, (New York: G. P. Putnam's Sons, 1979) for more detailed analysis of his theories.

54. Thacher, *Brief Rule.*

55. *Winthrop Papers*, 454.

56. Shurkin, *Invisible Fire*, 140-145.

57. *Massachusetts Bay Assembly, Acts and Resolves*, 656. (hereafter cited as *Mass. Acts.*).

58. Dennis Melchert, "Experimenting on the Neighbors" (Ph. D. dissertation, Yale University, 1974), 95.

59. Winslow, *Destroying Angel*, 28.

60. *Mass. Acts*, (1699), 1: 377.

61. *Mass. Acts*, (1728), 2: 324.

62. *Mass. Acts*, (1735), 3:124.

63. Ashley Bowen, *The Journals of Ashley Bowen*, 2 vols. (Cambridge: Colonial Society of Massachusetts Collections, 1973), 301.

64. *Mass. Acts*, (1701), 1: 469.

65. Elizabeth Tandy, "Local Quarantine and Inoculation for Smallpox in the American Colonies (1620-1735)" *American Journal of Public Health*, No. 13 (1923), 204.

66. Blanton, *Medicine in Virginia*, 61.

67. East Hampton Council, *Town Records of East Hampton*, 1: 201, (1662).

68. John Blake, *Public Health in the Town of Boston 1630-1822* (Cambridge: Harvard University Press, 1959), 33.

69. *Mass. Acts*, (1730), 11: 567.

70. *Ibid.*, 458.

71. Bowen, *Journals*, 30.

72. Cotton Mather, *Diary of Cotton Mather* (Cambridge: Massachusetts Historical Society Collections, 1911-1912), 435.

73. Winthrop, *Papers*, 412-413.

74. *Mass. Acts*, (1751), 14: 609.

75. *Mass. Acts*, (1764), 4: 1121.

76. Bowen, *Journals*, 352.

77. *Ibid.*, 582-585.

78. *Mass. Acts*, (1701), 1: 469.

79. Bowen, *Journals*, 197.

80. *Mass. Acts*, (1744), 13: 429.

81. Gerald H. Clarfield, "Salems Great Inoculation Controversy 1773-1774" *Essex Institute Historical Collections*, No. 106, (1970-1971), 279.

82. *Mass. Acts*, (1735), 3: 126.

83. *Mass. Acts*, (1764-1765).

84. Tandy, *Local Quarantine*, 204.

85. *Mass. Acts*, (1702), 7: 748.

86. *Mass. Acts*, (1721), 10: 105.

CHAPTER III

87. James Moore, *The History of the Smallpox* (London: Longman, 1815), 219 and Wain, *A History*, 173-174.

88. Moore, *History of the Smallpox*, 221 and Cartwright, *A Social History*, Chapter 5.

89. Hopkins, *Princes and Peasants*, 47-48 and Wain, *A History*, 175.

90. *Ibid.*

91. Maitland, *Dr. Maitland's Account*, 7.

92. *Ibid.*, 19.

93. Razzell, *Conquest*, 2 and Emanuel Timoni, "An Account or History of the Procuring of the Smallpox by Incision or Inoculation" *Philosophical Transactions*, (April-June, 1714).

94. Mather, *Diary of Cotton Mather*, 620-621.

95. Kenneth Silverman, ed., *Selected Letters of Cotton Mather* (Baton Rouge: Louisiana State University Press, 1971), 214.

96. Zabdiel Boylston, *Some Account of What is Said of Inoculating or Transplanting the Smallpox*, (Boston: N.p., 1721), 3.

97. *Ibid.*, 4.

98. John Blake, "Smallpox Inoculation in Colonial Boston," *Journal Medical and Allied Sciences*, No. 8, (1953), 284-300.

99 John T. Barrett, "The Inoculation Controversy in Puritan New England," *Bulletin of the History of Medicine*, No. 12 (1942), 173.

100. Mather, *Diary of Cotton Mather*, 620-621.

101 Buchan, *Domestic Medicine*, 289.

102. Blake, "Smallpox Inoculation," 286.

103. T. E. Cone, "Cotton Mather Anguishes," *Pediatrics*, No. 53 (1974), 392.

104. George H. Weaver, M.D., "Life and Writings of William Douglass, M.D. 1691-1752), *Bulletin of the Society of Medical History*, No. 2, (1921), 5.

105. Increase Mather, "Some Further Account...," (Boston: N.p., 1721), 6.

106. *Boston Gazette* 88, (July 14-24, 1721).

107. *Ibid.*

108. C. Mather, "An Account of the Method..." (1722), 11.

109. *Ibid.*, 12

110. *Ibid.*

111. *Ibid.*

112. *Ibid.*

113. John Williams, *Several Arguments Proving that Inoculating the Smallpox is not contained in the Law of Physick, either Natural or Divine, and therefore Unlawful* (Boston: N.p., 1721), 80.

114. *Ibid.*, 81.

115. James Kilpatrick, *An Essay on Inoculation Occasioned by the Small-pox being brought into South Carolina in the Year 1738*, (London: N.p., 1743).

116. See Barrett, "Inoculation Controversy," Blake, "Smallpox Inoculation," and Weaver, "Life and Writings."

117. Cone, "Cotton Mather Anguishes," 392.

118. Benjamin Colman, *Some Observations on the New Method of Receiving the Smallpox by Ingrafting or Inoculating* (Boston: N.p., 1721), 2-8.

119. *Ibid.*

120. *Ibid.*, 8

121. *Ibid.*, 2-8.

122. Zabdiel Boylston, *An Historical Account of the Smallpox* (Boston: N.p., 1726), 28.

123. *Ibid.*

124. Williams, *Several Arguments*, 3-4.

125. Edmund Massey, *A Sermon Against the Dangerous and Sinful Practice of Inoculation* (N.p.: William Madews, 1722), 6.

126. *Ibid.*, 7.

127. *Ibid.*, 10.

128. *Ibid.*, 11.

129. Samuel Grainger, *The Imposition of Inoculation as a Duty Religiously Considered* (Boston: N.p., 1721), 18.

130. Handbill to Dr. Archibald, (1721).

131. Shurkin, *Invisible Fire*, 126.

132. William Dodd, *The Practice of Inoculation Recommended in a Sermon* (London: W. Faden, 1767), 5.

133. *Ibid.*, 7.

134. *Ibid.*, 17.

135. Maitland, *Dr. Maitland's Account*, 15.

136. *Ibid.*

137. Edward Strother, M.D., *Experienced Measures How to Manage the Smallpox; and Dissertations upon the Ingraftment of that Disease* (London: Charles Rivington, 1723), 23.

138. William J. Cooper, *A Letter to a Friend in the Country*, (Boston: Kneeland for Green, 1721), 3.

139. *Ibid.*, 1.

140. Kilpatrick, *Essay on Inoculation*, 7.

141. Boylston, *Historical Account.*

142. See Douglass (works).

143 *A Vindication of the Ministers of Boston* (Boston: B. Green, 1722), 10.

144. *Ibid.*, 6.

145. *New England Courant*, (August 7, 1721).

146. Boston Selectmen, *Selectmen's Minutes of 1721*, No. 90, (Boston: 1721).

147. *Mass. Acts*, (1722), 10: 161.

148. *Mass. Acts*, (1763), 5: 729.

149. *Mass. Acts*, (1722), 10: 161.

150. Shurkin, *Invisible Fire*, 126.

151. M. De La Condamine, *The History of Inoculation* (New Haven: N.p., 1754).

CHAPTER IV

152. Shurkin, *Invisible Fire*, 405.

153. Hopkins, *Princes and Peasants*, 310.

154. *Mass. Acts*, (1776), 5: 555.

155. Wain, *History*, 186.

156. Traux, *Doctors*, 100-101.

157. Donald R. Hopkins, *Princes and Peasants*, 264; D. Baxby, *Jenner's Smallpox Vaccine*, (London: Heinemann Educational Books, 1981).

158. Traux, *Doctors*, 100.

152. Shurkin, *Invisible Fire*, 405.

153. Hopkins, *Princes and Peasants*, 310.

BIBLIOGRAPHY

Archer, Samuel. "Smallpox: An Historical Sketch." *Liverpool Medico—Churgical Journal* 13 (1893): 120-134.

Bardell, D. "Smallpox During the American War of Independence." *ASM News* 42 (1976): 526-530

Baron, John. *The Life of Edward Jenner.* 2 vols. London: Henry Colburn, 1827-1838.

Barrett, John T. "The Inoculation Controversy in Puritan New England." *Bulletin of the History of Medicine* 12 (1942): 169-190.

Baxby, D. *Jenner's Smallpox Vaccine.* London: Heinemann Educational Books, 1981.

Bernstein, S. S. "Smallpox and Variolation: Their Historical Significance in the American Colonies." *Journal Mount Sinai Hospital* 18 (1951): 228-244.

Bishop, William J. "Thomas Dinnsdale M.D. and the Inoculation of Charles the Great." *Annals of Medical History* (1932): 321-338.

Blake, John B. "Inoculation Controversy in Boston" *New England Quarterly* 25 (1952): 489-506.

— . "Smallpox Inoculation in Colonial Boston." *Journal Medical and Allied Sciences* 8 (1953): 284-300.

— . *Public Health in the Town of Boston 1630-1800.* Cambridge: Harvard University Press, 1959.

Blanton, William B. *Medicine in Virginia.* Richmond: W. Byrd Press, Inc., 1930.

Boston. Boston City Council. *Report Made by a Joint Committee on the Subject of Hospitals for the Smallpox.* Boston: 1837.

Boston. Boston Selectmen. *Selectmen's Minutes of 1721.* Boston: 1721. [see Evans, vol. 1.]

Boston Gazette 88: Boston, July 14-24, 1721.

Boylston, Zabdiel. *Some Acct. of What is Said of Inoculating or Transplanting the Smallpox by the Learned E. Timonius and J. Pylarinus.* Boston: N.p., 1721.

— . *An Historical Account of the Smallpox.* Boston: N.p., 1726.

— . [untitled essay]. *New England Weekly Journal*: (April 20, 1730).

Bradford, William. *Of Plymouth Plantation.* Boston: Wright and Potter Printing Co., 1901.

Buchan, William, M.D. *Domestic Medicine.* 1772. Reprint. London: Garland Printing, 1985.

"B. Waterhouse—The American Jenner." *Journal American Medical Association* 188 (1964): 929-931.

"B. Waterhouse and G. Stuart." *New England Journal of Medicine* 267 (1962): 624-625.

Byrd, William. "Letters of William Byrd." *Virginia Magazine of History and Biography* 25 (1917): 134-137.

Cartwright, Fredrick I. *A Social History of Medicine.* New York: Longman, 1977.

Cash, Peter. *Medical Men at the Siege of Boston.* Philadelphia: American Philosophical Society, 1973.

Cash, Phillip, *Medicine in Colonial Massachusetts.* Pubs. Coll. Soc. Mass., Vol. 57. University Press of Virginia, 1980.

Catlin, George. *North American Indians.* London: Challo and Windus, 1841.

Clarfield, Gerard H. "Salem's Great Inoculation Controversy 1773-1774." *Essex Institute Historical Collections* 106 (1970-1971): 277-282.

Clark, Edward H., M.D., ed. *A Century of American Medicine 1776-1876.* Reprint. N.p.: Old Hickory Bookshop, 1962.

Clinch, William, M.D. *An Historical Essay on the Rise and Progress of the Smallpox.* London: A.R., 1725.

Coffin, Margaret M. *Death in Early America.* Nashville: Thomas Nelson, Inc. Publishers, 1976.

Cohen, I.B., ed. *Cotton Mather and American Science and Medicine.* Salem: Ayer Co. Publishers, 1980.

Colman, Benjamin. *Some Observations on the New Method of Receiving the Smallpox by Ingrafting or Inoculating.* Boston: N.p. 1721.

Cone, T.E. "Cotton Mather Anguishes..." *Pediatrics* 53 (1974): 756.

— . "Reverend Higginson..." *Pediatrics* 61 (1978): 392.

Cooper, William J. *A Letter to a Friend in the Country Attempting Solution of Scruples and Objections...Made Against...Receiving the Small Pox.* Boston: Kneeland for Green, 1721.

Corlett, W. T. *The Medicine Man of the American Indian.* Springfield: Charles C. Thomas, 1935.

Creighton, Charles. *A History of Epidemics.* Reprint. London: Cass and Co., 1965.

Cronin, James E., ed. *The Diary of Elihu Hubbard Smith 1771-1798.* Philadelphia: American Philosophical Society, 1973.

Dean of Lincoln. *A Sermon...for the Smallpox and Inoculation.* London: W. Woodfall, 1771.

Debus, Allen G. *Medicine in Seventeenth Century England.* Berkeley and Los Angeles: University of California Press, 1974.

De La Condamine, M. *The History of Inoculation.* New Haven: N.p. 1754.

Dewhurst, Kenneth, Dr. *Dr. Thomas Sydenham (1624-1689).* Berkeley: University of California Press, 1966.

Dimsdale, Thomas. *The Present Method of Inoculating....* London: N.p., n.d.

"Directions for Treating Persons in the Smallpox." [handbill]. N.p. 1750.

Dissertations Upon the Ingraftment of the Small-Pox, According to the Method of Turkey. London: C. Rivington, 1722.

Dodd, William. *The Practice of Inoculation Recommended in a Sermon Preached at St. James Westminster.* London: W. Faden, 1767.

Douglass, William. *Inoculation of the Small-Pox as Practised in Boston, Considered in a Letter to A----, M.D..* Boston: J. Franklin, 1722.

— . *The Abuses and Scandals of Some Late Pamphlets in Favor....*

Boston: N.p. 1722.

— . *A Dissertation Concerning Inoculating of the Smallpox.* Boston: N.p. 1730.

Dudgeon, T. A. "Development of Smallpox Vaccine in England in the Eighteenth and Nineteenth Centuries." *British Medical Journal* (1963): 1367-1372.

Duffy, John. *Epidemics in Colonial America.* Baton Rouge: Louisiana State University Press, 1953.

East Hampton. East Hampton Council. *Town Records of East Hampton.* 1 Boston: 1662.

Evans, Charles. *American Bibliography.* 14 vols. New York: P. Smith, 1941-59.

Frewen, Thomas. *The Practice and Theory of Inoculation with an Account of its Success in a Letter to a Friend.* London: S. Austen, 1749.

Gill, Harold G., Jr. *The Apothecary in Colonial Virginia.* Charlottesville: University Press of Virginia, 1972.

Gordon, Maurice B. "Medicine in Colonial New Jersey." *Bull Hist. Med.* 17 (1945): 38-60.

Grainger, Samuel. *The Imposition of Inoculation as a Duty Religiously Considered.* Boston: N.p. 1721.

Green, J. O. "Smallpox in Lowell, Massachusetts." *Boston Medical Surgical Journal* 17 (1837): 321-329.

Guerra. "Colonial Medical Almanacs." *Journal Hist. Med.* 16 (1961): 234-258.

Halsband, Robert. "New Light on Lady Mary Wortley Montagu's Contribution to Inoculation." *Journal Hist. Med.* 8 (1953): 390-405.

Handbill (to Dr. Archibald). 1721. [author unknown, see Evans, vol. 1].

Heagerty, Charles E. *Four Centuries of Medical History in Canada.* Bristol: John Wright and Sons, 1945.

Hillary, William. *A Practical Essay on the Smallpox, Wherein a*

Method of Preping the Body Before the Disease Comes On. 2nd ed. London: N.p. 1740.

Hopkins, Donald R. *Princes and Peasants: Smallpox in History.* Chicago: University of Chicago Press, 1983.

Hutchinson, Thomas. *The History of the Colony and Province of Massachusetts.* Vol. 1. Edited by L. S. Mayo. Cambridge: Harvard University Press, 1936.

Issac, Lord Bishop or Worcester. *A Sermon...for the Small-Pox.* N.p., n.d.

Josselyn, J. *An Account of Two Voyages to New England.* 1675. Reprint. Cambridge: Massachusetts Historical Society Collections. 3,3, 1833.

Kilpatrick, James. *An Essay on Inoculation occasioned by the Small-pox being brought into South Carolina in the Year 1738.* London: N.p. 1743.

King, Lester S., M.D. *The Medical World of the Eighteenth Century.* Huntington: Kreiger Publishing Co., 1971.

Klebs, Aarnold C. "Papers on Smallpox." (Private Collection) Yale University Library, New Haven.

Langrish, B., M.D. *Plain Directions in Regard to the Smallpox.* London: Baldwin and Collins, 1758.

Lobb, Theophilus, M.D. *A Treatise of the Smallpox.* London: Woodward, 1731.

MacLeane, Laughlin, M.D. *An Essay on the Expediency of Inoculation and the Seasons most Proper for it.* Philadelphia: Bradford, 1756.

Mahoney, I. *Madame Catherine.* New York: Coward, McCann and Geohegan, 1975.

Maitland, Charles. *Dr. Maitland's Account of Inoculating the Smallpox.* London: J. Peele, 1723.

Massachusetts. *Massachusetts Bay Assembly Acts and Resolves.* Boston: Wright and Potter, 1869-1922.

Massey, Edmund. *A Sermon Against the Dangerous and Sinful Practice of Inoculation.* N.p.: William Madews, 1722.

Massey, Issac. *Remarks on Dr. Jurin's Last Yearly Account of the Success of Inoculation.* London: Mist's Journal, 1727.

Mather, Cotton. *Diary of Cotton Mather.* Cambridge: Massachusetts Historical Society Collections 7, 7, 1911-1912.

— . *A Pastoral Letter to Families...* Boston: N.p. 1721.

Mather, Increase. *Some Further Account from London on the Smallpox Inoculated.* Boston: N.p., 1721.

Melchert, Dennis Don. "Experimenting on the Neighbors: Inoculation of Smallpox in Boston." Ph.D. dissertation, Yale University: 1974.

Miller, Genevieve. "Smallpox Inoculation in England and America." William and Mary Quarterly, 3rd Series, Vol. 13 (1956): 476-492.

— . *The Adoption of Inoculation for Smallpox in England and France.* Philadelphia: University of Pennsylvania Press, 1957.

— . "Medical Education in American Colonies." *Journal Medical Education* 31 (1956): 82-94.

Moore, James. *The History of the Small Pox.* London: Longman, 1815.

New England Courant. Boston: August 7, 1721.

Newman, H. "The Way of proceeding in the smallpox...." Philosophical Transactions (1720-1723). N.P.p.

Philanthropos, W. [Letter to] *Boston News-Letter.* Boston, July 14-24, 1721.

Razzell, Peter. *Edward Jenner's Cowpox Vaccine.* Sussex: Caliban Books, 1977.

— . *The Conquest of Smallpox.* Firle: Caliban Books, 1977.

Remarks of Doctor Cum---ngs' Letter to Mr. Grierson...concerning... Inoculating, or Ingrafting. Dublin: N.p. 1722.

Reynolds, Whitman M. "Inoculation for the Smallpox, in Colonial America." *Bull. Hist. Med.* 22 (1948): 273-276.

Romanell, Patrick. *John Locke and Medicine.* New York: Prometheus Books, 1984.

Rose, Phillip, M.D. *An Essay on the Small-Pox Whether Natural, or Inoculated....* London: Curll, 1727.

Shafer, Henry B. *The American Medical Profession.* New York: Colorado University Press, 1936.

Shurkin, Joel N. *The Invisible Fire.* New York: G. P. Putnam's Sons, 1979.

Shyrock, Richard H. and Otho T. Beall, *Cotton Mather; First Significant Figure in American Medicine.* Baltimore: John Hopkins Press, 1954.

Silverman, Kenneth, ed. *Selected Letters of Cotton Mather.* Baton Rouge: Louisiana State University Press, 1971.

Simpson, Howard N., M.D. *Invisible Armies.* New York: Bobbs-Merril Co., 1980.

— . "The Impact of Disease on American History." *New England Journal of Medicine* 250 (1954): 679-687.

Stearn, E. Wagner. and Allen E. Stearn. *The Effect of Smallpox on the Destiny of the Amerindian.* Boston: Bruce Humphries, Inc., 1945.

Strother, Edward, M.D. *Experienced Measures How to Manage the Smallpox; and Dissertations upon the Ingraftment of that Disease.* London: Charles Rivington, 1723.

Sutton, Daniel. *The Inoculator or Suttonian System of Inoculation.* London: N.p. 1796.

Sydenham, Thomas. *The Works of Thomas Sydenham.* 2 vols. London: N.p. 1788.

Tandy, Elizabeth. "Local Quarantine and Inoculation for Smallpox in the American Colonies (1620-1775)." *American Journal of Public Health* 13 (1923): 203-207.

Thacher, Thomas. *A Brief Rule to Guide the Common People of New England How to Order Themselves and Theirs in the Small Pock or Measles.* Boston: N.p. 1702.

Traux, Rhoda. *The Doctors Warren of Boston.* Boston: Houghton Mifflin Co., 1968.

Thwaites, Reuben G. *The Jesuit Relations and Allied Documents,* 73 Volumes. Vol. 19. Cleveland: Burrows, 1896-1901.

Timoni, Emanuele. "An Account or History of the Procuring of the Smallpox by Incision or Inoculation...." *Philosophical Transactions* (April-June, 1714) N.P.p.

Van Doren, Mark, ed. *Samuel Sewall's Diary.* New York: Russel and Russel, 1963.

A Vindication of the Ministers of Boston from the Abuses and Scandals Lately Cast Upon Them in Diocese Printed Papers, Boston: B. Green, 1722.

Wain, Harry. *A History of Preventive Medicine.* Illinois: Charles C. Thomas Publisher, 1970.

Walker, Robert, M.D. *An Inquiry into the Smallpox Medical and Political.* London: J. Murray, 1790.

Watkinson, John, M.D. et. al. *An Examination of a Charge Brought Against Inoculation.* London: J. Johnson, 1777.

Weaver, George H., M.D. "Life and Writings of William Douglass, M.D. (1691-1752)." *Bulletin of the Society of Medical History* 2 (1921): 229-259.

Wilkinson, P. B. *Variations on a Theme by Sydenham: Smallpox.* Bristol: N.p. 1959.

Williams, John. *Several Arguments Proving that Inoculating the Small Pox is not contained in the Law of Physick, either Natural or Divine, and therefore Unlawful.* Boston: N.p. 1721.

Winslow, Ole E. *The Destroying Angel.* Boston: Houghton, Mifflin Co., 1974.

Winthrop, John. *Winthrop's Journal.* Edited by J. K. Hosmer. New York: Charles Scribner's Sons, 1908.

Winthrop Papers. Massachusetts Historical Society Collections, 4 vols. Massachusetts Historical Society: 1929-1944.

Woodward, Samuel B. "The Story of Smallpox in Massachusetts." *New England Journal of Medicine* 206, No. 23 (1932): 1181-1191.

ADDENDUM

"Here lies cut down, like unripe fruit,
A son of Mr. Amos Tute...
To death he fell a helpless prey,
On April 5 and Twentieth Day,
In Seventeen hundred seventy seven,
Quitting this world, we hope, for Heaven,
Behold the amazing alteration,
Effected by inoculation...
The means employed his life to save,
Hurried him headlong to the grave."

Vernon, Vermont gravestone

Death in Early America
by M. Coffin, pp. 31-32.

VITA

MONIKA DRAKE PATTEN

Born in Boston, Massachusetts, December 14, 1963. Graduated from Skidmore College in 1984 with a B.A. in History. Attended Durham University in 1984-1985, specializing in Mediaeval Archaeology; Vikings. Received M.A. in 1986. Attended College of William and Mary in 1985-1986, as a student of Historical Archaeology.