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NOSOLOGY, URBAN INFRASTRUCTURE, AND PUBLIC HEALTH DISCOURSE IN
18TH-CENTURY PHILADELPHIA: AN IN-DEPTH LOOK AT FEVER DEBATES DURING
THE 1793 YELLOW FEVER EPIDEMIC

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THE 1793 YELLOW FEVER EPIDEMIC

A THESIS APPROVED FOR THE
DEPARTMENT OF HISTORY OF SCIENCE, TECHNOLOGY, AND MEDICINE

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Abstract:

By the 1790s, Philadelphia was a thriving port city that saw numerous ships arriving daily from foreign ports throughout the Atlantic world. In 1793, many of these in-bound ships were not carrying the typical goods to be sold in the local market, but were instead carrying displaced Saint Domingans fleeing the bloody turmoil of the Haitian Revolution. Their arrival set off one of the biggest outbreaks of yellow fever Philadelphia had seen in over three decades. What resulted from this outbreak was a high number of victims and a fearful public demanding answers from their medical community. This paper takes an in-depth look at the state of Philadelphia just prior to the outbreak, the arguments of the nature of fever coming from prominent members of the medical community while they struggled to treat their patients, and the attempts made to slow the transmission of yellow fever both during and after the 1793 epidemic. The urban infrastructure of Philadelphia and quality of the city's atmosphere were now being considered as potential contributors to the transmission of yellow fever throughout the city. These considerations changed how Philadelphia physicians understood the nature of yellow fever, as well as their recommendations to prevent its return in future years.

Contagionist, anticontagionist, miasmata, localist, climatist; all labels that have continually been used in historical writings by modern historians, and scholars, as a means to denote different groups of people based on their perceived understanding of the nature and transmission of disease in the early modern period. These labels are quite often misleading and have been influenced by a Whiggish mentality that has portrayed these discussions as archaic remnants of a bygone period of time in American medical history. While these labels have been created to differentiate between oppositional groups of thought on fever, they also flatten out what are essentially very complex arguments on developing fever theories in the 18th-century. Diminishing this complexity also creates a narrowed view of prevention practices that were enacted as a response to fever outbreaks in populous port cities along the eastern seaboard of the United States, such as Philadelphia in the 1790s. This creates a tunnel-vision of the 1790s epidemics that has been further swayed by the anachronistic judgements of present day scholars. This paper takes on the task of stripping away these labels, using as a case study the yellow fever epidemic of 1793 in Philadelphia. By stripping away the labels placed on them by historians, we can see that all 18th-century Philadelphia physicians, regardless of their understanding of the causes and spread of yellow fever, considered the role of external forces, such as the effect that urban infrastructure had upon the quality of the atmosphere of a populous city, as well as how that quality created an environment that was conducive to the spread of yellow fever throughout its streets. These considerations also change how public health measures, like the creation of an efficient quarantine system, are perceived by modern scholars. We can now see that these measures served the dual purpose of prohibiting the spread of fever into the city but also creating

an environment that was conducive to the recovery of the afflicted patient, all while preventing loss of property while the patient was convalescing.

By understanding why Philadelphia was so susceptible to yellow fever in the summer and fall of 1793 through present day understandings of yellow fever, entomology, and weather patterns we can see that the discussions of the Philadelphia physicians were based on a relatively new fever classification system and firsthand observation of yellow fever itself. The published writings of Philadelphia physicians, William Currie and Benjamin Rush, along with those of their contemporaries, produced not long after the 1793 yellow fever epidemic, demonstrate this changing understanding of fever and its impact upon a populous city. Modern labels gloss over this change and by removing them we uncover an amazingly complex discussion on the evolving understanding of the nature and transmission of fever throughout densely populated areas. At the same time, we see attempts to rectify an inefficient health system that failed to prevent the spread of yellow fever within the city of Philadelphia in 1793. It can also be seen that gaining public support for these changes was going to be difficult and the language of the published medical treatises demonstrates an attempt by the medical community to include them in the discussion and request their participation in preventing fever from returning to their city. Labels can be useful at times, but at other times they can obscure our perception of medical arguments of the past as well as the practices that emerged from these discussions. By removing them, the numerous nuances of these arguments can be displayed, and a rational discussion emerges from the darkness.

1. Philadelphia, yellow fever, and public health in the 18th-century

By the end of the 18th-century Philadelphia was a thriving port city that welcomed numerous ships from throughout the Atlantic.¹ These ships arrived with processed materials and raw goods ready to be unloaded and transported to local markets either within the city or in nearby towns and villages. Alongside these marketable goods came numerous travelers from all areas of the Atlantic, including the West Indies. But with these people came news of events occurring in other areas of the trade route, which included sporadic outbreaks of deadly diseases. To prevent the incursion of a foreign contagion into the newly named capital of the United States authorities established a rudimentary quarantine and inspection station in which appointed wardens were to inspect incoming foreign vessels for signs of contagion. But the efficacy of the inspection/quarantine port system was hampered by regulations and input from several agencies of the port. Port physician, Dr. James Hutchinson, was appointed by the College of Physicians to inspect incoming vessels and to report his inspections to the Board of Wardens of the Port of Philadelphia who held the power to officially authorize quarantine protocols on suspect ships. But with strict ship inspection guidelines limiting the types of ships that could be inspected and minimal funding from the Pennsylvania Assembly along with numerous other duties including “licensing and regulating pilots, receiving ship manifests, maintaining wharves and piers, and

¹ See Thomas Doerflinger, *A Vigorous Spirit of Enterprise: Merchants and Economic Development in Revolutionary Philadelphia* (Chapel Hill: University of North Carolina Press, 1986); Simon Finger, “Maritime Labor, Economic Regulation, and the Spoils of Atlantic Commerce in Early America,” *Early American Studies* no. 4 (2015): 908-930; Gary B. Nash, *The Urban Crucible: Social Change, Political Consciousness, and the Origins of the American Revolution* (Cambridge: Harvard University Press, 1979); Billy G. Smith, *The “Lower Sort”: Philadelphia’s Labouring People, 1750-1800* (Ithaca: Cornell University Press, 1990); Sam Bass Warner Jr., *The Private City: Philadelphia in Three Periods of Growth* (Philadelphia: University of Pennsylvania Press, 1987).

policing unruly sailors at liberty,”² the Board of Wardens were ill-equipped to satisfactorily perform their duties in the summer of 1793. To further compound their duties the Board’s obligations were added on to by Secretary of War Henry Knox in the summer of 1793. Knox determined that the Board of Wardens held the duty of maintaining the port’s neutral status considering the influx of former Saint Domingue plantation owners and their remaining enslaved Africans fleeing from the bloody turmoil of the Haitian Revolution.³

The arrival of French refugees and African slaves from Saint Domingue was the result of a slave revolt that was due in part to events occurring in mainland France. By the 1790s, France was in the midst of its own revolution and the ideals of liberty, equality, and fraternity that pushed these events forward on the European continent had made their way to France’s colonies in the Caribbean. The population of Saint Domingue at the time was largely made up of African slaves (~90%) with the rest being made up of European colonialists, freed Africans, merchants, etc. It is difficult to state categorically what inspired the enslaved and free African people to form an insurrection against the white plantation owners. Whether it was due to the revolutionary propaganda issuing from mainland France or because of racial divisions that had begun to emerge following the Oge Rebellion in October 1790, by August of 1791 a large mass of slaves and free black men (~100,000), led by free black Boukman Dutty, revolted against the white plantation owners of the Northern Plains of Saint Domingue, which was the richest sugar-growing area in the colony, as well as attacking several smaller coffee-producing plantations located in the mountains surrounding the Plains. During this first wave there was extensive

² Simon Finger, *The Contagious City: The Politics of Public Health in Early Philadelphia* (Ithaca: Cornell University Press, 2012), 122.

³ Finger, *The Contagious City*, 122.

damage to the plantations, including the burning of plantation buildings and fields, as well as numerous deaths of the white plantation owners and their families at the hands of the black insurgents. Fearing for their safety, survivors of the first wave fled to Cap Francais while the black insurgents, growing in number as they progressed, continued on with a second wave of attacks in the eastern part of the province in October 1791. In response, France sent a contingent of soldiers to the island to put down the revolt and take back control of their island colony. However, over half of the contingent that set foot on the island fell, not to the black insurgents, but to the diseases that inhabited the island alongside the local population. These French soldiers had never experienced tropical diseases like yellow fever and malaria before, and had no type of immunity with which to protect themselves. Because of this the soldiers, as well as the French inhabitants of Saint Domingue, were unable to quell the growing insurrection and were forced to flee from the island in any ship that was available in the nearby area in the summer of 1793.⁴

These ships, like the *Hankey*, *Sans Culotte*, and *Mary*, needed to find a safe harbor where their cargo of people could be discharged safely. Some ships headed for southern ports in the United States, like New Orleans, while others travelled north to ports that were friendly to the French people, like Philadelphia. Historian Billy G. Smith has put the estimated number of refugees fleeing to the United States at around 15,000 people; about 2/3 being white refugees and the remaining 1/3 being the enslaved Africans that had been brought along by their white owners. Of these 15,000, about a 1,000 of them travelled to Philadelphia, although scholar J.M. Powell

⁴ See J. R. McNeill, *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620 - 1914* (New York: Cambridge University Press, 2010), 237-243; Jeremy D. Popkin, *A Concise History of the Haitian Revolution* (Hoboken: Wiley Blackwell, 2022); Alex Dupuy, *Rethinking the Haitian Revolution: Slavery Independence, and the Struggle for Recognition* (Lanham: Rowman & Littlefield, 2019).

puts the number at over 2,000 by the end of August.⁵ But there was another living creature aboard those ships, *Aedes aegypti*, the vector (or carrier) of the yellow fever virus. While these mosquitos were most likely already inhabiting Philadelphia by this period, a fresh crop of mosquitos were traveling aboard the refugee ships and just waiting for access to a new population of warm-blooded creatures.⁶

With very little to no money the French refugees turned to the Philadelphians for aid and shelter. Other cities such as New York and Baltimore took in the refugees and solicited donations to help the former residents of Saint Domingue. Philadelphia followed suit and the citizens of the city worked to provide aid to those who set foot upon their wharves. Local gentlemen Stephen Girard, Peter Duponceau, and Peter LeMaigre established the *Societe Francaise de Bienfaisance de Philadelphie*, whose goal was to provide relief to the white Saint Domingans which included providing food, clothing, employment as well as finding them places to stay along the waterfront.⁷ The people of Philadelphia, however, did not realize that while assisting the refugees they were also, unintentionally, helping another type of traveler find food and shelter in this foreign city. This unintentional aid led, in part, to an outbreak that would cause the city to slam to a halt and lead to the death of many residents of Philadelphia.

It is difficult to accurately state just when the very first case of yellow fever was seen in Philadelphia. Although there were many physicians working in the city at the time, there was no central medical record system. But there is a general acceptance that the first cases appeared at

⁵ J. M. Powell, *Bring Out Your Dead: The Great Plague of Yellow Fever in Philadelphia in 1793* (Philadelphia: University of Pennsylvania Press, 1949), 5.

⁶ Billy G. Smith, *Ship of Death: A Voyage That Changed the Atlantic World* (New Haven: Yale University Press, 2013), 185-186.

⁷ Powell, *Bring Out Your Dead*, 5.

the beginning of August amidst the houses of Water Street located only a few feet from wharves and piers of the port. Philadelphia physician, William Currie, noted in his 1793 treatise, *A Description of the Malignant, Infectious Fever*, that cases were first seen at the lodging-house of Richard Dennie, where travelers from Dublin, along with two Frenchmen, resided. On August 3rd, another Philadelphia physician, Dr. Cathrall, was called to the lodging-house to see Mrs. Parkinson, one of the travelers from Dublin, who was “labouring under a highly malignant fever.”⁸ Mrs. Parkinson would not survive this malignant fever and she was followed by other residents of the lodging-house, including an unnamed Englishman, one of the Frenchmen, as well as the house’s owner Richard Dennie and his wife. All succumbed to the fever while others, including the Dennie’s daughters, managed to avoid the dread disease.⁹ It should be noted that William Currie did not attend any of the fever cases at the lodging-house but received this information from the physicians who did attend the victims. But where Currie did not examine these early cases of malignant fever, fellow Philadelphia physician, Benjamin Rush did document his own early experiences with fever cases in the beginning of August.

It was August 5th when Benjamin Rush was first exposed to the beginning of the yellow fever outbreak in the home of another physician residing in Philadelphia, Dr. Hodge, whose child had been struck by a debilitating fever. Noting in his 1794 published treatise, *An Account of the Bilious Remitting Yellow Fever*, he found Dr. Hodge’s child, “ill with a fever of the bilious kind,

⁸ William Currie, *A Description of the Malignant, Infectious Fever Prevailing at Present in Philadelphia; with An Account of the Means to Prevent Infection, and the Remedies and Method of Treatment, Which Have Been Found Most Successful* (Philadelphia: Thomas Dobson, 1793), 26.

⁹ Currie, *A Description of the Malignant, Infectious Fever*, 26-27.

which terminated (with a yellow skin) in death on the 7th of the same month.”¹⁰ After visiting the physician’s child Rush also attended the sick rooms of Mrs. Bradford (wife of Thomas Bradford), the son of Mrs. McNair, Richard and William Palmer (sons of Mrs. Palmer on Chestnut Street), Mrs. Leaming (wife of Thomas Leaming), and numerous other fever cases that arose in the area. Not all these people perished after Rush saw them. Mrs. Bradford, the Palmer brothers, Mrs. Leaming, etc. survived their fevers with the worse side effect for some being, “for several days after...[their] eyes and face were of a yellow color”¹¹ It would be after seeing the wife of Peter LeMaigre, who had helped to establish the aid organization that assisted the French refugees, on the 19th of August that Rush began to formulate an argument as to what, specifically, plagued the sick and from whence it originated.

As more cases continued to emerge it was noted by Philadelphia physicians that a particular group of city residents seemed to elude the grasp of this deadly outbreak. The African community, both free and enslaved, were perceived to be immune to the fever that was attacking the white residents of Philadelphia. This most likely did not surprise many in the medical community as discussions on, what Rana Hogarth terms, “innate black immunity” had been spreading throughout the Atlantic World in the publications of physicians who had claimed to witness this immunity first hand while visiting the black communities in West Africa and the Caribbean. Subsequent articles and treatises produced by plantation physicians in the southern United States further solidified the argument of innate black immunity against fevers. As a result of this belief, many of Philadelphia’s black residents remaining in the city began to take on the

¹⁰ Benjamin Rush, *An Account of the Biliious Remitting Yellow Fever; as it Appeared in the City of Philadelphia, in the Year 1793* (Philadelphia: Thomas Dobson, 1794), 8.

¹¹ Rush, *An Account of the Biliious Remitting Yellow Fever*, 8.

role of caretakers for the fever patients and performed necessary tasks, such as collecting the deceased for burial, relying on this perceived immunity to keep them safe. Unfortunately, this led to many succumbing to the very fever they were supposed to have been immune to as well as providing evidence for several members of the medical community, including William Currie, who argued that the theory of innate black immunity was wrong.¹²

By the end of August, cases of people with symptoms from the fever continued to rise, as did the number of people who succumbed to the disease. Fear spread throughout the city leading to citizens, who had the means, closing their homes and fleeing to the surrounding environs. Amongst those fleeing the city, members of the local and federal government fled the city including George Washington. A few governmental figures chose to stay behind in order to deal with the outbreak, including Philadelphia Mayor Matthew Clarkson. Clarkson then turned to the local medical authority, the College of Physicians located in Philadelphia, for answers as to what plagued his city.¹³ In response to Clarkson's request then president of the College, Dr. John Redman, called a meeting of the members of the College of Physicians, those who remained in Philadelphia at the time. As stated by Rush, who attended the meeting, the goal of the gathering was to "consult about the best methods of treating this fever, and of checking its progress in the city."¹⁴ It is this line of inquiry that separated the members of the College into oppositional

¹² For more information on racial immunity in the Atlantic World see Rana Hogarth, *Medicalizing Blackness: Making Racial Difference in the Atlantic World, 1780 - 1840* (Chapel Hill: The University of North Carolina Press, 2017); Londa Schiebinger, *Secret Cures of Slaves: People, Plants, and Medicine in the Eighteenth-Century Atlantic World* (Stanford: Stanford University Press, 2017); Mariola Espinosa, "The Question of Racial Immunity to Yellow Fever in History and Historiography," *Social Science History* 38, (2014): 437-453; Eric Herschtal, "Antislavery Science in the Early Republic: The Case of Dr. Benjamin Rush," *Early American Studies* 15, no.2 (2017): 274-307.

¹³ Finger, *The Contagious City*, 123-124.

¹⁴ Rush, *An Account of the Bilious Remitting Yellow Fever*, 21.

groups split along arguments over the nature and transmission of the fever that afflicted their city in the late 18th-century. These arguments, and counter-arguments, have led modern historians to attach labels to the oppositional groups of not only 1790s yellow fever but also with any major medical event where oppositional arguments arise in medical treatises and other publications. But does this use of labels, in fact, simplify the complicated discussions within these theories on the spread of contagion in major cities in early America, or at any other major outbreak in history? Do these labels cause later generations of historians, and scholars, to miss vital information and practices that might explain why a public health system, like quarantine, was deemed a valid means to prevent future outbreaks of deadly infectious diseases in the urban city? By removing the labels applied by modern historians the yellow fever outbreaks in Philadelphia are an excellent episode of an attempt by its medical community to understand the impact of urbanization on the transmission of disease to its citizens. This understanding changed how physicians comprehended the transmission of yellow fever throughout a populous city. This comprehension led to drastic changes in the sick room where the goal was not only to help the patient but also to prevent the fever from spreading to the attendants of the patient during the outbreak. Once the outbreak had died down in late 1793, these arguments over the nature and transmission of the fever sparked a desire to update the systems of fever prevention for the city of Philadelphia while also including the residents of the city in the discussion. Ultimately, modern historians have obscured complex arguments and discussions on developing fever theories in the 18th-century by using oversimplified labels. By removing these labels, the complex arguments reemerge demonstrating the reasoning and logic that pushed fever theories into discussion on public health in populous cities in the 18th-century.

Scholars of yellow fever in Philadelphia during the late 18th and early 19th centuries have attached multiple labels to the oppositional medical groups at the time. It would seem appropriate to start with one of the most widely used books that has repeatedly been cited in recent scholarship. J.M. Powell's book, *Bring Out Your Dead*, gives a detailed chronological survey of the yellow fever outbreak in Philadelphia, encompassing events leading up the first documented cases of yellow fever to the arrival of the frost that effectively ended the 1793 epidemic. Powell only labels one group of physicians, the contagionists. William Currie and other enlightened physicians at the time believed in the theory that fever was spread from person to person, or contagionism. This theory was supported by the medically enlightened men from numerous European nations and was a prevailing theory at the time. Although many modern historians, like Powell, just apply the name to a whole group of physicians, this ignores the range of ideas and opinions held by those who espoused contagion theory. But while Powell labels Currie and the like-minded physicians of Philadelphia, "contagionist," he does not label Benjamin Rush, instead choosing to elaborate on his arguments in favor of local origins of fever caused by putrefying vegetable matter, or miasma theory.¹⁵ In other words, he flattens the complexity of the contagionists' positions while describing and analyzing the nuances of Rush's ideas. This is especially interesting when you come to realize that other historians have created a label to mark Rush and other miasma theory supporters.

Historians such as Erwin Ackerknecht and Edward T. Morman attached a moniker to groups of physicians and government officials who believed in the local origination of fever.

¹⁵ See J. M. Powell, *Bring Out Your Dead: The Great Plague of Yellow Fever in Philadelphia in 1793* (Philadelphia: University of Pennsylvania Press, 1949).

Morman's article, "Guarding Against Alien Impurities,"¹⁶ and Ackerknecht's lecture on anticontagionism¹⁷ use the term anticontagionist or anticontagionism as a means to identify the physicians and like-minded individuals who believed that yellow fever was not spread from person to person. But in the case of these articles, the people in question are not that of Rush and Deveze but of physicians who may have taken their medical beliefs from these previous physicians from Philadelphia. In both articles, these two historians are discussing the quarantine system that was in place by the mid to late nineteenth century and the link between politics, immigration, contagion theory, and quarantine measures. The label anticontagionist is not attached to a specific group from the 1793 yellow fever epidemic but now we can see that there is an attempt to label the opposition to contagion theory.

It is in recent historical writing that we see historians attempting to attach a different type of label to Rush and his supporters that tends to focus more on what their particular argument pertains to in their respective works. In his book, *Contagious City*, the historian Simon Finger labels Rush and his supporters "climatists." This is the first use of this term to label Rush and his supporters. This use of the label "climatist" links Rush's arguments about the local origination of fever to the propaganda of Pennsylvania founder, William Penn, who promoted the healthful benefits of his colony versus the crowded, dirty conditions of the city of London in the 17th century. Another "climatist" identified by Finger is the French physician and head doctor of Bush-Hill hospital, during the 1793 fever outbreak, Dr. Jean Deveze. Finger connects Deveze to

¹⁶ Edward T. Mormon, "Guarding against Alien Impurities: The Philadelphia Lazaretto 1854 - 1893," *The Pennsylvania Magazine of History and Biography* 108, no. 2 (1984): 131 - 151.

¹⁷ Erwin H. Ackerknecht, "Anticontagionism Between 1821 and 1867," *Bulletin of the History of Medicine* 22, no. 5 (1948): 562 - 593.

Rush under this moniker despite the variations in their individual arguments about yellow fever. Where Rush established a large mound of rotting coffee as the point of origin for the fever, Jean Deveze stipulated that the fever arose from the

burying grounds in the midst of the city. These places of interment are injurious from the vapours which exhale from them and corrupt the atmosphere, and also by the miasmata which the rain-water carries with it, as it filters through the earth and passes into the wells...the tan-yards, and starch manfactories, and also the quays...from which a quantity of pernicious vapours arise.¹⁸

Both Rush and Deveze stipulated that fever, especially yellow fever, was caused by Philadelphia's "corrupted air" which seeded the disease into the human body. But Rush saw a large mound of coffee as the culprit in 1793 while Deveze saw the city as a whole to be responsible for the rise of fever in 1793 and even put forward a different mode of transmission through the drinking water of the city. We see Finger labeling Rush and Deveze, together, as climatists who believed that the corrupted climate of the city of Philadelphia spread the disease even though they disagreed about the point of origin in 1793.¹⁹

Finally, we come to the work of Thomas Apel and his book, *Feverish Bodies, Enlightened Minds*, and yet another moniker attached to Rush and other like-minded physicians. Instead of labeling them "climatists or anticontagionists," Apel instead comes up with the label "localist." Benjamin Rush, Noah Webster, and numerous other physicians during the 18th-century have been labeled a localist by Apel, because these individuals believed "that the disease arose from locally

¹⁸ Jean Deveze, *An Enquiry Into, and Observations Upon the Causes and Effects of the Epidemic Disease, Which Raged in Philadelphia From the Month of August till Towards the Middle of December, 1793* (Philadelphia: Parent, 1794), 38-40.

¹⁹ Simon Finger, *The Contagious City: The Politics of Public Health in Early Philadelphia* (Ithaca: Cornell University Press, 2012).

situated miasmas.”²⁰ Just like Finger, the focus for the moniker is on the argument that fever arose from the conditions of the local environment, such as the city of Philadelphia, but what it overlooks is the different understandings of the causative factor that would activate the disease.

The use of modern labels for 18th-century theories have been tailored by the historians who utilize them in their own writings. These are not labels that were put in place by the physicians defending their arguments at the time and as a result the individual nuances of these theories are flattened and molded to fit the hypotheses of modern scholars. Thomas Apel’s use of “localist” to identify Rush and his supporters or the overwhelming use of “contagionist” to identify William Currie and his supporters all reflect an important aspect of their arguments. Rush believed that fever originated from Philadelphia’s ports, Currie believed that it had been spread from infected former residents of Saint Domingue to the residents of Philadelphia. But these labels mask the individual nuances of these oppositional arguments such as the role that city of Philadelphia itself played in the understanding of yellow fever and how this role shaped future discussions of fever prevention following the 1793 epidemic. By removing the labels, we see the individual nuances and how they inspired their respective physicians to create and put forward their own arguments on keeping the fever from entering Philadelphia, or any port city, at the time.

While we need to remove the labels from historical discussions, with the benefit of hindsight, we also need to understand how the northern port city of Philadelphia, along with its surrounding environs, was able to foster a disease that originated from a tropical climate. Modern understandings of the mechanics of yellow fever, meteorological weather patterns, and insect life

²⁰ Thomas A. Apel, *Feverish Bodies, Enlightened Mind: Science and the Yellow Fever Controversy in the Early American Republic* (Stanford: Stanford University Press, 2016), 3.

cycles allows for the modern historian, or reader, to see that specific environmental conditions were occurring that allowed for yellow fever to invade and flourish in a northern port city.

For a tropical disease, like yellow fever, to propagate and spread throughout an area certain environmental conditions needed to be achieved. And by 1793 the city of Philadelphia was well on its way to meeting these environmental conditions. Historians have noted that the city of Philadelphia was the result of staggered structural planning and irregular growth from its inception by William Penn to the 1790s of Benjamin Rush and William Currie. Penn had laid out his city in a grid-like pattern to prevent “a London on the Delaware, rife with the conditions that produced the Devil’s Year.”²¹ Penn’s plan was to create what he termed a “green country town” that would be safe from disasters, such as the fire that tore through London, as well as maintain a type of purity vastly different from his memories of London at the time. The result of Penn’s design was a layout that broke up the land into large lots all for the expressed purpose of creating gardens and orchards around the houses, as well as promoting proper air circulation to the inhabitants of these large plots.²² This was Penn’s intention, but this was not the state of Philadelphia by the end of the 18th-century.

By the end of the 18th-century, Philadelphia had grown from a small “green country town” to a thriving port city with an uneven development of its infrastructure. Commerce along the waterfront afforded merchants and well-to-do citizens the ability to live in an area that was within walking distance of many shops and markets that had ties to incoming ships. One observer, Philadelphia publisher Matthew Carey, noted that,

²¹ Devil’s Year: “the catastrophes of 1665-1666: war, plague, starvation, and a killing frost, capped by a devastating fire.” Finger, *The Contagious City*, 9 & 17.

²² *Ibid.*, 17.

the manufactures, trade, and commerce of Philadelphia had, for a considerable time, been improving and extending with great rapidity...its population was extending fast...the number of applicants for houses, exceeding the number of houses to be let.²³

However, this availability of luxury goods and homes close to the markets did not extend evenly over the whole of Philadelphia. Instead, as one progressed further inland the city reverted from a developed urban center to the large lots of land that Penn had originally envisioned. This sporadic, irregular growth of the city from the constructed wharves and piers of the port to the wilds of the Pennsylvania woods was further complicated by the lack of an adequate system of sanitation in the city. Citizens tossed their refuse either into the yards and pits behind their homes or into the street, craftsmen and butchers were just as likely to dump their own refuse into the streets leaving large amounts of matter behind to rot. In his treatise *Observations Upon the Origin of the Malignant Bilious, or Yellow Fever in Philadelphia*, published in 1799, physician Benjamin Rush noted several remote causes that contributed to the outbreaks of yellow fever in 1790s Philadelphia, chief among them being, “the docks; these contain a large quantity of filthy matters in a highly concentrated state.”²⁴ He also included Philadelphia’s sewers, dirty cellars and yards of the inhabitants, privies, and “the putrefying masses of matter which lie in the neighbourhood of the city.”²⁵ However dirty and unsanitary the circumstances of Philadelphia were portrayed by Rush its situation was not an isolated case. Similar cities already existed in other areas of the Atlantic world.

²³ Mathew Carey, *A Short Account of the Malignant Fever, Lately Prevalent in Philadelphia: With a Statement of the Proceedings That Took Place on the Subject in Different Parts of the United States* (Philadelphia: Mathew Carey, 1793), 11-12.

²⁴ Benjamin Rush, *Observations Upon the Origin of the Malignant Bilious, or Yellow Fever in Philadelphia, and Upon the Means of Preventing it: Addressed to the Citizens of Philadelphia* (Philadelphia: Thomas Dobson, 1799), 4.

²⁵ Rush, *Observations Upon the Origin of the Malignant Bilious, or Yellow Fever*, 5.

There were port cities comparable to Philadelphia in the West Indies, as well as along the southern coast of the United States. Noted environmental historian, J.R. McNeill, argued that the colonial New World's "quest for wealth and power changed ecologies...ecological changes in turn shaped the fortunes of empire, war, and revolution."²⁶ In Philadelphia's case, this quest for wealth came from the desire to enhance its port system to keep up with the burgeoning Atlantic market economy, all at the detriment of leaving the city vulnerable to infrastructural failures that put the public health at risk. Rapid construction of the docks, shipyards, and markets of Philadelphia either attempted to control the risk factors to public health, with substandard drainage and sewers, or initiated public health reforms that lacked enforcement by the various governmental agencies. Much like the West Indies and the southern United States, this lack of response to public health concerns left the city vulnerable to numerous outbreaks of fever that seemed to coincide with the arrival of various foreign ships to its ports.²⁷ But the infrastructure of the city, along with the attempts at reforming public health structures, was not the only part of the equation needed to create the ideal situation for the spread of deadly fever amongst the citizens of Philadelphia.

Several projects were proposed in order to take on the role of policing public health in 18th-century Philadelphia. By the mid-18th century, there were relatively few hospitals throughout the United States and none at all in Philadelphia. However, Philadelphia physician, Dr. Thomas Bond, saw a need for such an institution within the city available to all. At the time of his hospital proposal Philadelphia had an almshouse that catered to the inmates of the local jail but

²⁶ McNeill, *Mosquito Empires*, 2.

²⁷ Finger, *The Contagious City*, 34-38.

did not have an institution specifically created to attend to the needs of the general population of the city. Modeling his hospital after the voluntary hospitals that appeared throughout Britain a half century earlier, Bond received support from numerous members of Philadelphia's medical community, as well as members of the upper class, including Benjamin Franklin. When opened, as historian Simon Finger explains, the hospital was "the most significant improving project of provincial Philadelphia, and it provides the clearest example of how the city's reforming culture combined private gain and public good."²⁸ The private gain and the public good being the molding of the slovenly patient, through medical care and reform programs, into labor for the local workforce in the city. Habit reforming programs, such as discussions on diet, drink, and behavior, were held regularly within the hospital to prevent future injuries to the patient but also to establish beneficial work habits that would enhance the economy of the city.²⁹

As the years progressed, the labors of the hospital were negatively affected by the events of the Revolutionary War as well as by ardent opponents of the hospital system. One such opponent, physician Benjamin Rush, noted in a letter to Federal Church Street minister, Jeremy Belknap, that with "the reduction of its funds by the late war, its usefulness is of late much circumscribed."³⁰ To take advantage of the languishing state of the Philadelphia hospital Rush created an outpatient facility that catered to all members of the city without focusing on their potential future as labor for the workforce. The Philadelphia Dispensary, as it came to be called, was opened in April of 1786 and instead of housing sick patients in the hospital, like the

²⁸ Ibid., 59.

²⁹ Ibid., 59-67.

³⁰ Benjamin Rush to Jeremy Belknap, Philadelphia, January 8th, 1788, in *Letters of Benjamin Rush, Vol. 1*, ed. L. H. Butterfield (Philadelphia: American Philosophical Society, 1951), 447-448.

Pennsylvania Hospital, the Dispensary instead provided access to medical care without sequestering the patient in a sick room away from their family. Instead, it was believed that allowing the sick to care for themselves in their own home with their family was beneficial to their overall health of mind and body; those who needed more intensive care or longer-term treatments had the ability to have medical personnel from the Dispensary come to their homes for in-home treatment. By 1788, “upwards of 1500 patients have been relieved by it in the course of the last year and at the moderate expense of 500 pounds,” stated Rush to Jeremy Belknap.³¹ The Pennsylvania Hospital and the Pennsylvania Dispensary were some of the earliest institutions in Philadelphia geared toward the care of public health and proposed by members of the medical community.³² Other measures to care for the public health of the city were not as easily accepted as the Hospital and Dispensary were and required the attention of the local government in order to take steps toward the ensuring the safety of the people of Philadelphia.

The creation of quarantine practices was in large part due to ports attempting to keep out foreign contagions which negatively affected the inhabitants, as well as the markets, of their respective cities and nations. Medical historian, Mark Harrison, has discussed this relationship between commerce practices of port cities throughout the Atlantic, and Mediterranean, world with the rise of quarantine practices, which included the creation of the quarantine station, or lazaretto. Harrison argues

The introduction of quarantine and other sanitary precautions implicitly recognized that the interests of the merchants needed to be curtailed for the public good... This civic

³¹ Rush to Belknap, *Letters of Benjamin Rush, Vol. 1*, 447- 448.

³² Finger, *The Contagious City*, 115-116.

mindedness became the basis of a political doctrine which equated protection against disease with virtue but also, increasingly, with power.³³

Some of the earliest attempts to prevent foreign incursion of disease into their ports came following the Plague of San Carlo (1575-1578) that afflicted the ports of numerous Italian states. In an attempt to prevent this from recurring, these states began to pay closer attention to the ships arriving at their ports and quarantining any that appeared to be infested with disease. Besides trying to keep the local citizens safe from foreign disease, cities also came to realize that “the merest hint of a plague in a foreign port could be enough to trigger such bans[embargoes]...it was doubly important to prevent the spread of plague and, above all, to be seen to do so.”³⁴ Such ideas about quarantine practices can be seen in events leading up to the 1790s in Philadelphia.

There were early attempts to institute some kind of quarantine practice into the port system in Philadelphia. Following an outbreak of plague in Barbados in 1700 Philadelphia authorities adopted their own version of monitoring and inspecting ships arriving from ports that were suspected to be “unhealthy.” This included preventing ships from pulling up to the docks, keeping them from unloading their goods or travelers, and even forcing them to unload any porous materials a safe distance from the city where they could be purified by the clean air before they arrived in the city. Inspectors were appointed in order to inspect the incoming ships, as mentioned above, and any ship that appeared to harbor some type of pestilence was refused access to the port until the afflicted were no longer infectious and the ship was clean. These procedures were not always enforced by the inspectors of the port, and this resulted in further outbreaks of disease, like yellow fever. After a yellow fever outbreak occurred in 1741,

³³ Mark Harrison, *Contagion: How Commerce Spread Disease* (New Haven: Yale University Press, 2012), 12.

³⁴ Harrison, *Contagion*, 14.

Pennsylvania governor Thomas Wharton attempted to create a lazaretto institution on an island not far from Philadelphia. But his proposal was met with fierce resistance and questions raised about the power and responsibility of the Governor and other office positions. Blame for the 1741 outbreak was laid, primarily, at the feet of the port physician at the time, Thomas Graeme, stating that he neglected his duties leading to the outbreak. The lazaretto proposal was sidelined until 1743 when a newly elected assembly approved the proposal and took control over several buildings located on Province Island to be used as a hospital for sick passengers from incoming vessels. Unfortunately, much like other such institutions, the Province Island hospital was underutilized prior to the 1790s and not used at all by the time that yellow fever broke out in 1793.³⁵ While the early versions of quarantine attempted to prevent fever from entering the city climate events happening in the surrounding environs of the city added fuel to the blaze that would be the 1793 yellow fever outbreak.

The spring and summer of 1793 saw environmental changes that affected the city of Philadelphia, as well as its surrounding environs, which led to the propagation and spread of the yellow fever virus. Kevin Lafferty, a researcher at the Western Ecological Research Center, has looked through historical records and noted that

because precipitation favors the container-breeding yellow fever vector, *Aedes aegypti*, these mosquitoes probably thrived under the unusually warm, wet El Nino conditions... the nine deadly yellow fever epidemics were more likely to follow an El Nino event in comparison to years not linked to an epidemic.³⁶

His analysis of fever outbreaks in the United States compared to what he terms the NINO-3 index might explain, in part, why the weather of Philadelphia varied to such a degree just prior to

³⁵ Finger, *The Contagious City*, 36-37, 42-50.

³⁶ Kevin D. Lafferty, "The Ecology of Climate Change and Infectious Disease," *Ecology* 90, No. 4 (2009): 892.

the outbreak of yellow fever in 1793. During the spring of 1793, heavy rains pelted the Philadelphia area swelling Dock Creek, Philadelphia's main source of water, and the Delaware River, causing them to spill over their respective banks. With the arrival of summer not long after the heavy rains came long periods of high temperature. As a result of this erratic series of meteorological events, the banks of both the Delaware River and Dock Creek quickly became a large morass of bogs and marshes. This extreme shift in temperatures also caused Dock Creek to dry up leaving the citizens of Philadelphia without any access to water from the city's water pump system resulting in people traveling down to the marshy creeks and rivers to collect water in open storage containers for use in their homes. The combination of the boggy marshes surrounding the city along with multitude of open water storage containers near the inhabitants homes created the ideal environment that the vector of yellow fever needed in order to live and thrive.

The vector, or carrier, of yellow fever may appear to be more of a nuisance than a transporter of a deadly disease but the *Aedes aegypti*, or yellow fever mosquito, has quite the history of spreading death wherever it landed. What is so special about the yellow fever mosquito is that it has adapted to survive in urban environments exceedingly well and it has at times been categorized as a container-inhabiting mosquito, as researcher Paul Reiter from the CDC has noted, "water storage jars and drums, cemetery urns, discarded rubber tires, buckets, pots, and other man-made containers can be prolific sources of...species that originally bred in tree holes."³⁷ While other species of mosquitoes typically can carry multiple viruses the yellow fever mosquito is solely responsible for the spread of yellow fever, hence its name. These pests

³⁷ Paul Reiter, "Climate Change and Mosquito-Borne Disease," *Environmental Health Perspectives* 109, No. 1 (2001): 143.

typically appear in temperate regions during the summer months when their optimal temperature requirements are met. Citizens of Philadelphia in the 1790s took notice of the appearance of these pests, Benjamin Rush noted prior to the fever outbreaks, “insects of different kinds have lately appeared and multiplied in an unusual manner.”³⁸ Another aspect of the mosquito that makes it so unique is the way it lays its eggs. Unlike other species of mosquito this one will lay its eggs above the water surface. These eggs can survive in this manner until conditions are met (i.e., appropriate temperature and humidity) in which the egg can hatch, and the larvae will drop into the water below. Yellow fever mosquito eggs have been known to survive in a desiccated state for months until submerged in water. This is why the mosquito does so well in the urban environment since man-made water containers make an appropriate site for egg laying. Finally, the female of the species does not lay her entire clutch of eggs in one spot. Instead, she will lay them one at a time over several hours, or days, and at several different sites making it very difficult to wipe out a nest completely.³⁹

The swift, but uneven, urbanization of Philadelphia’s ports, the effects of El Nino weather patterns on the surrounding environment, and the proliferation of yellow fever mosquitoes all came together in the late 18th-century to create the perfect storm of disease, death, and frustration that rained down on the citizens, all it needed was a catalyst to set off the destruction. This catalyst came in the form of French refugees fleeing their homes in Saint Domingue bringing with them the deadly virus that came to decimate the city. From this storm emerged two physicians who attempted to understand what caused so much misery within the city limits and

³⁸ Rush, *Observations Upon the Origin of the Malignant Bilious, or Yellow Fever in Philadelphia*, 8.

³⁹ Catherine Zettel and Phillip Kaufman, “Featured Creatures: Yellow Fever Mosquito; *Aedes aegypti*,” last modified March 2013, https://entnemdept.ufl.edu/creatures/aquatic/aedes_aegypti.htm.

how the city itself contributed to the deadly outbreak that took so many lives. The labels that modern historians have attached to these two physicians separate these medical men into two opposing groups but have at the same time also hidden the complicated, and evolving, nature of the yellow fever debates from these physicians.

II. Feverish debates: understanding the nature and cause of yellow fever

With the spread of a deadly fever through the streets of Philadelphia, the physicians who chose to remain behind came together at the College of Physicians to answer the questions posed by the fever. Today it is still a daunting challenge to identify an unknown disease during an outbreak. With modern laboratory techniques and a better understanding of infectious disease the amount of time required to identify the pathogen causing an epidemic disease has sharply decreased. However, in 1793 Philadelphia physicians were in the unenviable position of attempting to diagnose an epidemic fever based solely on its symptoms. But fevers and other illnesses, at one point or another, displayed the same clinical symptoms, making it that much harder to accurately diagnose the likely culprit of the outbreak in question. In this case of yellow fever in 1793 those who came down with the fever at first displayed “weariness and weakness, which, in a few hours, is succeeded by a sense of chilliness, and an oppressive dull pain and giddiness in the head...”⁴⁰ Other early symptoms included difficulties breathing, nausea, vomiting, as well as an elevated body temperature. None of these symptoms were unique to that of yellow fever as modern scientists have confirmed.

⁴⁰ Currie, *A Description of the Malignant, Infectious Fever*, 4.

Commonality of symptoms across a wide spectrum of fevers and illnesses has been a cause of frustration for physicians, in the past as well as in the present, and has at times led to misunderstandings within the medical community. Medical librarian, Suzanne M. Shultz, and clinical microbiologist, Arthur E. Crist, have shown that a variety of diseases had been circulating in the cities of Pennsylvania during the 1790s stating that “many febrile illnesses presented with identical and quite non-specific constellations of symptoms: fever, headache, chills, and generalized achiness.”⁴¹ These febrile illnesses included Malaria, Leptospirosis, Typhoid Fever, Dengue, and even Hepatitis A; all of which presented a similar set of symptoms as the early stages of yellow fever. Physicians in Philadelphia at the time of the 1793 outbreak noted in their publications that the fever “puts on all the intermediate forms between a mild remittent and the worst species of Typhus Gravior.”⁴² It was not until patients reached the second stage of yellow fever that symptoms presented that were unique to yellow fever. Only at this point were physicians able to narrow down their official diagnosis to that of yellow fever. Physician William Currie noted that as the disease progressed, “frequent vomiting of matter resembling coffee grounds in colour and consistence...together with a cadaverous appearance of the countenance, succeeded by a deep yellow or leaden colour of the skin and nails” appeared days prior to the patient’s death.⁴³ Identifying the fever not only enlightened the physicians and public as to what disease was sweeping through the city but also led to arguments that fractured Philadelphia’s medical community into two camps, each with their own theories as to the nature

⁴¹ Suzanne M. Shultz and Arthur E. Crist Jr., “Colonial Conundrum: Divining the Diagnosis of a Mysterious Fever,” *Pennsylvania History: A Journal of Mid-Atlantic Studies* 78, No. 3 (2011): 277.

⁴² Rush, *An Account of the Bilious Remitting Yellow Fever*, 20.

⁴³ Currie, *A Description of the Malignant, Infectious Fever*, 5.

and spread of yellow fever within this northern port city. To successfully identify the fever that was plaguing their city was also to identify where it originated and how it spread throughout the city of Philadelphia in the 1790s.

Delving into the medical treatises published both during and shortly after the 1793 yellow fever epidemic by two prominent Philadelphia physicians, Dr. William Currie and Dr. Benjamin Rush, we see two physicians tackling the difficulties of identifying the fever despite the publication of a fever classification system prior to the outbreak. Their firsthand experience with the fever led them to question the system and correct the errors they saw within the system. This discussion of fever classification in Philadelphia by Currie and Rush was connected to their arguments over its transmission amongst the residents and has been flattened beneath the labels of modern historians. Understanding the difficulties of classifying a disease is necessary to understand how a particular physician, like William Currie or Benjamin Rush, understood its transmission which influenced their recommendations for preventing its spread both during and after the outbreak. Also, by looking beneath the labels we can now see that these physicians were not focusing solely on what had been written prior to the outbreak but instead making adjustments to their understandings by combining previous scholarship with first hand observations, leading them to consider the role that the urban infrastructure had in creating an atmosphere that was conducive to the spread of fever in 1793.

Modern scholars have discussed the difficulties that came from attempting to divine the specific fever, or illness, plaguing any given area at a specific time and how these challenges led to changing medical institutions prior to the 1790s. Paul Kopperman notes, prior to the end of the 18th-century, physicians “emphasize perceived variations and to assert that even the slightest

difference in symptoms marked off separate diseases...across Europe, disease were called by a number of names.”⁴⁴ In an attempt to combat this frustrating practice of identifying disease, members of the medical community created structured systems of fever classification, or nosology, based around the symptoms and duration of the different fevers. Noted University of Edinburgh professor and physician, William Cullen, was an influential member of the medical community attempting to create a new classification, or nosology, of disease in the mid-18th century. His *Synopsis Nosologiae Methodicae*, followed shortly after by his *First Lines of the Practice of Physic*, separated fevers into five orders (Fever, Inflammation with Fever, Eruptive Fever, Hemorrhages with Fever, and Fluxes with Fever). These orders were then further broken down by either clinical symptoms or duration of perceived symptoms, depending on the order of the fever. Each section, or order, was given an introduction where Cullen gave a brief overview of common symptoms for the order and included the manner of transmission for the order in question.⁴⁵

Within the pages of the *Synopsis Nosologiae Methodicae* and *First Lines of the Practice of Physic* it can be seen how fevers, like yellow fever, were first classified, creating a foundation upon which Philadelphia physicians based their own arguments about the identity and nature of transmission following their own first hand experiences with yellow fever in the 1790s. William Cullen placed yellow fever into the order Continued Fever, “fevers, without intermission not produced by marsh miasmata; but continuing with remissions and exacerbations; though not

⁴⁴ Paul E. Kopperman, “‘Venerate the Lancet’: Benjamin Rush’s Yellow Fever Therapy in Context,” *Bulletin of the History of Medicine* 78, No. 3 (2004): 559-560.

⁴⁵ William Cullen, *Synopsis Nosologiae Methodicae: To which is added an English translation with notes of the indications and treatment of the principle diseases* (London: W. Jackson, 1827), 10-11.

always considerable; having two paroxysms each day.”⁴⁶ Cullen further classified yellow fever as a “Typhus or Putrid Fever...contagious, heat little increased; pulse small, weak, and in general quick...”⁴⁷ But to account for the “perceived variations” that occurred he made the note right next to yellow fever that there was a yellowness of skin present that conclusively marked the fever as yellow fever. With this demarcation not only did William Cullen create a structured nosology to combat confusion while attempting to identify a particular fever, he also clearly marked the nature of transmission for the various fevers present in the 18th-century. But while this nosology was a step forward in attempting to standardize fever classification, physicians questioned whether Cullen’s system was truly accurate or in need of restructuring especially after they experienced these fevers firsthand.

Due to the plethora of material located within the archives of Philadelphia Dr. Benjamin Rush has been a great source of information regarding the theories and treatment practices of yellow fever in the 18th and 19th-centuries. The son of a gunsmith residing near Philadelphia at the time of his son’s birth, Rush received a formal education from several boarding schools, and even attended Princeton University before apprenticing himself to Dr. John Redman in Philadelphia. During his time as Dr. Redman’s apprentice in Philadelphia, Rush met and developed a relationship with William Shippen and John Morgan after attending their lecture series. Seeing potential, these physicians encouraged Rush to continue his medical studies across the Atlantic in the halls of the University of Edinburgh. During his time at Edinburgh, Rush studied under several prominent professors, including Dr. William Cullen. After Rush earned his

⁴⁶ Cullen, *Synopsis Nosologiae Methodicae*, 24.

⁴⁷ *Ibid.*, 26.

medical degree from Edinburgh, he returned back to Pennsylvania with an open mind that, “came to suspect ‘error in every thing I had been taught.’”⁴⁸ Returning to Philadelphia with his degree, Rush accepted a position as Professor of Chemistry at the newly founded College of Philadelphia and later moved on to accept the chair of Institutes of Medicine when it became vacant. By the time that yellow fever arrived at Philadelphia’s ports in 1793 Rush had reorganized William Cullen’s nosology and used the outbreak as further proof that his version was an accurate classification system that corrected the errors presented by previous generations of physicians.⁴⁹

As it has been noted by modern historians, “theory left such immense room for disagreement,”⁵⁰ and Benjamin Rush’s work was no exception to this statement. His attempts to establish his own nosology of fever demonstrates an almost complete separation from his teacher and mentor, William Cullen. Instead of a system of classification that broke down fevers into orders, classes, and even species Benjamin Rush instead argued that all fevers were derived from one source, or “parent disorder.” He gives no supporting evidence to account for the variation of symptoms presented to the physician by the afflicted but does make the argument, in the next section of his work, *An Account of the Bilious Remitting Yellow Fever*, that when a stronger fever enters an area, or city, it either pushes out or “assimilates” the diseases that were already present in the city. By placing these two theories next to each other within this work it appears as if Rush

⁴⁸ William L. Hedges, “Benjamin Rush, Charles Brockden Brown, and the American Plague Year,” *Early American Literature* 7, No. 3 (1973): 300.

⁴⁹ See Alyn Brodsky, *Benjamin Rush: Patriot and Physician* (New York: St. Martin’s Press, 2004); Stephen Fried, *Rush: Revolution, Madness & the Visionary Doctor Who Became a Founding Father* (New York: Crown Publishing, 2018); Harlow Giles Unger, *Dr. Benjamin Rush: The Founding Father Who Healed a Wounded Nation* (New York: Da Capo Press, 2018).

⁵⁰ Powell, *Bring Out Your Dead*, 37.

is attempting to put forward his own classification system by linking his one fever theory with his fever assimilation theory. He closes his fever assimilation theory section with the statement:

The physician who considers every different affection of the different systems in the body, or every affection of the different parts of the same system, as distinct diseases, when they arise from one cause, resembles the Indian or African savage, who considers water, dew, ice, frost, and snow, as distinct essences: while the physician who considers the morbid affections of every part of the body, (however diversified they may be in their form or degrees) as derived from one cause, resembles the philosopher, who considers dew, ice, frost, and snow, as different modifications of water, and as derived simply from the absence of heat.⁵¹

This simplification of classifying fever has also appeared in his arguments over the nature of transmission of the offspring fever in question.

While it may seem that Benjamin Rush had completely detached himself from the teachings of his teacher and mentor, William Cullen, he had in fact based his theory on one particular section of the *Synopsis Nosologiae Methodicae*. Rush took Cullen's first class of fevers, intermittent fevers, as the basis for his one fever theory. All intermittent fevers were "fevers arising from marsh miasmata, consisting of many paroxysms, with intermissions... returning with remarkable exacerbations."⁵² The tertian ague, according to Rush, was the "parent disorder" from which all other fevers descended.⁵³ And keeping with Cullen's description of intermittent fevers Rush also concluded that marsh miasmata were responsible for outbreaks of fever in affected areas. It was highly unlikely that fever was spread from person to person and that it had not been imported into the city in 1793 because "I had heard of no foreigners or sailors that have hitherto been infected; nor has it been found in any lodging houses... principally

⁵¹ Rush, *An Account of the Bilious Remitting Yellow Fever*, 92.

⁵² Cullen, *Synopsis Nosologiae Methodicae*, 18.

⁵³ Rush, *An Account of the Bilious Remitting Yellow Fever*, 78.

confined to the inhabitants of Water-Street.”⁵⁴ It was while tending to the inhabitants of Water-Street that Rush claimed to have identified the fever afflicting the area as well as its point of origin.

There has been some discussion as to why Rush chose to make such a radical change to a relatively new classification system. Historian Donald D’Elia has argued that “since republican society was the most reasonable of all societies, it followed that republican medicine must be the most reasonable of medical systems...based upon just a few easily comprehensible ‘essential principles.’”⁵⁵ He continues that it was Rush’s republican ideology that pushed him to create a system that was to open access to medical knowledge and make it available to all citizens. The result being that countless lives would be saved because information was not being relegated to a select few specialists; citizens from different classes would have access to the information and be able to treat themselves.⁵⁶ A sentiment that has echoed throughout Rush’s many writings, including his work with the Dispensary as well as his controversial treatments for yellow fever as the weeks passed along. The outbreak of yellow fever was another opportunity for Rush to promote an open republican system of medicine. Although he stumbled a bit as the first cases of fever began to appear in the city of Philadelphia.

In the early days of the yellow fever outbreak in August of 1793, Benjamin Rush was busy caring for patients along Water-Street and had yet to determine that malignant fever was starting to spread along the wharves of the city. He admitted in his writings that, “none of these

⁵⁴ Ibid., 20.

⁵⁵ Donald J. D’Elia, “Dr. Benjamin Rush and the American Medical Revolution,” *Proceedings of the American Philosophical Society* 110, No. 4 (1966): 230.

⁵⁶ D’Elia, “Dr. Benjamin Rush and the American Medical Revolution,” 230.

cases which I have mentioned, excited the least apprehension of the existence of a yellow fever in our city; for I had frequently seen sporadic cases.”⁵⁷ It was not until after attending to several afflicted patients residing at the home of Mr. LeMaigre, located on Water-Street, that Rush admitted that “a fever of a most malignant kind had carried off four or five persons within sight of Mr. LeMaigre’s door... I did not hesitate to name it the *Bilious remitting Yellow Fever*.”⁵⁸ Upon further discussion with fellow physicians Dr. Hodge and Dr. Foulke, Rush also noted that within several yards of the LeMaigre’s door a large heap of coffee had been abandoned to putrefy along Mr. Ball’s wharf. The proximate location of the rotting pile of coffee in conjunction with the sudden eruption of a malignant fever among local residents convinced Rush that he had located the point of origin. The foul smells, or miasma, emanating from the rotting coffee propagated the “seeds” of contagion that afflicted the surrounding community leading to an outbreak of fever. When he revealed the identity of the fever and its point of origin to his fellow citizens he was met with scorn and disbelief due, in part, to the fact that many of the citizens in Philadelphia had never witnessed yellow fever before. But he was able to garner support from members of the medical community who agreed “that the contagion originated from some damaged coffee, or other putrefied vegetable or animal matters.”⁵⁹ Further compounding the problem, Rush stated, was the narrowness of certain streets and alleys around the port. “The more narrow the street, the more certainly the contagion infected. Few escaped it

⁵⁷ Rush, *An Account of the Bilious Remitting Yellow Fever*, 10.

⁵⁸ *Ibid.*, 11-13.

⁵⁹ *Ibid.*, 19-20.

in alleys...the atmosphere of every street in the city was loaded with contagion,” he noticed.⁶⁰

This setup of narrow streets and alleys as it pertained to the spreading of contagion to the citizens of the city was not observed by Rush alone.

The role of the city streets in the transmission of contagion was also taken up by fellow Philadelphia physician, and co-founder of the College of Physicians, William Currie. Just like Rush, Currie was born in Pennsylvania to an Episcopal clergyman. But unlike Rush, Currie attained his medical knowledge through an apprenticeship with Dr. Kearsley, before accepting a position as an army surgeon during the Revolutionary War.⁶¹ Following the war Currie established his own practice in Philadelphia and helped to found the College of Physicians. Instead of questioning burgeoning medical theories that were arriving from Europe prior to the 1790s, Currie was a firm believer in the fever classification system that Dr. William Cullen had created and did not concur with Rush’s arguments that all fevers originated from a parent tertian fever. Currie was not a professor or instructor at the local medical school, nor did he involve himself in matters of politics, like his counterpart Benjamin Rush. However, he proved to be a capable researcher with a knack for presenting his findings in a structured and informative manner. He came into the 1793 epidemic with ties to fellow members of the Philadelphia medical community but lacked access to medical students that Rush came to rely upon during the worse moments of the epidemic who provided him with more information that he used in his own writings. Despite this hindrance, Currie’s work and subsequent publications continued to

⁶⁰ Ibid., 104.

⁶¹ Thomas Apel, *Feverish Bodies, Enlightened Minds: Science and the Yellow Fever Controversy in the Early American Republic* (Stanford: Stanford University Press, 2016), 13.

support contagion theory while at the same time highlighting a key factor that was needed for a tropical disease, like yellow fever, to infiltrate and spread throughout a northern port city.⁶²

Although William Currie supported the nosology created by Dr. William Cullen during the early days of the outbreak in 1793, he was cautious about identifying the fever without further evidence. In his first publication, *A Description of the Malignant, Infectious Fever*, published during the outbreak, Currie chose to list the symptoms presented by his patients, but he did not officially identify the fever as specifically yellow fever like his counterpart Benjamin Rush did until his next publication in 1794. He notes in a footnote on the first pages of the treatise, “the Influenza made its appearance here the last week in July, and the first case of the Malignant Fever that has been observed was about the 3d of August.”⁶³ Because the appearance of these two different fevers occurred so close together it is quite probable that Currie wanted to wait and see before officially identifying the malignant fever. Should it turn out that some of his patients were in fact suffering from Influenza at the time of the Malignant Fever outbreak then this would be useful in accurately identifying the unknown fever. In short, Currie was waiting for clear symptoms specific to a particular fever before he would posit an identification.

While William Currie may have been reticent to identify the fever during the actual outbreak in 1793, in his next published treatise, *A Treatise on the Synochus Icteroides*, not only did Currie identify the fever that had affected Philadelphia at the end of 1793 but also puts forth doubts that William Cullen’s nosology had accurately defined the nature and symptoms of yellow fever. As mentioned above, Cullen placed yellow fever as a species of the genus Typhus,

⁶² Powell, *Bring Out Your Dead*, 37.

⁶³ Currie, *A Description of the Malignant, Infectious Fever*, 3.

or putrid fever, however, Currie challenged this placement by defining yellow fever as a “Synochus Icteroides...derives its name from the inflammatory symptoms, with which it begins, becoming putrid in its progress; and from the yellowness in the eyes and skin.”⁶⁴ According to Cullen, a Synochus, or Mixed Fever, was a fever that combined symptoms of inflammation with symptoms of typhus, where patients showed signs of inflammatory symptoms before progressing to producing symptoms synonymous with typhus.⁶⁵ Currie noted in his 1794 treatise that “a chilly fit, alternated with glowing flushes of heat...gave place to those symptoms which designate a confirmed fever of the inflammatory type, which increased in violence as the day advanced,”⁶⁶ all symptoms that Cullen had stipulated were connected to Synochus fevers. So not only did Currie identify the fever that had affected Philadelphia in late 1793, but also argued that it has been mislabeled as a strictly putrid fever. This change in the genus of the fever did not affect William Currie’s belief that the fever spread from person to person since both Typhus and Synochus fevers were believed to be contagious. But he did question whether or not there was another variable needed in order for the fever to successfully propagate and spread throughout the city.

The role of the climate and environment of populous cities, like Philadelphia, turned out to be this variable under consideration. Historian Jan Golinski has discussed the role that urban environment played in understanding the transmission, and spread, of disease in early America. Prior to the outbreaks of yellow fever in the 1790s, a belief arose that the altering of local

⁶⁴ William Currie, *A Treatise on the Synochus Icteroides, or Yellow Fever; as it Lately Appeared in the City of Philadelphia* (Philadelphia: Thomas Dobson, 1794), 19.

⁶⁵ Cullen, *Synopsis Nosologiae Methodicae*, 28.

⁶⁶ Currie, *A Treatise on the Synochus Icteroides*, 20.

landscapes through cultivation was taming the wild lands of early America, bringing it under the control of the people living in the area. This idea was further promoted following the events of the Revolutionary War even though by this time naysayers, including Benjamin Rush, believed that the rampant deforestation was creating a marshy environment that in turn would cause an increase in fevers. Once the fevers had broken out in Philadelphia, among other cities, in the 1790s, voices rose that called into question the actual health of air in American cities, and demanded changes to the public health system to rectify the factors that were making urban air unhealthy. Some historians, at times, have discussed the arguments regarding the role of urban environment in the spread of disease from the point of view of physicians, like Benjamin Rush and miasma theory, but little has been written about how Rush's opponents, including William Currie, linked the urban environment to the spread of disease from a contagion theory point of view.⁶⁷

William Currie applied his understanding of contagion theory, his readings of William Cullen's *Synopsis Nosologiae Methodicae*, and his own firsthand observations of the state of the Philadelphia at the time of the fever outbreak to make the argument that there was more to the transmission of fever than just contact with an infected individual. By looking at the observations he makes in his medical treatises we see a highly intelligent individual questioning how a supposedly tropical disease that is endemic to the West Indies could possibly survive in a northern port city. By approaching the fever in this manner, William Currie opened a discourse in the American medical community on the specific conditions that needed to be met for a foreign

⁶⁷ Jan Golinski, "Debating the Atmospheric Constitution: Yellow Fever and the American Climate," *Eighteenth-Century Studies* 49, No. 2 (2016): 150-152.

disease, like yellow fever, to infiltrate and spread throughout the populous cities of the northern United States.

Not once did William Currie waver from the argument that the malignant fever, or yellow fever, that broke out in Philadelphia had spread from one person to another, but he did stipulate “that the disease under consideration, though certainly infectious is nevertheless only communicable under particular circumstances.”⁶⁸ Remove that particular circumstance and the disease could not propagate and spread. What was this particular circumstance necessary for the spread of yellow fever in the 1790s? It was the atmosphere that surrounded the afflicted patient that allowed for the contagion to spread from said patient to anyone who happened to be enclosed with them. Currie notes in his 1793 treatise that the only circumstances by which he observed the spread of the fever from the patient was to be in confined with the patient in a small, enclosed, and unventilated room for long periods of time or in close contact with porous materials that contained human effluvia from the patient. But, once again, during the actual 1793 outbreak Currie did not elaborate on his theories, instead informing his readers that further discussion would come after the outbreak had ended. And in his 1794 treatise William Currie did elaborate on the role of the atmosphere in spreading fevers as well as how urban city infrastructure affected the quality of the atmosphere in question.⁶⁹

Historians have argued that contagionists, like William Currie, assimilated certain arguments from miasmatists, like Benjamin Rush, about the role of local sources in the spread of fever into their own theories. In *Feverish Bodies, Enlightened Minds*, Thomas Apel states that

⁶⁸ Currie, *A Description of the Malignant, Infectious Fever*, 7.

⁶⁹ *Ibid.*, 9.

Currie “was willing to concede that local conditions might activate, or exacerbate, the contagious particles.”⁷⁰ But the fact that Currie was already starting to question the quality of the atmosphere of the sick room in relation to the spread of the fever from patient to caretaker does call Apel’s assessment into question. In fact, Currie was already noticing a link between the spread of the fever from the patient to caretaker and the quality of the air present within the sick room for he noted that “people in walking the streets, are by no means in any danger of infection...the best, and I believe I may say the only neutralizer or corrector of contagion yet discovered, is the pure vital air of the atmosphere.”⁷¹ He continues that tombs and vaults that had been sealed and full of putrid effluvia were rendered safe once they were exposed to fresh air. With this we can see that Currie was already contemplating the role that vital, or fresh, air had upon dissipating putrid effluvia from the atmosphere of the enclosed spaces before Benjamin Rush published his own treatise in 1794.⁷²

Enclosed sick rooms, tombs, and vaults were not the only places that William Currie saw as possible locations of a corrupted atmosphere. In *A Treatise of the Synochus Icteroides*, William Currie elaborated on how populous cities were able to create the corrupted atmosphere that both harmed the human body and allowed for fever to spread from the sick to the healthy. He noted that physicians, himself included, observed that yellow fever was “highly contagious when conveyed to other countries, especially in populous cities with close built streets, when the

⁷⁰ Apel, *Feverish Bodies, Enlightened Minds*, 24.

⁷¹ Currie, *A Description of the Malignant, Infectious Fever*, 9-11.

⁷² *Ibid.*, 11.

heat of the weather is equal to, or exceeds that of, tropical environments.”⁷³ He went on to write that the atmosphere of populous cities becomes charged with the exhalations of various forces be they the putrefaction of animals and vegetables, respiration of animals, the combustion of fires, etc. where simultaneously the “vivifying principle” of the air is being depleted by the processes of these various forces. Although he is unable to identify it specifically Currie notes that there must be a substance that has saturated the air preventing it from regaining its “vivifying principle” which would have allowed it to push out the contagions of fever rendering it safe for the inhabitants of the city. Currie also admits that both moist soil and a high degree of heat are needed in order to render the contagion volatile. Sources of contamination within the city included privies, sinks, sewers, gutters, and slaughterhouses, as well as the very inhabitants of the cities themselves. All contributing to the corruption of the city air that was trapped in the enclosed, unventilated streets and homes of the populous cities. Take away these variable forces from the surrounding atmosphere and the contagion would be unable to survive long enough to spread throughout the city.⁷⁴

At the same time that William Currie was establishing his own arguments about urban atmosphere and the transmission of fever he was also calling into question the main point argued by miasmatisists at this time, that fever originated from the putrid exhalations of rotting vegetative matter. Currie did agree that rotting vegetation did play a part in the spread of fever but not that fever originated from the noisome smells produced by the fermenting matter. Instead, he noted that:

⁷³ Currie, *A Treatise of the Synochus Icteroides*, 62.

⁷⁴ *Ibid.*, 70-72.

The yellow fever never appears among the inhabitants of marshy countries in temperate climates, but in such climates, when it does occur, is always confined to sea-port towns, where, on its first occurrence, it has always been traced to one contracted spot near to some wharf, or foul vessel—If it originated from the same cause as the bilious remittent, every part of the town, where it occurs, would be alike subject to the disease, at the same time, or within a few days of each other...the malignant yellow fever every time that it has occurred in this city..has always made its first appearance in one circumscribed point, and first affected a few individuals who resided near, or transacted business at that particular point, while every other part of the city has continued perfectly healthy, until the disease has had time to spread its contagion.⁷⁵

The fact that Benjamin Rush seems to refuse to reply to this type of statement outside of simply reiterating his argument that a large mass of rotting coffee located in one spot started the 1793 outbreak is a little surprising. But within his own publications, Rush continuously states that the coffee was the point of origin and that he never saw a case present itself amongst the French refugees exiting the ships along the wharf that would lead him to believe that the fever had been imported into the city.

Within the pages of the treatises published by both William Currie and Benjamin Rush the complex nature of fever classification as well as discussion about transmission appear and call into question the labels that modern historians have attached to these physicians and their supporters. At the same time by looking beneath the labels there appears links that connect these two oppositional groups together, whether they knew about these links or not is not possible to determine at this time. But several elements of their arguments are noted by both sides of the argument: infrastructure of Philadelphia in 1793, the role of putrefying vegetation in the propagation and spread of disease, and the nosology of William Cullen. Both Currie and Rush noted that inhabitants who frequented areas of the city with enclosed, poorly ventilated streets

⁷⁵ William Currie, *Observations on the Causes and Cure of Remitting or Bilious Fevers. To Which is Annexed, An Abstract of the Opinions and Practice of Several Authors* (Philadelphia: William T. Palmer, 1798), 42-43.

were more likely to be negatively affected and/or succumb to the fever spreading throughout the city. They also noted that the presence of the rotting vegetation negatively affected the surrounding atmosphere in these enclosed streets further increasing the likelihood that a citizen's health would suffer and leave them open to fever spreading to them. And these arguments all came, in part, as a result of William Cullen's nosology which had attempted to create a structured system for identifying and treating fevers in the 18th-century. Although Rush tried to separate his own one fever theory from that of Cullen's nosology, he based his own theory off the first order of fevers within the pages of the *Synopsis Nosologiae Methodicae*. William Currie did not make as radical a move like Rush, but he did make adjustments of his own after witnessing yellow fever firsthand, claiming that Cullen had mislabeled the fever as a putrid fever when he believed it to be a mixed fever, displaying both inflammatory and putrid symptoms. Looking beneath the labels, a far greater argument about fever in the 18th-century emerges and demonstrates that there is more to the story and how that hidden story explains the choices of physicians when it came to preventing the return of fevers to the populous northern cities of early America.

III. Translating theory into practice: public health in Philadelphia during and after the 1793 yellow fever epidemic

Discussion of the identity of the 1793 fever and the nature of its transmission resulted in several attempts both during and after its spread to slow down its progress in Philadelphia and prevent its recurrence in coming years. Whether they believed in William Currie's argument that the fever spread through contact with a sickened person and that a specific atmospheric condition was

needed for the contagion to pass to the unaffected or whether they believed Benjamin Rush's argument that rotting masses of vegetation led to the propagation of fever, the citizens of Philadelphia were desperate to avoid succumbing to yellow fever both during and after the fever outbreak in 1793. To slow the spread of the fever during the outbreak, public committees made up of wealthy gentlemen proceeded to create a fever hospital outside the city limits of Philadelphia to separate the afflicted from the healthy residents. Physicians, including William Currie, who believed that the fever would spread through close contact with afflicted patients in enclosed, unventilated sick rooms, argued that these rooms needed to be rearranged to allow access of pure air to the patient that would promote their recovery while simultaneously removing the corrupted air keeping it from affecting the attendants of the patient. But what should be done to prevent the fever from infiltrating the city again in the future? If you couldn't change the qualities of the atmosphere within the city without demolishing buildings in order to open the streets, then the primary objective for the medical community was to create a system that would keep the contagion from entering the city in the first place. It also became necessary to create a backup system should a fever manage to make its way into the city that would separate the exposed from the non-exposed residents of the city. These objectives led to changes in the public health infrastructure of the city of Philadelphia both during and after the epidemic. Physicians, wealthy gentlemen, and governmental officials came together during and after the outbreak to tackle the substandard public health system. The measures they took included revamping the fever hospital Bush-Hill and putting forth a proposal for the creation of quarantine and isolation facilities to prevent the fever from returning to Philadelphia, as well as promote the recovery of anyone who became afflicted by the fever. Though not everyone supported these

efforts, especially the creation of a quarantine system, the arguments for their creation by Dr. William Currie demonstrate a rational attempt to stop the contagion from entering a populous city that created an environment that was conducive to the spread of fevers imported through the Atlantic trade network. But first the citizens of Philadelphia needed to survive the 1793 yellow fever outbreak, leading to traditional measures of prevention through isolation.

By the end of August, the fever was increasing in strength and more people were displaying symptoms of sickness. As a result, large numbers of wealthy Philadelphians closed their homes and fled to the surrounding countryside and small towns far away from the sickened city. Publisher Mathew Carey noted, “the removals from the city, which were for some weeks so general, that almost every hour in the day, carts, waggons, coaches, and chairs, were to be seen transporting families and furniture to the country in every direction.”⁷⁶ Carey continued noting that business stopped, numerous mechanics and artisans were unemployed, and that the streets, “wore the appearance of gloom and melancholy.”⁷⁷ The city had become a ghost town that was haunted by the sick and dying citizens seeking out any kind of care, perpetually reminded of their fate by the constant tolling of the church bells and the sight of the horse-drawn cart that carried the dead to be buried away from the city. It fell upon the Overseers and Guardians of the Poor⁷⁸ to find a suitable place to house and care for the pauper fever patients as existing public

⁷⁶ Carey, *A Short Account of the Malignant Fever*, 20-21.

⁷⁷ *Ibid.*, 21.

⁷⁸ The Overseers and Guardians of the Poor were formed to act as managers of the Pennsylvania Almshouse prior to the 1793 outbreak. By the time yellow fever broke out in 1793 they were the only agency in the city who officially dealt with the poor and indigent residents of Philadelphia. This agency, by 1793, was made up of young, naive gentlemen whose sole duty was to locate sick paupers, see they received some medical attention, and keep them from becoming a public nuisance. Because of these duties a large burden was placed on these ill-prepared gentlemen to care for growing numbers of poor fever patients. See Powell, *Bring Out Your Dead*, 55-56.

institutions like the Pennsylvania Hospital and the Almshouse were refusing to admit anyone who appeared to be suffering from yellow fever.⁷⁹

The Guardians of the Poor needed an appropriate location to set up a fever hospital for those suffering from yellow fever. At first, they took possession of the “circus”⁸⁰ previously owned by Mr. Ricketts and sent seven afflicted paupers to the amphitheater. Of these seven, Carey noted, “they lay in the open air for some time, and without proper assistance...one crawled out on the commons, where he died at a distance from any house.”⁸¹ Two more died in the circus. One of them was left to decay so long that when the body was removed it fell to pieces. These substandard conditions along with fear of the fever caused the inhabitants of the surrounding neighborhood to voice their concerns and threaten to destroy the circus if the sick were not removed. Due in part to rising tensions with the inhabitants, the Guardians of the Poor resolved to find and procure a suitable location, with a building, that could house “the poor who were or might be afflicted with contagious disorders, and be destitute of the means of providing necessary assistance otherwise.”⁸² After resolving to find an appropriate area to set up a fever hospital away from the city, a committee came upon the unused lands, called Bush-Hill, of Independence Hall architect, Andrew Hamilton. After his death, the land passed from Andrew to his son James before passing into the hands of James’ nephew, William. However, at the time of

⁷⁹ Ibid., 58-59.

⁸⁰ The “circus” was an enclosed amphitheater located at Twelfth and High Street that had been built by John Bill Ricketts, a well-known Scottish equestrian, who held many performances at the facility, the last one being a charity event for the exiled Santo Domingans before leaving Philadelphia to hold a series of performances in New York. Ricketts left the “circus” unattended and without a local agent to manage the property. See Powell, *Bring Out Your Dead*, 58-59.

⁸¹ Carey, *A Short Account of the Malignant Fever*, 24.

⁸² Ibid., 26.

the fever outbreak William was in England, leaving the land and buildings empty, except for one tenant living in an outbuilding. The property was located about two and a half miles from Philadelphia and was easily accessible by cart. The Guardians believed they had found the perfect spot that was a fair distance from the city to create a fever hospital. They quickly seized the mansion house and transported the four remaining fever patients from the circus to Bush-Hill for treatment. In *Bring Out Your Dead*, J. M. Powell notes that these patients were, “the first of a grim train that in the next fortnight would turn the handsome old mansion itself into a dread charnel house of fear, dismal suffering, and death.”⁸³

Not long after commissioning the Bush-Hill property and turning it into a fever hospital, most of the Guardians fled Philadelphia, leaving behind three members to deal with the sick patients at the hospital. They quickly became overwhelmed by their duties and Bush-Hill started to deteriorate from lack of necessary medical items and staff leaving the facility in a destitute state with inadequate sanitary measures and dying patients. Mathew Carey described the situation at Bush-Hill in graphic terms:

The dying and dead were indiscriminately mingled together. The ordure and other evacuations of the sick, were allowed to remain in the most offensive state imaginable... It was, in fact, a great human slaughter house, where numerous victims were immolated at the altar of riot and intemperance.⁸⁴

News of the situation at Bush-Hill made its way down into the city causing an overall feeling of dread of the place amongst the remaining residents of Philadelphia. Many an afflicted person, whether sickened by the fever or by another ailment, went to great lengths to avoid the hospital including locking themselves into their rooms or fighting back physically against anyone trying

⁸³ Powell, *Bring Out Your Dead*, 63.

⁸⁴ Carey, *A Short Account of the Malignant Fever*, 61.

to remove them to the facility. Other afflicted even refused to admit that they were sick or showing symptoms of illness to family, friends, or neighbors. According to Carey,

it is to be observed, that the fear of the contagion was so prevalent, that as soon as any one was taken sick, an alarm was spread among the neighbours, and every effort was used to have the sick person hurried off to Bushhill, to avoid spreading the disorder. The cases of poor people forced in this way to that hospital, though labouring under only common colds, and common fall fevers, are numerous and afflicting.⁸⁵

The state of the hospital, and its reputation, remained in effect until mid-September with the creation of a group of well-to-do gentlemen who chose to remain behind in Philadelphia with the express purpose of caring for the sick, the poor, as well as the people who were orphaned or widowed due to the fever outbreak. This “Committee to Attend to and Alleviate the Sufferings of the Afflicted with the Malignant Fever” took up the task that was abandoned by the Guardians of the Poor and set to work to rectify the poor situation at Bush-Hill with the hope that the hospital could lose its reputation as a “human slaughter house.”⁸⁶ Here was the first attempt to fix the substandard state of Philadelphia’s public health infrastructure.

The Committee undertook the laborious task to resolve the issues at Bush-Hill hospital, including attempts to enhance the reputation of the facility amongst the remaining citizens of Philadelphia. Beginning on the 12th of September, 1793 around 27 gentlemen⁸⁷ volunteered to join the Committee and “to transact the whole of the business relative to mitigating the sufferings of those that are or may be afflicted with the disorder prevalent in this city and vicinity.”⁸⁸

⁸⁵ Ibid., 62.

⁸⁶ Ibid., 61-62.

⁸⁷ Attendance at Committee meetings ranged from 9 attendees up to 30 attendees at a time.

⁸⁸ *Minutes of the Proceedings of the Committee, Appointed on the 14th September, 1793, By the Citizens of Philadelphia, The Northern Liberties and the District of Southwark, To Attend to and Alleviate the Suffering of the Afflicted with the Malignant Fever, Prevalent, in the City and its Vicinity* (Philadelphia, R. Aitken & Son, 1794), 7.

Included amongst these members were the current mayor of Philadelphia, Matthew Clarkson, publisher Matthew Carey, and Stephen Girard, a gentlemen who took on the majority of the task of restoring Bush-Hill's standard of practice as well as its reputation. Published minutes from the Committee show that the state of Bush-Hill was of top priority to the group and that it was disappointing that such a necessary facility had been allowed to fall into such disrepair so quickly. After visiting the facility, Stephen Girard and fellow hospital manager, Peter Helm, noted that the hospital,

is without order or arrangement, far from being clean, and stands in need of necessary arrangements. —There are five or six female attendants; but none qualified for the proper management of the sick...it may subject the sick to great inconvenience to lay on the floors until bedsteads can be made.⁸⁹

Both Girard and Helm stated that there was an “immediate need” for a proper Hospital steward to manage the facility, for trained nurses, as well as a qualified person to “act as barber and bleeder,” and that a physician should be present at the hospital at all hours of the day. If these needs were met, both Girard and Helm believed that the quality of care of the patients of Bush-Hill would greatly increase for all afflicted residents of Philadelphia, no matter their social status in the city, and the mortality rates would drop substantially.

While the Committee was attempting to reorganize the hospital into an effective medical care facility, they also had to deal with the reputation that Bush-Hill still retained despite the Committee's work. To rectify this issue, the Committee requested that “measures may be adopted to prevail upon those who wish to avail themselves of the advantages of the Hospital, to apply early for admission after they discover symptoms of the disease upon them.”⁹⁰ These measures,

⁸⁹ *Minutes of the Proceedings of the Committee*, 6-14.

⁹⁰ *Ibid.*, 28.

published in city newspapers, were directed at the physicians currently working in Philadelphia impressing on them the improved conditions of Bush-Hill as well as their goals to get afflicted residents to sign into the hospital as soon as possible instead of waiting until they were too far gone for beneficial medical treatments. But fear of the hospital kept many residents locked away in their own homes with only those family members or friends that remained behind to care for them.

However, one physician believed that with appropriate prevention measures put into place the sick room could be rendered beneficial to the patient as well as prevent the spread of the fever to the nursing attendants of the patient. Little attention has been given to the recommendations that Philadelphia physician, William Currie, put forward to create a sick room that promoted the recovery of the yellow fever patient, while at the same time preventing the contagion from spreading through “human effluvia” to the attendants of the afflicted. J.M.Powell briefly mentions Currie’s arguments on the structural set up of the sick room during the yellow fever outbreak in 1793. But Currie’s recommendations were an important aspect of public health in the period because they took the theory of fever transmission through close contact with afflicted patients and distilled its essence down into a language that was easier to understand by the average, literate resident of Philadelphia. This distillation of knowledge allowed for the public to participate in slowing the spread of the fever while also assisting in the recovery of an afflicted family member or friend. The residents now had access to information and guidelines that allowed them to participate in the fight against the malignant fever that plagued their city. Currie was promoting a sick room that could be achieved in an average person’s living space to effectively treat the yellow fever patient without the undue stress of being shipped off to a

hospital that had the reputation of a “human slaughterhouse” but would prevent spread of fever, similar to the way isolation in the hospital was supposed to prevent spread. His easy-to-follow guidelines in his first treatise on the malignant fever that was published in September of 1793,⁹¹ *A Description of the Malignant, Infectious Fever*, depicts an attempt to correct what he believed to be harmful practices of patient care by the enclosure of the sick within their room, or apartment, effectively sealing them off from the pure air that the human body needed.

As mentioned above, William Currie believed that the fever contagion needed an appropriate atmosphere in order to spread from one person to another. The enclosed, un-ventilated streets of Philadelphia trapped the putrefying fumes of decaying vegetable and animal matter, combustion from cooking fires, as well as bodily exhalations from the living creatures within the city and as a result removed the vivifying principle of the surrounding atmosphere. Just as this occurred in the streets of Philadelphia, Currie argued that enclosing patients into their sick rooms, or apartments, achieved the same result. The vivifying quality of the air in the sick room was being negatively affected by the exhalations of the patient and their attendant(s), leading to the weakening of the human body as well as making it easier for the contagion to spread from patient to caretaker. As he notes in his 1793 treatise, “confinement for any length of time in the bed-chamber of the sick, especially when the apartment is not large, and freely ventilated — coming in immediate contact with the patient, his body, or bed-clothes... before they have been for some time exposed to the action of the open air,”⁹² increased the likelihood of transmission between the sick and the non-exposed caretaker, or visitor. This confinement

⁹¹ Powell, *Bring Out Your Dead*, 82.

⁹² Currie, *A Description of the Malignant, Infectious Fever*, 9.

needed to be rectified for the patient to recover and to stop the spread of the contagion and Currie's easy to follow guidelines tackled this challenge head on.

The inclusion of "pure vital air of the atmosphere" was Currie's strongest recommendation when he discussed the set up of the sick room. Currie backed up this statement by noting that sealed tombs and vaults contained harmful effluvia from lack of pure air but became safe to enter once they had been unsealed and pure vital air was circulated through the space. This same concept could be applied to the sick room by creating a ventilation system that allowed for a constant flow of pure air pushing out the fixed air. To aid in this process Currie recommended that a fire be kindled in the chimney, creating a vacuum that pushed the corrupted, fixed air out of the room while also pulling in clean, pure air through open windows.⁹³ To further purify the air of the sick room Currie implemented the fumigation techniques developed by Edinburgh physician, James Carmichael Smyth, wherein a purifying vapor was created by the burning of niter on charcoals in multiple areas of the sick room.⁹⁴ Currie even called upon his understanding of pneumatic chemistry to put forth the recommendation that plants be present in the sick room as another means to purify the air. "All kinds of plants in a state of vegetation furnish more or less pure air, at the same time that they absorb and correct that which is contaminated," he stated while also noting that pepper grass seeds sown on moistened cotton were the appropriate plant to place in sick rooms as they "will immediately vegetate" and begin the process of purifying the air faster than other types of seeds. Currie does caution that the vessels containing the moist cotton and seeds should be removed every night and replaced with

⁹³ Ibid., 10-12.

⁹⁴ Lukas Engelmann and Christos Lynteris, *Sulphuric Utopias: A History of Maritime Fumigation* (Cambridge: The MIT Press, 2020), 36 - 39.

fresh water the following day. While he does not elaborate on the reason behind the nightly removal of the vessels of seedlings he inadvertently does prevent new mosquito hatching sites from occurring with their removal.⁹⁵ Currie put forward all these recommendations in his 1793 malignant fever treatise and, as Powell has noted in *Bring Out Your Dead*, his instructions were written in a “language so simple that laymen could easily understand.”⁹⁶ This simple language made it so that the citizens of Philadelphia could take on the challenge of caring for the afflicted as well as decrease the likelihood of spreading the disease just by restructuring the very room that housed the source of the contagion, the patient.

At this time, it is impossible to say with a hundred percent certainty that Dr. Currie’s sick room guidelines were followed by any of the residents in Philadelphia. Further research of any diaries or letters that have been preserved from this time period will need to be done before I can give any solid evidence that his recommendations were followed by the residents of Philadelphia. However, it can be noted that William Currie had published his 1793 treatise through a prominent Philadelphia book printer, Thomas Dobson. J. M. Powell has noted that Currie delivered his manuscript to Dobson on September 4, 1793, and that Dobson, “put his printers to work at once. In two days he had set up and issued a pamphlet of thirty-six pages...it was the first authentic handbook people had.”⁹⁷ After the epidemic, Dobson printed numerous fever treatises from different authors including, Benjamin Rush’s, *An Account Of The Bilious Remitting Yellow Fever*, Dr. Isaac Cathrall’s yellow fever treatise, *A Medical Sketch Of The*

⁹⁵ Currie, *A Description of the Malignant, Infectious Fever*, 12-13.

⁹⁶ Powell, *Bring Out Your Dead*, 82.

⁹⁷ *Ibid.*, 82.

Synochus Maligna, Or Malignant Contagious Fever, and William Currie's 1794 treatises, *A Treatise of the Synochus Icteroides, or Yellow Fever* and *An Impartial Review Of That Part Of Dr. Rush's Late Publication, Entitled "An Account Of The Bilious Remitting Fever*. Dobson even printed several editions of Benjamin Rush's, *Medical Inquiries and Observations*. Further evidence to support a wide readership of Currie's 1793 treatise is that it was advertised for sale in the pages of Philadelphia's newspaper, *The Federal Gazette*. While we do not know how influential his 1793 treatise was upon the restructuring of the sick room in private homes, by being published by a prominent book printer and being advertised in *The Federal Gazette* this handbook, as Powell called it, was accessible to all interested parties.

The next challenge came after the fever outbreak had ended with the coming frosts in November and December of 1793. For the survivors of the outbreak attention turned from coping with the fever to prevention tactics intended to keep the fever from returning to Philadelphia's wharves and docks. Much like the origin of yellow fever created fractures in the medical community, the arguments over preventative measures, such as the creation of a quarantine station, also led to division both within the medical community as well as amongst the general population of the city of Philadelphia following the 1793 epidemic. Historians, including Simon Finger, Alex Chase-Levenson, David S. Barnes, and numerous others, have attempted to break down the many points of views and arguments that were raised either for or against the installment of a quarantine stations both in the Atlantic world and especially in early America. Martin S. Pernick, Simon Finger, and Thomas Apel all noted that the division seemed to occur along political lines with Federalists calling for the creation of a quarantine station located outside the city while their opponents, the Democratic Republicans, raised concerns that the

station was only a means for the Federalists to control the local market economy in Philadelphia. Other historians, including Erwin Ackerknecht, Edward T. Mormon and David S. Barnes, have taken a different approach to the question of quarantine in early America instead focusing on the primary objectives of the quarantine station from screening incoming ship passengers and sailors to the inspection of porous materials as potential sources of contagion being brought into Philadelphia.⁹⁸ But what gets lost in the story of quarantine is the logical arguments that members of the medical community put forward in order to create such a public health edifice based on contemporary theories of disease transmission. Quarantine and lazaretto stations had been in use prior to 1793 in other areas of the Atlantic World and they would serve as a foundation for the officials in Philadelphia but physicians, such as William Currie, saw an opportunity to revamp the quarantine station into one that not only prevented the fever contagion from entering the city but also allowed for the proper care of any who showed signs of illness and sterilization of porous materials that could carry the “human effluvia” into the city. As mentioned above, the Philadelphia government attempted to institute a type of ship inspection system to prevent the introduction of disease into the city which, ultimately, failed. William Currie now saw a chance to update an aged and inefficient public health system.

⁹⁸ For more information on the discussion of quarantine in the Atlantic World see Thomas Apel, *Feverish Bodies, Enlightened Minds: Science and the Yellow Fever Controversy in the Early American Republic* (Stanford: Stanford University Press, 2016); Erwin H. Ackerknecht, “Anticontagionism Between 1821 and 1867,” *Bulletin of the History of Medicine* 22, No. 5 (1948): 562 - 593; David S. Barnes, “Cargo, ‘Infection,’ and the Logic of Quarantine in the Nineteenth Century,” *Bulletin of the History of Medicine* 88, No. 1 (2014): 75 - 101; Alex Chase-Levenson, *The Yellow Flag: Quarantine and the British Mediterranean World, 1780 - 1860* (New York: Cambridge University Press, 2020); Simon Finger, *The Contagious City: The Politics of Public Health in Early Philadelphia* (Ithaca: Cornell University Press, 2012); Mark Harrison, *Contagion: How Commerce Spread Disease* (New Haven: Yale University Press, 2012); Martin S. Pernick, “Politics, Parties, and Pestilence: Epidemic Yellow Fever in Philadelphia and the Rise of the First Party System,” *The William and Mary Quarterly* 29, No. 4 (1972): 559 - 586; Edward T. Mormon, “Guarding Against Alien Impurities: The Philadelphia Lazaretto 1854 - 1893,” *The Pennsylvania Magazine of History and Biography* 108, No. 2 (1984): 131 - 151; Billy G. Smith, *Ship of Death: A Voyage That Changed the Atlantic World* (New Haven: Yale University Press, 2013).

Much like his 1793 malignant fever treatise William Currie's next treatise, published in 1794, was written in a manner that was easy to understand for all literate citizens of Philadelphia. And much like his sick room recommendations from his 1793 treatise, his *Treatise on the Synochus Icteroides* laid out his prevention protocols in a clear manner for easy understanding and implementation. William Currie, through his writings, was attempting to quell the potential unease that such a massive institution might have evoked amongst the citizens of populous cities as noted by historian, Kira Newman,

throughout outbreaks, the government asserted that plague control measures were acts of public health for the benefit of all...contrary to this government narrative of disease prevention there was a popular narrative that portrayed quarantine and isolation as personal punishment rather than prudent policy.⁹⁹

By creating a detailed discussion of his quarantine and isolation protocols William Currie was attempting to change the public's perception on public health and pave the way for acceptance of such institutions as the Philadelphia lazaretto.

It is in the language used to discuss the quarantine station and isolation rooms that we see William Currie's attempts to portray such imposing infrastructures in a positive light thus making it seem as if they would create a comfortable environment for anyone who might be sick while traveling aboard ships from foreign ports. William Currie's system called for the creation of four large hospitals erected at a "convenient distance" from the city. These hospitals were to have large, airy apartments equipped with windows that slid open and shut to allow for adequate exposure to clean, pure air as well as the effective removal of the foul air from the patient's room. The individual buildings were given a specific designation,

⁹⁹ Kira L. S. Newman, "Shutt Up: Bubonic Plague and Quarantine in Early Modern England," *Journal of Social History* 45, No. 3 (2012): 810.

one of these hospitals to be appropriated for persons with dubious symptoms. A second for persons manifestly infected. A third for convalescents from the disease. A fourth for purifying the body, the wearing apparel, and bed clothes.¹⁰⁰

Amenities including baths and fresh clothes were to be provided to the patient and the facilities were to remain clean and sanitary to prevent transmission of the contagion from the patient to either another patient or the hospital attendants. Here we see Currie's attempts to portray the quarantine station as a beneficial institution that will keep fever from entering the city while also caring for those travelers afflicted by a foreign disease.

It is curious to note that in this section of his 1794 treatise William Currie does not attempt to establish guidelines on the sterilization of incoming foreign ships or any porous materials that may be present within their holds. Within the pages of both his 1793 and 1794 treatises, William Currie has noted several times that porous materials held the potential of carrying infected human effluvia from a fever patient to an unexposed citizen in the city of Philadelphia. So why did he choose to forego discussion on possible protocols to sterilize porous goods aboard foreign ships? Currie's 1794 treatise, much like other publications at the time, was to be made available to the citizens of Philadelphia, not just the members of the medical community or the local government. As such it is possible that he did not include such a discussion because this particular treatise, which was geared towards the average literate citizen of Philadelphia, was more concerned with how incoming travelers were going to be treated than the inanimate ships they traveled in. Including a quick discussion of a building used for the purification of body, apparel, and bed clothes, including the need to have fumigating materials

¹⁰⁰ Currie, *A Treatise on the Synochus Icteroides*, 73-74.

available for use, might have been his way of implying that the fourth hospital could take on the role of purifying all porous materials, including goods within the holds of the foreign ships.

However, William Currie was not naive about the efficacy of quarantine stations and their protocols in the prevention of fever infiltration. He knew very well that fever would break out in the city in the future. Immediately following his section on the creation of a hospitable quarantine system Currie put forward a series of isolation protocols that were meant to “prohibit all intercourse between the sound and infected; and to commit the diseased to the care of persons commissioned for that purpose.”¹⁰¹ Much like Currie called for the creation of four buildings for the quarantine station he also called for the construction of infirmary apartments to be built some distance from the city, at the public’s expense, and “on dry and elevated situations, particularly on the high and gravelly banks of rivers or constant streams of water, open on all sides to the free access of the air.”¹⁰² These infirmaries were to be made available to all inhabitants of the city unless they had such means as allowed them to convalesce in a private infirmary at their own expense. The afflicted person’s home was then to undergo purification while they resided at the infirmary. Even discussion of the purification of an afflicted patient’s home was presented in such a manner as to evoke a desire to prevent disease while not destroying a citizen’s personal property.

The process by which William Currie intended for personal property of an afflicted fever patient, once they had been removed to the infirmary apartments, focused on three practices: the application of heat; fumigation techniques; and the use of a lime-wash on the walls, floors, as

¹⁰¹ Ibid., 75.

¹⁰² Ibid., 76.

well as all porous materials, including bedding and clothes. Early fumigation practices that had been recommended for the sick room during the 1793 outbreak were now meant to be used to sterilize potentially contagion-infested materials in future outbreaks of fever. Currie recommended,

The bedding and wearing apparel being hung on lines across the room, iron pots placed on bricks in the centre, and at each corner of the chamber or apartment should be nearly filled with alternate layers of powdered sulfur or nitre, and charcoal. . . the fireplace being previously closed, and the windows shut down, is to be set on fire, and then the door to be shut.¹⁰³

No one was to enter the room again, unless to relight the fires, for three to four days upon which the door, windows, and chimney were opened, and fresh air allowed to circulate for at least a “fortnight.” If this process had been completed as he directed Currie believed that “every particle of contagion will be perfectly extinguished.”¹⁰⁴ To further extinguish any possible contagion particle in the home the walls and floors were to be white-washed with lime, a portion of which was to be thrown into the privy.¹⁰⁵ Nowhere within this section of his treatise does Currie recommend the destruction of private property instead insisting that with proper fumigation, and sterilization, techniques the home and property could be made safe for human use once the patient had recovered and returned home.

But the idea of strengthening the quarantine protocols for the city of Philadelphia as well as other port cities along the coast of America was not seen as a necessity for the improvement of public health among certain people. William Currie’s main rival, Dr. Benjamin Rush, was quite

¹⁰³ Ibid., 81.

¹⁰⁴ Ibid., 82.

¹⁰⁵ Ibid., 81- 82.

outspoken on what he deemed an institution based on superstition instead of scientific fact. In subsequent letters following outbreaks of fever in 1799 and 1803, Rush called America's quarantine laws as "absurd, expensive, vexatious, and oppressive to a degree."¹⁰⁶ Citing rising arguments among the merchant community of America's port cities Rush stated that

the commerce of our country has suffered greatly by our absurd quarantine laws of different states. These laws, which admit the contagious nature of our American yellow fever, have produced a reaction in the governments of Europe which has rendered our commerce with the cities of Europe extremely expensive and oppressive.¹⁰⁷

But his true disdain was directed at those members of the government and medical communities who continued to believe in the importation of yellow fever from foreign ports. "I feel the same pity and contempt for men in company who defend the importation of the yellow fever that I do for the settlers in New England who believed in witchcraft," Rush stated in a letter to fellow miasmatist, Noah Webster.¹⁰⁸ Similar sentiments appear in a later letter to Thomas Jefferson in 1803 where, again, Rush assures Jefferson that, "posterity will view them in the same light that we now view horseshoes at the doors of farmers' houses to defend them from witches."¹⁰⁹ Instead of falling prey to the superstition of an imported fever, Rush instead called for a city-wide clean up system meant to sweep away the rotting vegetation that he perceived to be the point of origin for yellow fever.

¹⁰⁶ Benjamin Rush to Thomas Jefferson, Philadelphia, August 5, 1803, in *Letters of Benjamin Rush, Vol. II*, ed. L. H. Butterfield (Philadelphia: American Philosophical Society, 1951), 872 - 873.

¹⁰⁷ Benjamin Rush to James Madison, Philadelphia, June 23, 1801, in *Letters of Benjamin Rush, Vol. II*, ed. L. H. Butterfield (Philadelphia: American Philosophical Society, 1951), 835 - 836.

¹⁰⁸ Benjamin Rush to Noah Webster, Philadelphia, June 20, 1799, in *Letters of Benjamin Rush, Vol. II*, ed. L. H. Butterfield (Philadelphia: American Philosophical Society, 1951), 811 - 812.

¹⁰⁹ Benjamin Rush to Thomas Jefferson, Philadelphia, August 5, 1803, in *Letters of Benjamin Rush, Vol. II*, ed. L. H. Butterfield (Philadelphia: American Philosophical Society, 1951), 872 - 873.

The general cleanliness of the city of Philadelphia, as well as other American cities, was the main objective for Benjamin Rush. In his 1799 treatise, *Observations Upon The Origin of the Malignant Bilious, or Yellow Fever in Philadelphia*, Rush laid out his own guidelines for the prevention of future outbreaks of fever within the city. Much like William Currie did in his own writings, Rush created a simple and easy to understand list of recommendations that he believed would rectify the miasmatic nature of yellow fever and keep it from appearing again in future years. First and foremost, Rush advised that

the docks be immediately cleaned, and let the accumulation of filth in them, be prevented in future, by conveying water into them by a passage under the wharves, or by paving them with large flag stones inclining in such a manner towards the channel of the river, as that the filth of the streets shall descend from them into the river.¹¹⁰

He also recommended that all Philadelphia ships be outfitted with ventilators, the sewers and gutters be frequently washed out with streams of waters from the pumps, filth should be removed from the yards and cellars, along with the prohibition of erecting new houses in the alleys of the city. By improving the cleanliness of the city streets and docks, in conjunction with better dietary habits, Rush believed that yellow fever would not arise again within the city.¹¹¹ But this leads to the question of why William Currie chose not to suggest similar measures in his own writings, especially since he did admit that putrefying vegetation was deleterious to the atmosphere in Philadelphia.

Put simply William Currie believed that city sanitation would not be enough to restore the vivifying principle of the atmosphere and prevent an appropriate medium for the fever contagion to spread through. In his writings, William Currie did note that “the quantity of animal and

¹¹⁰ Rush, *Observations Upon the Origin of the Malignant Bilious, or Yellow Fever*, 21.

¹¹¹ *Ibid.*, 21-27.

vegetable substances in a state of putrefaction, which cover or are mixed with the soil”¹¹² robbed the atmosphere of its vivifying principle, or pure air. But rotting vegetation was not the only source of corruption in the city, combustion from cooking fires along with the exhalations from animal bodies, human bodies included, trapped in the enclosed, unventilated streets of Philadelphia all took away the pure, clean air of the city and created the appropriate situation for fever to propagate and spread from one person to another. Take away the rotting matter the very infrastructure of the city as well as its inhabitants would still corrupt the air. For Currie, the best way to keep fever from spreading through the city again was to attempt to keep it from reaching this corrupted environment, and if that failed separate the exposed from the non-exposed to decrease the mortality of the disease. Therefore, Currie strongly advocated for a better quarantine and isolation system in the form of quarantine hospitals and isolation infirmary apartments. All situated some distance from the city but set up so that the patient and their families could recover in comfort.

Both during and after the outbreak of yellow fever in 1793, different groups of people worked to fix the inadequate public health systems of Philadelphia. The Guardians of the Poor, followed by the Committee to Attend to and Alleviate the Sufferings of the Afflicted with the Malignant Fever, established a hospital located outside of the city of Philadelphia strictly for fever patients, which became necessary after the Pennsylvania Hospital and Almshouse refused to admit any fever patients into their wards. Despite falling into disrepair after its initial set up at Bush-Hill, the hospital was able to successfully treat patients suffering from fever at the time. Unfortunately, its reputation as a “human slaughter-house” continued even after sanitary and

¹¹² Currie, *A Treatise on the Synochus Icteroides*, 71.

supply improvements had been undertaken by the Committee and the condition of the hospital wards were noticeably improved. After the outbreak had ended with the appearance of frost in November, William Currie and the College of Physicians deemed that it necessary to fix the ship inspection system that failed to keep yellow fever from arriving on Philadelphia's shores. Currie put forward, in a manner that was easy to understand for citizens of Philadelphia, a series of public health improvements including the creation of a series of quarantine hospitals located outside the city, the creation of isolation apartments in case fever still managed to make its way into the city, and sterilization and fumigation techniques that could be used to minimize property damage within the city. While other members of the city, like Benjamin Rush, believed that quarantine harmed the economy more than it helped to prevent the spread of fever and was based on superstitious nonsense, Currie and the College held fast to the belief that this was the only way to effectively keep the mortality rate of yellow fever to a minimum even though it was only after several more outbreaks of fever that the city of Philadelphia finally agreed to implement Currie's quarantine recommendations.

Conclusion

The creation of the quarantine system in Philadelphia was a slow process. It took several years and numerous outbreaks of yellow fever before a system was officially authorized by Philadelphia mayor, Matthew Clarkson. Calls for a quarantine system were raised not only by William Currie and his supporters, but also by the very organizations that witnessed each

outbreak and its effects upon the city of Philadelphia. The Committee to Attend to the Malignant Fever were

of opinion that a health office, upon a more extensive plan than the present, is of the greatest importance, and that the residence of the officer and physicians should be at a suitable distance below the city...easily accessible by land and water, together with requisite building for the accommodation of those who may be attacked by malignant disorders in future...the increasing trade of the city, and the great number of people who are daily arriving from all parts of the world, expose us to every species of infection that prevails in other places.¹¹³

The College of Physicians were also of the opinion that a Board of Health needed to be established that “they shall have full power to do everything necessary respecting the quarantine to be performed by vessels arriving in this Port,”¹¹⁴ effectively replacing the previous ship inspection system that had been impeded by a dilution of power among different governmental bodies. Now all authority to inspect and quarantine incoming ships was to be held by one office, the Board of Health. Clarkson finally authorized the refurbishment of the Marine Hospital on State Island, in Tinicum Township, into a quarantine station for incoming ships in 1797.

Unfortunately, the refurbishment of the Marine Hospital into a quarantine station did not completely follow the guidelines of William Currie. There was one large main building that served as the hospital for travelers who displayed signs of fever instead of the four-building system that Currie had discussed in his own guidelines. But, as Simon Finger stated, the building and surrounding area was constantly improved to make it as inconvenient as possible for anyone who had to remain on the premise during the quarantine process by repairing “ wharves, fences,

¹¹³ Committee to Attend to the Malignant Fever Minutes, 30 October 1793, Historical Society of Pennsylvania (Philadelphia, Penn).

¹¹⁴ John Redman to Thomas Mifflin, Philadelphia, August 18, 1797, in *Proceedings of the College of Physicians of Philadelphia relative to the Prevention and Spreading of Contagious Diseases* (Philadelphia: Thomas Dobson, 1798) 18, in “Harvard University Library Open Collections Program,” <http://ocp.hul.harvard.edu/contagion/yellowfever.html>.

and buildings...The board of health monitored the work, constantly requesting further improvements and immediate correction to broken lights, damp rooms...even hired a gardener to help cultivate food on State Island to feed the lazaretto.”¹¹⁵ Finger further states that by the turn of the century, “residents lived with the system, and visitors took note of its rigor.”¹¹⁶ But this was not the only means by which the city of Philadelphia attempted to prevent recurrences of yellow fever within the city. It does not appear that the Infirmary isolation apartments were ever constructed as recommended by William Currie.

Attempts were made to create a better environment within the city itself. In 1798, a committee was convened to tackle the issue of Philadelphia’s water supply which was still struggling to keep up with the increased demand of the growing city. Besides providing water for consumption by the residents of Philadelphia there was also a call for water to be used to flush the streets of the city removing waste materials and putrefying matter that, both William Currie and Benjamin Rush believed, was contributing to the recurrence of fever within the city. To tackle this situation the committee turned to recent British emigre and architect, Benjamin Latrobe, who designed a steam pump delivery system that transported water from the Schuylkill River to a storage tower. From there the water would be delivered through a gravity system to the residents of Philadelphia. This system opened in 1801 and ran for about a decade before it was replaced with a more efficient system in 1811.¹¹⁷

¹¹⁵ Finger, *The Contagious City*, 148.

¹¹⁶ *Ibid.*, 149.

¹¹⁷ *Ibid.*, 154.

Even though William Currie's recommendations were not entirely followed by the Board of Health or the local government in Philadelphia, this episode in early American history demonstrates that the argument of quarantine and isolation practices in early American ports have been severally flattened by the use of modern labels to denote opposing theories on the nature and spread of fever. By removing these labels and looking at epidemics, such as the yellow fever outbreaks in the 1790s, we can see that these arguments over theory were much more complex and encompassed discussion of the role of urban infrastructures in the propagation and spread of disease. From the enclosed, un-ventilated streets of Philadelphia that trap noxious exhalations and diminish the vivifying quality of the air, as discussed by William Currie, to the presence of rotting matter along the wharves and quays of Philadelphia's port system, mentioned by Benjamin Rush, we can see that theories on the spread of fever focus on an external factor that creates a specific condition promoting the spread of that fever. Can it truly be called a contagious, person-to-person, disease if a specific atmospheric condition is needed for the fever to spread? By labeling doctors, like William Currie, as contagionists, historians have flattened out the complex nature of his arguments based upon his understanding of developing medical theories and first hand observation. This also paints their fever prevention guidelines as very simplistic and old-fashioned.

If the streets of the city are so enclosed that they trap the exhalations from the very residents of the cities themselves, thus corrupting the air just by breathing, then how do you prevent the fever from spreading? The creation of a fever hospital on Bush-Hill and the reorganization of an individual's sick room, along with later attempts to establish an efficient quarantine system all rose from this question. The creation and reorganization of Bush-Hill

hospital into an efficient medical institution, the restructuring of the sick room to improve access to pure air, and the installation of a quarantine hospital system held the dual role of preventing the spread of fever through the streets of Philadelphia while also creating a beneficial environment that promoted the recovery of the fever patient. And all these systems were publicized in a manner that was meant to alleviate the concerns of the residents of Philadelphia and bring them into the discussion as active participants in the process. The labels of modern historians have hidden this intricate web of relationships that arose during a trying time in early American history and one that would continue to reappear with future outbreaks of disease.

Timeline of Events:

- July 1790: Haitian Revolution begins on Saint Domingue
- July 1793: French Ships arrive in Philadelphia's port bringing refugees fleeing Saint Domingue
- August 3, 1793: Dr. Cathrall visited Mrs. Parkinson - sick with fever
- August 4, 1793: Dr. Physick visited unnamed Englishman who perished from fever on the same day
- August 7, 1793: Mrs. Parkinson dies from fever
- August 19th, 1793: First reported fever patient death - Peter Aston
- August 20th, 1793: Mrs. Lemaigre dies due to fever
- August 22nd, 1793: Philadelphia Mayor Matthew Clarkson calls for streets of Philadelphia to be thoroughly cleaned
- August 25th — 26th, 1793: mass evacuation of citizens from Philadelphia
- August 25th, 1793: College of Physicians meet to determine origin of fever
- August 26th, 1793: College of Physicians publishes guidelines to stop the spread of fever, in the Federal Gazette newspaper
- August 29th, 1793: Pennsylvania Governor Thomas Mifflin sends word to Mayor Clarkson calling for enforcement of street cleaning
- August 31st, 1793: Building on Bush-Hill is commandeered to be used as hospital for fever patients by committee for the poor
- September 5th, 1793: House of Representatives and Senate are adjourned till fever epidemic ends
- September 10th, 1793: George Washington and Thomas Jefferson leave Philadelphia (Washington will not return until 6 weeks later)
- September 11th, 1793: Dr. Benjamin Rush publishes treatment protocols as a means for the poor to treat themselves
- September 12th, 1793: Committee to Attend to the Malignant Fever is formed by 10 members of the local citizenry as a means to care for the poor and sick
- October 12th, 1793: Heavy rains noted, believed will drive away the fever by local citizens and doctors
- October 21st, 1793: Citizens begin to return to the city; small surge in new fever patients
- October 25th, 1793: Ships once more enter Philadelphia's ports
- October 26th, 1793: Philadelphia's markets reopen
- October 30th, 1793: Committee to Attend to the Malignant Fever submits recommendations upon Governor Mifflin's request about prevention of future epidemics: it is highly recommended that a quarantine station be established
- November 5th, 1793: Doctor Benjamin Rush resigns from College of Physicians
- 1793: Dr. William Currie publishes *A description of the malignant, infectious fever prevailing at present in Philadelphia; with an account of the means to prevent infection, and the remedies and method of treatment, which have been found most successful*

- Dr. Benjamin Rush publishes *An enquiry into the origin of the late epidemic fever in Philadelphia: in a letter to Dr. John Redman, president of the College of Physicians, from Doctor Benjamin Rush*
- 1794: Yellow Fever strikes Philadelphia
 - Dr. Benjamin Rush publishes *An account of the bilious remitting yellow fever, as it appeared in the city of Philadelphia, in the year 1793.*
 - Dr. William Currie publishes *An impartial review of that part of Dr. Rush's late publication, entitled "An account of the bilious remitting yellow fever, as it appeared in the city of Philadelphia, in the year 1793, which treats of the origin of the disease." In which his opinion is shewn to be erroneous; the importation of the disease established; and the wholesomeness of the city vindicated; and A treatise on the synochus icteroides, or yellow fever; as it lately appeared in the city of Philadelphia. Exhibiting a concise view of its rise, progress and symptoms, together with the method of treatment found most successful; also remarks on the nature of its contagion, and directions for preventing the introduction of the same malady, in future*
- 1794: Board of Health is created; several members come from the College of Physicians
- 1796: Yellow Fever strikes Philadelphia
- 1797: Yellow Fever strikes Philadelphia
- 1798: Yellow Fever strikes Philadelphia
 - Philadelphia establishes public waterworks to cleanse city of waste
- 1799: Mayor Clarkson approves commissions request to establish Lazaretto on Tinicum Island
- 1801: Lazaretto on State Island is opened; begins the process of investigating all incoming ships for signs of illness

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Abbreviations

HSP Historical Society of Pennsylvania
Philadelphia, Pennsylvania

LCP Library Company of Philadelphia
Philadelphia, Pennsylvania

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