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Sarah E. Naramore
I SING THE BODY REPUBLIC: HOW BENJAMIN RUSH CREATED AMERICAN MEDICINE

Abstract

by

Sarah E. Naramore

In this dissertation I argue that Philadelphia Physician Benjamin Rush (1746-1813) merged medical and political theory in an unprecedented matter to form a concept of biological citizenship for the United States in the years following independence from Great Britain. A graduate of the University of Edinburgh's medical school, Rush began his career in 1769 as one of the few elite colonial physicians who held an MD degree. By the time he died in 1813, however, Rush publicly rejected the medicine he had learned in Scotland. He claimed to have created a new system predicated on simple physiological concepts adjusted to meet the needs of the young republic. In doing so he created an American medicine which had implications far out stripping the comparatively narrow purview of twenty-first century medical practice.

Historically Rush's legacy has been fragmented into the histories of medicine, psychiatry, American political history, social history, and the history of reform movements. This informs the question this dissertation seeks to answer: Rush is a perennially-cited
player in the history of medicine and that of the early United States, why? He was not the only Scottish-educated American physician nor the only member of a medical faculty; yet, his work stands out in a way which that of his contemporaries does not. To recover Rush's significance and role in the development of early American medicine this project reflects the scope of his intellectual inquiry independent of modern disciplinary boundaries.

Rush's status as the American physician between 1790 and 1813 is explained through several characteristics of his work. He achieved his status by becoming an important synthesizer of knowledge both local and foreign. Rush participated in a trans-Atlantic network of physicians, improvers, and intellectuals through personal correspondence and shared publications. In particular he leveraged the work of neo-Hippocratic colonial practitioners in the tropics to claim that the United States had a unique environment. Unlike the hot West Indies or cool Britain, the United States was unified by its variability. In order to succeed as an independent republic populated by moral and rational citizens new institutions were required to promote the country's development and to correct mistakes manifest in immorality, filth, and disease. Rush promoted hybrid political and medical projects some, but by no means all, of which might be considered “public health.” In other instances – like public education, temperance, and personal hygiene -- he used medical theory to make claims about individual choice and the reciprocal relationship between body and society.
For Nathan
Contents

Figures...........................................................................................................................................v

Tables.............................................................................................................................................vii

Acknowledgments..............................................................................................................................viii

Chapter One: Introduction..................................................................................................................1
  1.1 Benjamin Rush from the Perspective of the Twenty-First Century....................................4
  1.2 Benjamin Rush in his own time.........................................................................................16
  1.3 The World of Benjamin Rush..........................................................................................30
  1.4 Chapter Outline..................................................................................................................43

Chapter Two: "A Republican in Medicine"....................................................................................47
  2.1 Colonial Roots..................................................................................................................49
  2.2 Scottish Medicine.............................................................................................................58
  2.3 Rush in the Capitals.........................................................................................................78
  2.4 Independent Medicine.....................................................................................................85
  2.5 Conclusion.........................................................................................................................97

Chapter Three: "Uniformly Variable".............................................................................................99
  3.1 Volney, Rush, and the American Climate..........................................................................105
  3.2 Networks of Knowledge..................................................................................................112
  3.3 Medical Journals and Associations..............................................................................122
  3.4 Putting Local Knowledge to Work................................................................................127
  3.5 Conclusion.........................................................................................................................140

Chapter Four: Toxic Geographies................................................................................................142
  4.1 The American Fever.........................................................................................................149
  4.2 A Slow-Moving Crisis......................................................................................................168
  4.3 Conclusion........................................................................................................................185

Chapter Five: Variations on a Theme............................................................................................187
  5.1 The Americans.................................................................................................................192
  5.2 The Republican Woman....................................................................................................212
  5.3 Barometers of Civilization..............................................................................................226
  5.4 Conclusion........................................................................................................................237
Chapter Six: "The Likeness of God Himself".................................................................239
  6.1 American Education..............................................................................................243
  6.2 The Pennsylvania Hospital..................................................................................267
  6.3 "Laboratories of Poison"....................................................................................279
  6.4 Conclusion...........................................................................................................289

Chapter Seven: Conclusion.........................................................................................292

Bibliography..................................................................................................................298
FIGURES

Figure 1-1 Proportion of total mentions of medical authorities in student notebooks by region as surveyed by the author.................................................................21

Figure 1-2 Total number of letters received by Rush each year as surveyed by the author ..................................................................................................................27

Figure 1-3 Proportion of total letters received by Benjamin Rush by region as surveyed by the author........................................................................................................28

Figure 2-1 Timeline of Benjamin Rush's time at the University of Edinburgh, London, and Paris based on his correspondence and autobiography...........................................69

Figure 2-2 Medical Graduates from the University of Pennsylvania by State (1791-1813) for those students with a home state listed on their records at the University of Pennsylvania Archive..................................................88

Figure 3-1 Volney's Journey in 1796 from the Delaware River to Albany, New York, estimated from View of the Climate and Soil of the United States of America (1804).................................................................108

Figure 3-2 Publication life-span of Early American medical journals in print during Benjamin Rush's lifetime........................................................................................................125

Figure 3-3 Distribution of article authors in the United States from the American Medical and Philosophical Journal (1811-1814), Philadelphia Medical and Physical Journal (1804-1808), Philadelphia Medical Museum (1805-1811), and New York Medical and Philosophical Journal (1809-1810)....................................................................................126

Figure 4-1 American municipalities with at least one published report of yellow fever, 1790-1811................................................................................................................157

Figure 4-2 Image of patients suffering from cretinism in the mountainous state of Styria, Austria. Fraz Sartori (publisher) Oesterreichs Tibur, oder Natur- und Kunstgemälde aus dem oesterreichischen Kaiserthume, Vienna (1819) Wikimedia Commons, public domain.................................................................172

Figure 4-3 Locations identified as having high rate of goiter according to Benjamin Smith Barton, A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America (1800).................................................................180
Figure 6-1 Wedding portrait of Mrs. Benjamin [Julia Stockton] Rush (1759-1848) by Charles Wilson Peale 1776........................................................................................................263

Figure 6-2 An early nineteenth-century etching of the Pennsylvania Hospital viewed from the corner of Pine and 8th Streets. "Insane" patients were housed in the wing on the left side of the image after 1796. National Library of Medicine, Public Domain, http://collections.nlm.nih.gov/catalog/nlm:nimuld-101394075-img....275
TABLES

Table 1-1 Collection of Medical Student Notebooks Used in this Dissertation from the Kislack Center for Rare Books and Manuscripts at the University of Pennsylvania (KCRBM) and the Historical Medical Library at the College of Physicians of Philadelphia (CPP)..................................................................................................................18

Table 1-2 Medical Faculty of the College of Philadelphia (1765-1791), University of the State of Pennsylvania (1780-1791), and University of Pennsylvania (organized 1791).........................................................................................................................................37

Table 1-3 Original Members of the Academy of Medicine of Philadelphia (1798)........40

Table 2-1 List of Rush's Peers Cited in Student Notebooks (1789-1813) in which a "peer" is considered any practitioner born within ten years of 1745.........................................................84

Table 2-2 List of most frequently-cited authorities, appear in ten or more notebooks, in student notebooks (1798-1813)........................................................................................................85
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CHAPTER ONE:

INTRODUCTION

In his poem "I Sing the Body Electric" Walt Whitman presented a view of human bodies in dynamic harmony with themselves and their surroundings. This dissertation, "I Sing the Body Republic: How Benjamin Rush Created American Medicine" argues that Philadelphia physician Benjamin Rush (1746-1813) proposed a similarly expansive and relational view of human bodies at the turn of the nineteenth century. Rush's vision did not possess the lyricism of Whitman's poem but he did create a medical identity for the United States based on dynamic interactions between bodies, society, and physical space.

Rush is a problematic figure in the history of American medicine. In the two centuries since his death he has been alternately praised and reviled by physicians and professional historians. Some have considered him a medical innovator and leader while others see him as unoriginal and ultimately harmful to a progressive historical narrative of American medicine. Both views limit Rush to his legacy rather than his significance during his lifetime. This is an oversight. Rush introduced to the medical profession a view of the United States as a unique biological space which could not be untangled from its unusual political situation. Within his lifetime Rush was considered the American doctor. He was the man who not only signed the Declaration of Independence, but also declared biological

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1 Benjamin Rush was born on December 24, 1745 O.S. for the sake of simplicity, I defer to the Gregorian calendar for dating Rush's age which moves his date of birth to January 4, 1746. Both dates are used interchangeably in the Rush literature.
independence. He asserted that American men of science needed to study and make sense out of their own situation for the good of the republic. The literal survival of the country, in his mind, rested in the kind of useful knowledge compiled by physicians.

Like the poem to which it alludes, this project, and Rush's work, must be understood in terms of mutual relationships. In the case of Rush's American medicine both terms "American" and "medicine" are equally important and help define the other. His fractured interests and fractured legacy are an artifact of the nineteenth and twentieth centuries which split the vast projects of eighteenth century medicine into the distinct disciplines of medicine, psychiatry, and public health. In the years during and following the American Revolution Rush's ideas and actions formed a unified program for national improvement ignorant of the professionalization and specialization which was to come. He shifted a generation of medical minds to think of the citizens of the United States as Americans in need of a biological as well as political identity. Americans, in this sense, suffered from certain kinds of diseases, ate certain kinds of food, lived with unique mental stresses, and improved their situation through the action of public institutions. Before the Revolution, they had been Britons living in North America. After it, they were Americans living in the United States. Rush, and his fellow citizens would learn about themselves and shape their

2 In this work I take a broad view of the American Revolution as a process which began in the 1760s and did not reach its end point until at least the 1790s with the establishment of social and political patterns which have continued to direct the course of public life in the United States. This builds on work by historians of the American Revolution and Early Republic including, Douglas Bradburn, The Citizenship Revolution: Politics and the Creation of the American Union, 1774-1804 (Charlottesville: University of Virginia Press, 2009); Susan Branson, These Fiery Frenchified Dames: Women and Political Culture in Early National Philadelphia (Philadelphia: University of Pennsylvania, 2001); Jack P. Greene, Peripheries and Center: Constitutional Development in the Extended Polities of the British Empire and the United States, 1607-1788 (Athens and London: University of Georgia Press, 1986); Patrick Griffin, America’s Revolution (Oxford and New York: Oxford University Press, 2012); Paul Douglas Newman, Fries’s Rebellion: The Enduring Struggle for the American Revolution (Philadelphia: University of Pennsylvania, 2012); Peter Thompson et al., State and Citizen: British America and the Early United States (Charlottesville: University of Virginia Press, 2013).
national and political identity through challenges to their own biology. Rush’s American system of medicine promoted the primacy of local knowledge, rejected specific diseases, and emphasized connections between body, mind, and the natural, social, and political environment.

In 1946 historian Richard Shryock argued in the article, “Benjamin Rush from the Perspective of the Twentieth Century,” that Rush’s legacy among physicians and historians of medicine had become more symbolic than substantive. As a remedy, he proposed a historicist re-appraisal of Rush’s work. Shryock demonstrated this approach in the essay and another, "The Advent of Modern Medicine in Philadelphia, 1800-1850," but left the bulk of this work for his colleagues. Over seventy years later, Shryock’s challenge remains largely unfulfilled. Historians and biographers often present Rush as either the “heroic” bleeder responsible for the deaths of patients or the hero-physician, a paradigm of professionalism. Others emphasize Rush’s political and reform activism, view him as the father of American psychiatry, or simply as a signer of the Declaration of Independence.

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1.1 Benjamin Rush from the Perspective of the Twenty-First Century

In recent years Rush's non-medical achievements have garnered the more interest from scholars than his medical theory. A 2017 special issue of *Early American Studies* includes essays reflecting on his position as a political mediator between Federalist and Democratic-Republican factions, an antislavery advocate, and a promoter of common sense, both the pamphlet and the philosophy.\(^5\) In the collection's introductory essay Sari Altschuler and Christopher J. Bilodeau write that "[m]irroring Rush's jumbled legacy, Rush scholarship might be best characterized as a field in a state of energetic yet fractured engagement."\(^6\) They do not, however question the engagement itself nor do they present a plan for un-jumbling that legacy. What made Rush stand out from his distinguished peer group to become the perennially-cited medical and literary figure that his is?

"I Sing the Body Republic " knits these fragments together. It argues that the answer to the Rush problem lies in better understanding the work he produced as an unprecedented fusion of political and medical theory for the United States. In doing so it both rises to Shryock's challenge and benefits from decades of historical scholarship in the history of

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American science and medicine which have emphasized the reciprocal relationship between science and society.

By the high point of his career in the 1790s Rush had developed an American "system" of medicine antithetical to the one in which he had been trained. In the eighteenth-century "systems" characterized medicine. Their creators aspired to marshal reason and observation to discover a unified set of principles which governed health and disease. Rush followed the general pattern of systems and like his predecessors William Cullen, Herman Boerhaave, and Albrecht von Haller used observations in chemistry, physiology, and natural history to direct his theory of disease. Rush's system reverberated through the medical networks to which he belonged and spread throughout the country. By looking carefully at his system in relation to others of the period, and to contemporary challenges to it, this dissertation re-evaluates the role of Rush and of this era in American medical history. I use his system as a means of unifying diverse scholarship and address several facets of scholarship associated with Rush.

By looking at Rush and the world he inhabited, "I Sing the Body Republic" argues that medical theory responded to and helped shape narratives of independence in early American science and medicine. An "American" medicine implied a unique American space which required careful observation and original research by men of science (they were nearly always men). Medicine, in this manner supported the growth of auxiliary "pure" sciences like botany, zoology, and chemistry. Of course, none of this science was without value judgment or social relevance. Science and medicine did not exist in a vacuum; they were patriotic acts at the beginning of the nineteenth century and allowed white Americans to claim the land of north America as their own. This was the case with
medical jurisprudence and what might now be called public health, as suggested by James C. Mohr, as well as in medical topography and public education as discussed in chapters three and six of this dissertation.7

The association between American pride and scientific endeavor is most famously associated with Thomas Jefferson. Historian of science I. Bernard Cohen uses Jefferson as an exemplar American scientist in his argument that science inhabited a lofty space in the eighteenth-century American imagination. Even the Declaration of Independent, he argued, exhibited evidence of prevailing scientific philosophy in the terms "laws of nature" and "nature's laws."8 Jefferson's work in natural history, linguistics, and as a supporter of scientific expeditions occurred in association with his interest in promoting American interests, especially economic interests. Much of the scientific work in Notes on the State of Virginia, for example, denotes important economic advantages of the state from agriculture to navigable rivers to a notorious defense of slavery. Jefferson, however, was far from alone in his promotion of American science as a political and economic tool. In recent years several historians have addressed the centrality of science in the creation of American identity.

Lily Santoro’s 2017 essay in Pennsylvania History, “Promoting the Book of Nature: Philadelphia’s Role in Popularizing Science for Christian Citizen in the Early Republic,” neatly summarizes the state of American science between 1776 and 1840. She notes that “the American context created uniquely American approaches to science” and


that “Philadelphians promoting science for popular audiences emphasized the moral and civil benefits of studying the natural world.” Santoro’s approach addresses the scientific, political, and social aspects of knowledge production in the American Republic. In doing so she argues that American science benefited from a complex interaction between religion, scientific institutions, and the state to promote the idea of a well-informed and moral society.

In another recent essay, Conevery Bolton Valencius, David I. Spanagel, Emily Pawley, Sara Stidstone Gronim, and Paul Lucier address the territorial nature of American science during this period. Americans expanded the pool of potential scientific contributors through print publications and scientific literacy, a trend reflected in Rush's correspondence networks, as discussed in chapter three of this dissertation. Focusing on printed work these authors survey a diverse collection of scientific work and emphasize its ubiquity throughout the young republic. Their work builds on earlier arguments from scholars like John C. Greene, Brooke Hindle, and Joseph Ewan whose scholarship noted that learned societies and institutions drove the push for useful knowledge, science that could work for the national good. Greene's foundational work, American Science in the Age of Jefferson,

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meanwhile, argues that the period from 1780 to 1820 formed the intellectual and institutional foundation for American science to grow and flourish in the nineteenth and twentieth centuries. The drive for patriotic science, the logic goes, resulted eventually in world class institutions. The argument has become more nuanced and widely explored over time, however the essential insight, the connection between science and patriotism in the early American Republic has remained important and powerful since the book's publication in 1984. Unsurprisingly, Rush is a key figure in this narrative. Although Greene clearly delineates his work and purposefully excludes the history of medicine and the history of technology, recent scholarship, including this project, has brought science and medicine into conversation with one another. Rather than a peripheral discipline, I argue that medicine was central to the development of American science. Medical men consumed and critiqued scientific literature; they adopted scientific theories into medical practice and propagated scientific ideas through their professional networks.

This growing interest has begun to change the narrative surrounding American medical history. By the mid-twentieth century, historians of American medicine were describing the time period which encompassed Rush's professional life as an end point. Rush, in this narrative, concluded a mode of “traditional” western medicine focused on humors and ancient authority which preceded the “modern” medicine of the nineteenth century. This modern medicine was said to come from Europe, especially Paris where

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13 Ibid., 3–4.
many of antebellum America's elite practitioners completed their educations. William Frederick Norwood exemplifies this view, stating "[b]y 1820, American physicians of a new generation awoke to the folly of professional isolation and looked anew toward the medical centers of Europe."\textsuperscript{14} John Harley Warner has since solidified the Parisian narrative in \textit{The Therapeutic Perspective} and \textit{Against the Spirit of System}, which chronicle the revolt against Rush's system in Antebellum America and the drive to adopt the theories of the Paris Clinic.\textsuperscript{15} He places this burden on a later generation of American medical men (and a few women) who trained in Paris during the antebellum period. Parisian-inspired empiricism and clinical pathology, he argues, nullified appeals to rational systems like that of Rush. As such, the eighteenth century often falls out of general narratives on the history of American medicine as being unimportant and lacking in innovation.\textsuperscript{16}

In his recent book on the history of American medicine John Burnham reiterates this view and argues that scientific medicine replaced the “traditional medicine” practiced


by Rush and his contemporaries.\textsuperscript{17} Charles Rosenberg dates this change later in the nineteenth century with the dominance of German bacteriology, the growth of hospitals, and an etiology grounded in specific disease entities.\textsuperscript{18} Scholars focused on institutions and the social history of medicine are likewise drawn to the influence of the Paris clinic and German laboratory medicine.\textsuperscript{19} Paul Starr, for example, views the end of the systems both in America and Europe as a breaking point between medicine of the past and that which leads to the present day.\textsuperscript{20} Rather than assuming that modern American medicine came only from a rejection of systems in the nineteenth-century, I argue that without Rush and his national system the very concept of a distinctive American medicine could not have developed.

"I Sing the Body Republic" considers the late eighteenth century as an influential beginning for a home-grown American medicine. On the one hand, this approach ties American medical theory more closely to debates in biology and physiology of the time. In the 1970s Theodore M. Brown, William Coleman, and E. Benton argued that the end of the eighteenth century marked the transition to a vitalist physiology and away from


\textsuperscript{18} Rosenberg, \textit{Our Present Complaint: American Medicine, Then and Now}, 3.


mechanics as an explanation for the function of living bodies. Although the term "vitalism" can be critiqued as anachronistic for the period, the argument that the turn of the nineteenth century saw physiologists expand their exploration of the body to include non-mechanical explanations for life is certainly true. It also marked a new way of considering diseases as an imbalance or malfunction of unknown forces. Rush's focus on physiology and the balance of the "animal oeconomy" fits within this general framework and anchors it in American medical practice and politics. That Rush perceived the social, political, and religious implications of his physiology is not a new argument. Sari Altschuler and Jacquelyn C. Miller, among others, have demonstrated that his political and social opinions clearly related to his medical theory and practice. Their work, however, neglects the


broader context within which Rush operated, his interactions with the continental medical community as discussed by L.S. Jacyna.

My work also, and more substantially, argues that Rush's emphasis on the importance of the American environment supported arguments for American medical research at the turn of the nineteenth century. This concept is modeled in Benjamin Park's work on Rush and Noah Webster. He addresses their view of the American nation as intimately tied to its geography and to physical alterations of the land. For both men, Park argues, agricultural improvement helped define the American nation.\textsuperscript{25} Jan Goliski and Katherine Arner likewise associate American self-fashioning and intellectual independence with the physical atmosphere and epidemic disease, respectively.\textsuperscript{26}

In some respects, this dissertation provides an American complement to Mark Harrison's argument in \textit{Medicine in an Age of Commerce and Empire: Britain and its Tropical Colonies}. Harrison claims that “imperial wars, territorial annexation, and colonial trade made a deep impact upon British medicine, providing a major stimulus to the emergence of what was known as ‘rational’ or ‘scientific’ medicine.”\textsuperscript{27} As a student and practicing physician, Rush benefited from that spirit which permeated many English-


\textsuperscript{27} Mark Harrison, \textit{Medicine in an Age of Commerce and Empire: Britian and Its Tropical Colonies} (Oxford: Oxford University Press, 2010), 3.
language texts. All four of Rush’s American Editions of British medical works address environmental medicine. Two, Cleghorn and Hillary’s works, explicitly describe diseases of hot colonial climates.

However, inspiration was not pure mimicry on Rush's part. The search for a “modern” and “scientific” medicine in the United States took on a character of its own impacted by its own version of “imperial wars, territorial annexation, and colonial trade.” As Wayne Bodle has noted, the American Revolution led to the breakdown of colonial institutions, especially in the Mid-Atlantic where the early years of the war were chaotic.28 As a Pennsylvanian and medical officer Rush watched his city change hands, friends and family suffer, and the establishment of the radical 1776 Pennsylvania constitution. In the war's aftermath he attempted to reform and rebuild a world which appeared chaotic. Andrew Hook argues that with the decline of the Quaker elite in the mid-eighteenth century, Philadelphia's connections to Edinburgh and the Scottish Enlightenment grew stronger. Social clubs, intellectual institutions, and charitable organizations maintained a Scottish genealogy which flourished in the final decades of the eighteenth century. Physicians, including Rush, were key to this transformation.29 Rush, as noted by Elizabeth Webster, put his faith not in people but in institutions and hoped to shape the next


generation into good republicans who would perpetuate a rational and moderate revolution.\textsuperscript{30}

Finally, it is impossible to discuss Rush without locating him within scholarship on yellow fever. After the 1793 outbreak in Philadelphia Rush's promotion of bleeding and purging as a cure became perhaps his most well-known attribute for both contemporaries and later historians. Scholarship on yellow fever is well-established and multi-faceted. Recent work by Billy G. Smith has traced the journey of \textit{Flavivirus} (the pathogen responsible for the fever) in 1793 from Sierra Leone to the Caribbean and on to Philadelphia on board the British ship \textit{Hankey}. In doing so Smith emphasizes the Atlantic scale of the epidemic using the biological reality of the disease and its vector, \textit{Aedes aegypti} mosquitos.\textsuperscript{31} Other historians focus on the political and social meaning of the disease in the United States, especially the novels of Charles Brockden Brown (1771-1810). Still other scholars, like Eve Kornfeld, focus on medical debates which continued into the early nineteenth century.\textsuperscript{32} Most recently in \textit{Feverish Bodies, Enlightened Minds}, Thomas Apel argues that the yellow fever debates demonstrate the power of rational argument in the American context over purer empiricism. He claims that Rush, Webster, and their allies


constructed a fuller narrative around Yellow Fever as a local production whereas the
importationists stuck to the facts to try and break down the logic of localism. By the 1820s
the logic had won despite a lack of scientific evidence. Neither camp could prove their
theory and, in retrospect, neither was "right." Meanwhile, Martin Pernick’s classic essay
“Politics, Parties, and Pestilence,” associated the fever and medical response firmly with
politics in the United States, a position that continues to drive scholarship either for or
against his reading.33

"I Sing the Body Republic" takes a different approach to Rush's experience with
yellow fever and its meaning in the early American republic. Rather than view it as a site
of professional discord and political hand-wringing, this project follows the lead of William
Coleman in Yellow Fever and the North, Katherine Arner, and Jan Golinski to focus on
what the existence of the fever meant to Rush and his fellow Americans.34 Despite
profound disagreements regarding the disease's origin and the best means of treatment all
physicians could agree that the fever posed an existential threat to the country not only in
the sheer number of deaths but also in the nation's inability to prevent the onslaught.

Benjamin Rush becomes an important historical figure because of the way his work
crossed disciplines. He was ultimately concerned with health in the broadest possible
terms: that of the country. An ailment like yellow fever threatened American success on
several levels, personal, social, environmental, and political. The perceived threats of social

33 Martin S. Pernick, “Politics, Parties, and Pestilence: Epidemic Yellow Fever in Philadelphia and
the Rise of the First Party System,” in A Melancholy Scene of Devastation: The Public Response to the
1793 Philadelphia Yellow Fever Epidemic, ed. J. Worth Estes and Billy G. Smith (Sagamore: Science

34 William Coleman, Yellow Fever in the North: The Methods of Early Epidemiology (Madison,
WI: University of Wisconsin Press, 1987); Arner, “Making Yellow Fever American: The Early American
Republic, the British Empire and the Geopolitics of Disease in the Atlantic World”; Golinski, “Debating
the Atmospheric Constitution: Yellow Fever and the American Climate.”
and mental instability which early American's feared were, in Rush's view, closely related. This dissertation argues that Rush's unique position as a physician, social reformer, educator, and political figure allows a historicist examination of early American medicine as a discipline deeply concerned with the social as well as physical well-being of the country. It also demonstrates that Rush was a foundational figure in the formation of an American medical profession which thought of and continues to think of itself as a distinct from those of other nations and states. The following section details the primary sources used to support these arguments and recreated the medical world of Benjamin Rush.

1.2 Benjamin Rush in His Own Time

"I Sing the Body Republic" adds to the historiography of Rush, American science, and the history of medicine, not only by engaging with existing scholarship, but by using historical resources in new ways. Scholarship on Rush as a medical innovator reaches back to the early decades of the nineteenth century and, in fits and starts, has accelerated since then. This dissertation takes a deep look at some underutilized Rush materials to shed light on some aspects of his career and on the history of American medicine. These include Philadelphia medical student notebooks and Rush's incoming correspondence. While these sources have been used separately as individual items, this project examines them at the collection level. This allows discrete items to become part of a larger whole and traces patterns in Rush's relationships over time.

Medical student notebooks from the College of Physicians of Philadelphia and Kislack Center for Rare Books and Manuscripts at the University of Pennsylvania record
what Rush taught in his theory and practice of medicine courses at the University of Pennsylvania. This project draws on a survey of 34 volumes recorded by 20 individuals between 1790 and 1813, see table 0-1. These notebooks cover Rush's entire tenure as chair of theory and practice at the University of Pennsylvania. In his lectures Rush tested some of his ideas before committing them to print, especially his conviction that the United States could not rely on the work of Scottish theorists (including Rush's professor at the University of Edinburgh, William Cullen (1710-1790) or his contemporary John Brown (1735-1788)). Rush did not "go public" with his rejection of their theories until around 1793, but it appears in notebooks years earlier. Thus, Christopher Heydrick's and William Simontown's notes from 1790 both include early descriptions of Rush's theories of excitement and excitability as key physiological concepts. In the case of quickly-evolving sciences, like chemistry, the notebooks indicate how Rush adapted new knowledge into his work. For example, by 1801 in Samuel Agnew's notes, Rush started to introduce Lavoisier's chemical nomenclature in favor, or alongside, Priestley's phlogiston theory.
TABLE 1-1

COLLECTION OF MEDICAL STUDENT NOTEBOOKS USED IN THIS DISSERTATION FROM THE KISLACK CENTER FOR RARE BOOKS AND MANUSCRIPTS AT THE UNIVERSITY OF PENNSYLVANIA (KCRBM) AND THE HISTORICAL MEDICAL LIBRARY AT THE COLLEGE OF PHYSICIANS OF PHILADELPHIA (CPP)

<table>
<thead>
<tr>
<th>Name</th>
<th>Number of Volumes</th>
<th>Year(s) Recorded</th>
<th>Home State</th>
<th>Archival Repository</th>
<th>Thesis Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Simontown</td>
<td>4</td>
<td>Unknown, 1790s</td>
<td>Unknown</td>
<td>KCRBM</td>
<td></td>
</tr>
<tr>
<td>Christopher Heydrick</td>
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<td>1790</td>
<td>Pennsylvania</td>
<td>KCRBM</td>
<td></td>
</tr>
<tr>
<td>John Spangler</td>
<td>2</td>
<td>1790</td>
<td>Pennsylvania</td>
<td>KCRBM</td>
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<tr>
<td>Hare</td>
<td>2</td>
<td>1796</td>
<td></td>
<td>KCRBM</td>
<td></td>
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<tr>
<td>Elijah Griffiths</td>
<td>1</td>
<td>1797</td>
<td>Pennsylvania</td>
<td>CPP</td>
<td>Ophthalmia (1804)</td>
</tr>
<tr>
<td>John Stevenson</td>
<td>1</td>
<td>1797</td>
<td>Pennsylvania</td>
<td>CPP</td>
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<tr>
<td>Joseph H. Erwin</td>
<td>1</td>
<td>1798</td>
<td>New Jersey</td>
<td>CPP</td>
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<tr>
<td>M. Wallant</td>
<td>1</td>
<td>1798</td>
<td>Unknown</td>
<td>KCRBM</td>
<td></td>
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<td>Samuel Agnew</td>
<td>4</td>
<td>1801</td>
<td>Pennsylvania</td>
<td>KCRBM</td>
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</tr>
<tr>
<td>Russel Clark</td>
<td>3</td>
<td>1801</td>
<td>Vermont</td>
<td>KCRBM</td>
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<tr>
<td>William Jackson Jr.</td>
<td>2</td>
<td>1804</td>
<td>Maryland</td>
<td>KCRBM</td>
<td></td>
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<tr>
<td>Anonymous</td>
<td>2</td>
<td>1804 or later</td>
<td>Unknown</td>
<td>KCRBM</td>
<td></td>
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<tr>
<td>Robert Maxwell</td>
<td>1</td>
<td>1807</td>
<td>Maryland</td>
<td>KCRBM</td>
<td></td>
</tr>
<tr>
<td>James Overton</td>
<td>2</td>
<td>1807-1808</td>
<td>Kentucky</td>
<td>KCRBM</td>
<td>Venesection in typhus (1809)</td>
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<tr>
<td>Constans Curtin</td>
<td>1</td>
<td>1808</td>
<td>Pennsylvania</td>
<td>KCRBM</td>
<td></td>
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<tr>
<td>Henry Powell</td>
<td>1</td>
<td>1809</td>
<td>Unknown</td>
<td>KCRBM</td>
<td></td>
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<tr>
<td>Samuel Franklin Earl</td>
<td>1</td>
<td>1810</td>
<td>Unknown</td>
<td>KCRBM</td>
<td></td>
</tr>
<tr>
<td>George F. Lehman</td>
<td>2</td>
<td>1810</td>
<td>Pennsylvania</td>
<td>CPP</td>
<td></td>
</tr>
<tr>
<td>William Horner (1793-1853)</td>
<td>1</td>
<td>1813</td>
<td>Virginia</td>
<td>CPP</td>
<td></td>
</tr>
<tr>
<td>Thomas Hamilton</td>
<td>1</td>
<td>1814</td>
<td>Georgia</td>
<td>KCRBM</td>
<td>(Benjamin Rush's lectures read by his son Dr. James Rush)</td>
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</tbody>
</table>
Some notes refer to Rush’s published works, especially to "An inquiry into the cause of animal life" (1799, reprinted 1805) in lieu of copying notes. The majority, however, of what they learned in the classroom never appeared in print. Hence notebooks, carefully preserved and often re-copied or rebound, acted as life-long references for former Rush students. In the absence of published textbooks, the notebooks represented a systematic account of Rush’s medical theory. The care given to some of them recalls a much earlier tradition of note-taking in which printed books were a rare or non-existent commodity. They also put Rush in a tradition in which novel information came first to the lecture hall rather than to the printed page. At the beginning of the eighteenth century, Herman Boerhaave in Leiden presented his new chemical and medical systems to his students without producing a textbook. Some of those students appear to have taken matters into their own hands by publishing unauthorized copies of Boerhaave’s work.  

Although this does not appear to have happened with regard to Rush, the Philadelphian’s publication record clearly indicates that ideas and arguments typically appeared in the lectures prior to the printed page. Most of Rush’s work appeared in small pamphlet-sized installments or newspaper and magazine articles, intended for a public audience. Later in life he reprinted many in his four-volume Medical Inquiries and Observations, including the above-mentioned lectures on animal life. Despite their teacher's proclivity for short-form writing, the students recognized and valued his all-

encompassing medical systems, as shown by a poem included in Christopher Heydrick's 1790 notebook.

From fact and Reason we our Practice draw,
The firmest Basis, and the soundest Law,
Whence Nature's powers in fullest Vigour rise,
And dread Disease with all its Phalanx flies.\(^{36}\)

Important as observation and reason were, they did not stand alone. Although Rush was not good at providing references or full footnotes in his published work, he was more transparent in the classroom. Throughout the 34 volumes of notebooks students made reference to over 460 individual medical authorities. Figure 0-1 shows the presence of authors from various geographic locations over time as a percentage of total references. Most of Rush's references came from European sources, overwhelmingly British, which reflects his Scottish education and the fact that he favored works written or translated into English. They also cover a wide time span, from antiquity to the early nineteenth century. Rush's use of authorities varied and is discussed in chapters two and three. Taken as a whole, however, they represent Rush's ties to a wider medical community. To medical students, the knowledge and relationships perpetuated by the notebook citations allowed them to see themselves as American members of a profession which transcended national boundaries.

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\(^{36}\) Christopher Heydrick, "Lecture Notes (1790)" KCRBM, Mss. Coll. 225, Box 12, Item 20, Vol I.
Figure 1-1 Proportion of total mentions of medical authorities in student notebooks by region as surveyed by the author
While student notes provide insights on Rush's classroom and strengthen the chronological arguments of this dissertation they only demonstrate one relationship; that of student and teacher. Correspondence, however, covers a much larger range of relationships from personal to professional, including professional practice. Medical correspondence, including what Wayne Wild calls "medicine-by-post", was a common means of obtaining and disseminating medical knowledge.\textsuperscript{37} Rush's incoming correspondence is preserved in manuscript at the Library Company of Philadelphia/Historical Society of Pennsylvania. It was originally donated by his son James Rush upon his death in 1869, along with their personal libraries, discussed below. This project uses a survey of approximately 3,350 letters sent to Benjamin Rush between 1767 and 1813. These documents comprise a little more than half of the total correspondence collection. Most of the letters were bound into large volumes in the mid-nineteenth century; at least one of these reflects the organizational scheme set down by James Rush (volume 25). Two sections of the collection, volumes 1-20 and 21-26 are arranged alphabetically and include letters from patients, colleagues, former students, and friends. The remaining volumes in the collection, volumes 27-45, are arranged by individual correspondents (Charles and Edward Dilly, Benjamin Waterhouse, Joseph Priestly, etc.) or by subject (yellow fever or "controversial").

In order to observe as wide a range of Rush's correspondence as possible and focus on senders who are historically unknown, this survey included the alphabetical volumes 1-26 and a small selection of the latter volumes including 27-28 and 30-31. By looking at a

large sample of Rush's incoming correspondence I was able to recover the breath of his world and how that world responded to him. In addition to making notes specific to representative letters I recorded the location of each sender, the year each missive was sent, the language in which it was written, the relationship of the sender to Rush (i.e. student, patient, physician), and up to three subject tags.

In general, the volume of Rush's correspondence increased dramatically over time from only a handful of letters in the early 1770s to hundreds per year by the time of his death in 1813, see figure 0-2. Some of the difference likely reflects Rush's or his son's preservation habits. Did Rush hold on to letters with greater care as he aged? By 1800 he certainly believed he had a legacy to protect and he started work on his autobiography, as noted by Catherine Jones.\(^{38}\) On the other hand, the growth in volume is steady and begins in the 1780s, when Rush was still a young man, ambitious but not famous. It is probably safe to say that the trend line does reflect an increase in correspondence sent to Rush in response to his growing reputation and the growing number of former students wishing to maintain an association with their preceptor. Letters from self-identified former students begin to increase after 1790, about 20 years after Rush had begun teaching. The trend of letters from colleagues or otherwise unidentified physicians and patients, meanwhile, match this trend and contribute to the overall growth of correspondence.

There is also an important geographic dimension to Rush's incoming correspondence. Over time the letters reflect a wider geographic reach and consolidate into clear patterns of geographic influence. Figure 0-3 shows the proportional representation of

different regions in Rush's incoming correspondence between 1767 and 1813. The mid-Atlantic states (New York, New Jersey, Pennsylvania, Delaware, and Maryland) are the best represented, followed by the South (Virginia, North Carolina, South Carolina, and Georgia). This mirrors patterns of student enrollment at the University of Pennsylvania which persisted well into the nineteenth century.\(^{39}\) Meanwhile, correspondence from the Caribbean spiked in the 1790s a time when both the islands and mainland North America experienced devastating outbreaks of yellow fever.

Among students and former students (both those who studied with Rush privately and those who attended his lectures only), communication nurtured professional relationships which certainly helped new students find their footing in the American metropolis. Over 100 of the letters surveyed are some form of introduction for a promising medical student arriving in Philadelphia for training, usually from their local preceptor. For example, in 1791 James McClurg, a former Edinburgh classmate of Rush's living in Richmond, Virginia, wrote a letter on behalf of a young man named W. Watkins who was travelling to Philadelphia as, "the first Kentuckian [sic]...who has attempted to prosecute the study of our Profession scientifically."\(^{40}\) Connections fostered by previous preceptor-pupil relationships allowed them to begin their careers with a certain amount of prestige and professional advice. However, the benefit flowed the other direction as well. After leaving Philadelphia students fanned out across the country, many to the south and


\(^{40}\) James McClurg to Benjamin Rush (1791), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XI.
southwest. Another group (although very small one) next travelled to Europe to continue their studies in Edinburgh, London, and Paris like their preceptors. These pupils, armed once more with letters of introduction, served as messengers between their two sets of professors. John Edmonds Stock, for example, conveyed compliments between Rush and English physician and chemist Thomas Beddoes (1760-1808) in the early 1800s. In 1793 James Proudfit commenced studies in London after a voyage to Bengal. Along with silks for Julia Stockton Rush, he sent his former professor a copy of Eusebio Valli's (1755-1816) work on animal electricity, stating "Monsieur Valli is ingenious and indefatigable in his researches." Rush agreed and frequently cited Valli in subsequent work and in the classroom.41

The collection also provides information on who Rush could readily communicate with. Over the course of his career he received letters in English, Latin, French, Spanish, German, and Italian. Based on his correspondence Rush acquired and maintained a working knowledge of French and readily received and responded to letters from Francophone physicians working in France, Italy, and the Caribbean. He also received some patient requests in French from St. Louis in the early nineteenth century.42 Beyond French, however, Rush’s polyphony is spotty and more difficult to recover. Although he received letters in Spanish, Italian, German, and Latin, subsequent letters from the same individuals typically arrived in either French or English. In a few cases translations appear

41 John Edmonds Stock to Benjamin Rush (1806), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXII; James Proudfit to Benjamin Rush (1793), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXVI.

42 James St. Vrains (1807) and Louis Labeaumield (1807) to Benjamin Rush, LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. III.
in the archive next to the original. It is possible that Rush understood some of what he read (certainly with respect to Latin) but could not respond in the same language as well as he could in either French or English.

Linguistic ability, however, did not directly translate into medical interest. Rush shows no evidence of being aware of or interested in new Parisian medical theories and techniques in the first decades of the nineteenth century. Most of Rush's French medical correspondence concerned vaccination programs or treatises on specific diseases and therapeutics. Some of the work Rush was sent from France consisted of translations of Italian, Swiss, and German medical books, again on specific topics. Geographically, his correspondence was as likely to come from Montpellier or the providences as from Paris. Given Elizabeth Williams's characterization of the Montpellier vitalist physiologists as sympathetic to religion and skeptical of pure materialism the fact that the religious and chemically-oriented Rush found common ground with them makes sense. From Rush's perspective one is completely unaware of anything like a clinical revolution happening in Paris. Nor was his French correspondence necessarily from France. In addition to the St. Louis letters, Rush maintained a francophone correspondence with friends and scholars in Virginia, Pennsylvania, New York, New Jersey, Martinique, Saint Domaingue (Haiti), Italy, and Mexico. In short, language ability did not equal interest or awareness on Rush's part.

Figure 1-2 Total number of letters received by Rush each year as surveyed by the author
Figure 1-3 Proportion of total letters received by Benjamin Rush by region as surveyed by the author
These patterns and individual stories are used in all five body chapters of "I Sing the Body Republic" to provide a new perspective to the study of Benjamin Rush. These letters include the voices of correspondents outside the elite circles. Letters composed by Rush and published by L.H. Butterfield serve as an additional source and counter point. They do not, however, include responses to many of the individuals who wrote to Rush. Without a letter book, the bulk of extant outgoing correspondence comes from the papers of his most famous friends and colleagues, including presidents John Adams and Thomas Jefferson. The elite correspondence reinforces narratives of Rush as an influential political player and elite physician, but they mask the full breadth of his importance. They miss correspondence with patients in the American West and former students attached to their preceptor by emotion and pride more than any objective scientific association.

Correspondence and student notes do not form the sole primary source base for this project. As a physician in Philadelphia Rush had access to a wide variety of printed materials, not exhaustive, but certainly enough to feel up to date with medicine and science. His personal library exists largely intact at the Library Company of Philadelphia along with his correspondence, lecture notes, and research notes. For the purpose of this dissertation books published before 1813 (Benjamin Rush's death) are considered as likely belonging to the elder Rush. Benjamin Rush did not systematically sign and date his books. James Rush, on the other hand, carefully signed and dated books which belonged to him. Books with a pre-1813 publication date and a "James Rush 1813" signature are presumed to have been part of his inheritance from his father. The few with either Benjamin Rush's signature, book plate, or inscription referring to him are counted as Benjamin Rush's books.
Other than his personal library Rush had access to a much wider range of publications. As an attending physician at the Pennsylvania Hospital he had access to that institution's library. He was also a member of the Library Company of Philadelphia at least by 1807.\textsuperscript{44} Catalogues from both institutions (as well as similar libraries for comparison) supplement knowledge of which volumes were available to Rush at a given point in time.\textsuperscript{45} They also point to the collective knowledge gathered in Philadelphia at the end of the eighteenth century. Rush was part of a vibrant and at times volatile intellectual community. The next section considers the Philadelphia of Rush's lifetime and his place within it.

1.3 The World of Benjamin Rush

Although Benjamin Rush was always ambitious there was nothing about him in his youth which predicted his role as a medical revolutionary. Despite being Pennsylvanian and a fervent supporter of American independence, his medical pedigree and outlook were those of a Provincial Briton. I discuss the details of his education in chapter two along with


the basic rules which governed his medical system. To summarize, however, Rush studied
privately in Philadelphia under John Redman in the early 1760s and then spent two years
at the University of Edinburgh where he obtained the degree doctor of medicine or,
*Medicinae Doctor* in the spring of 1768. At the University of Edinburgh, he attended
William Cullen's courses in the institutes of medicine, Joseph Black's (1728-1799)
chemistry, anatomy with Alexander Monro, *secudus* (1733-1817), materia medica with
John Hope (1725-1786) and practice of physic [medicine] with John Gregory (1724-1773).
Following his graduation Rush travelled to London to study under William Hunter (1718-
1783) and Richard Huck (1720) and observed hospital practice in Paris before returning to
Philadelphia in the summer of 1769.

This background, especially his time in Scotland, led Rush to think in broad terms
and seek an underlying order following the rational systems of William Cullen and Herman
Boerhaave (1668-1738). These medical systems sought to derive law-like knowledge of
diseases and therapeutics rationally from anatomy, physiology, and medicine's allied
sciences. In addition to medical systems, Rush's medical education incorporated a wide
variety of subjects allied to the practice of medicine, as noted above. Scottish physicians
in the middle of the eighteenth century increasingly saw the social as well as medical value
of their work and stressed these connections with their students. In his book *Doctors and
the Law*, Mohr characterizes the medical school at the University of Edinburgh of the mid-
to late-eighteenth century as "the most prestigious, progressive, and practically-oriented
medical school in the English-speaking world."46 Rush took these lessons to heart when he

returned to the United States, another location ripe for the blending of science and social reform.

When he returned to Philadelphia, the nascent medical faculty of the College of Philadelphia (after 1791 the University of Pennsylvania) appointed Rush to the chair of chemistry. He held the position for twenty years and relied heavily on the chemical theory of his Edinburgh professors Cullen and Black. Rush's association with Cullen in terms of both chemistry and disease theory is well documented. In lectures and in print the American physician described his own work as either a continuation or refutation of his Scottish predecessor. Cullen was undoubtedly an important mentor for Rush and demonstrated an Enlightenment commitment to the pursuit of knowledge for the improvement of society. Cullen, like Rush in later years, took an interest in agricultural improvement and social reform in conjunction with his friend and patron Henry Home, Lord Kames (1696-1782). I argue, however, that Cullen was not the only important figure for Rush. In addition to social and scientific pursuits, Rush considered the moral and Christian aspects of his profession with equal dedication. Moreover, his ambitious reimagining of a Christian American republic of sound mind, body, and morals relied upon his profession's broad moral mandate.

With respect to professional conduct Rush most closely resembled Gregory. Gregory stressed the importance of teaching medicine with an eye to morals and professional ethics and was considered a better Christian in Rush's view than the deist Cullen. In addition to his posthumous book on the education of daughters, Gregory had a broad view on the education of students and encouraged them to consider the welfare of
patients in practice. Physicians needed to be both men of science and men of feeling. The ability to sympathize with a patient, her family, and society at large gave the physician his moral purpose. Rush's students recorded lessons in proper behavior as well as medicine. Elizabeth Webster has argued that morality is central to discussions about American science. She demonstrates that science often contributed to debates about the development of national character and that character stood in for moral behavior.

In teaching, Rush encouraged medical students to practice gentlemanly behavior and act as examples of scientific citizens in their own communities. In this respect, Rush contributed to a larger discussion on the role of the physician in the United States. In the case of medical jurisprudence outlined by Mohr, Rush "was forced to think seriously about the various roles that his own profession might play in the new republic." Mohr argues that Rush's interest was sparked by his role as a political figure during and after the revolution. His educational background and association with peers, however, suggests that his interests in the social dimensions of medicine predate the American war.

The medical profession's public involvement in question of education, improvement, social reform, and medical jurisprudence grew after the turn of the nineteenth-century with the support of Rush, his colleagues, and students. In New York

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State, physicians attempted to support continued medical education through the state medical society. The organization published a circular in 1809 containing instructions for conduct including polite behavior, and collaboration between members. The author and former Rush student, John Stearns (1770-1848), encouraged members to actively support general educational initiatives in their communities.\(^5^1\) He argued that “the medical profession can only be respectable in a well-informed community… as the ignorant and illiterate are the only dupes of empiricism.”\(^5^2\) Another New York physician and Rush’s Edinburgh-educated contemporary, Samuel Bard (1742-1821), stressed the highly visible nature of the medical profession. Another close correspondent of Rush’s, New Yorker David Hosack (1769-1835) encouraged the role medical schools had in disseminating scientific information.\(^5^3\) Samuel Latham Mitchell (1764-1831) took on public roles both as the editor of a medical journal *The Medical Repository and Review of American Publications* (1797-1824) and as a member of congress for New York State.\(^5^4\) Medical students represented the top tier of educated Americans yet they interacted with all ranks in society. They were in many towns the only expert in natural philosophy and the sciences


\(^{5^2}\) John Stearns, “The Following Circular Communication from the Medical Society of the State of New-York, to the Several County Medical Societies, for the Year 1809, Will Expalain the Nature and Objects of This Institiuation,” *American Medical and Philosophical Register, or, Annals of Medicine, Natural History, Agriculture and the Arts1* 1 (1811): 121.


for miles around. Bard argued that as such, a local doctor represented all the educated professions. For the physician, success was a literal matter of life and death. A society free of superstition and governed by reason would follow the lead of physicians and lead healthy lives with reduced rates of disease.

The American medical world after the Revolutionary War was dynamic. An imagined community developed through correspondence, medical societies, and medical journals which kept dispersed physicians in contact with one another. Chapter three demonstrates how that community allowed Rush to claim knowledge about portions of the United States he never visited. It also allowed the growing population of university-trained physicians to communicate. During the second half of the eighteenth century a few hundred Americans attended Scottish universities to study medicine. Lisa Rosner has discussed the growth of this community in her essay "Thistle on the Delaware: Edinburgh Medical Education and Philadelphia Practice, 1800-1825." Rush's generation saw more men cross the Atlantic for an education than any before. In his autobiography (first drafted around 1801) Rush listed the American men he studied with, most of whom he managed to keep in close contact with over the years.

In Philadelphia many of the professors Rush taught alongside had also attended the University of Edinburgh and all had studied abroad. John Morgan and William Shippen Jr. (1735-1808), the founders of the medical faculty, had studied in Edinburgh, the former in

55 Samuel Bard, “A Discourse on the Importance of Medical Education; Delivered on the 4th of November, 1811, at the Opening of the Present Session of the Medical School of the College of Physicians and Surgeons. By Samuel Bard, M.D. President of the College of Physicians,” American Medical and Philosophical Register, or, Annals of Medicine, Natural History, Agriculture and the Arts 2 (1812): 381.

London, Paris, and Italy as well. Another of Rush's contemporaries, Adam Kuhn studied at the University of Uppsala in Sweden under Linnaeus before he held the chair of botany in Philadelphia. Morgan was perhaps the largest personality out of the original faculty and taught theory and practice of medicine. Rather than innovate in theory, Morgan's chief aim was the organization of the medical profession in America. Unlike his colleagues, Morgan famously refused to perform surgical services and did not sell drugs, which he considered the domain of surgeons and apothecaries respectively. In 1765 he published *A Discourse upon the Institution of Medical Schools in America* which set down his plan for an organized and hierarchical medical profession led by university-trained physicians. The table below shows the faculty members at the University of Pennsylvania and its precursor institutions during Rush's lifetime. By the turn of the nineteenth century some of his colleagues were former pupils like the physician-naturalist Benjamin Smith Barton (1766-1815) and Rush's closest colleague in later years, the renowned surgeon Philip Syng Physic (1768-1837).

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The Philadelphia medical community operated on a largely personal level. Just as Rush's ties to colleagues in Scotland and New York were fostered by personal relationships and regular written contact, Philadelphians met regularly, consulted with one another, and socialized within their professional circles. As shown above, within the small circle of university-physicians many had the same teachers (Rush, Morgan, and John Redman Coxe all trained under Redman) and attended the same universities. Individual physicians knew each other well as they vied for prestige, patients, and students. They published in newspapers and magazines thereby targeting their written work for a general, if educated,
audience. Rush wrote for magazines and newspapers; The College of Physicians, a professional association established in 1787, printed opinions and notices for the public. During the yellow fever epidemic of 1793, arguments among rival physicians, including Philadelphians William Currie and Rush, burst into the public consciousness.

In the past, historians have largely attempted to divide the Philadelphia medical community into competing teams based on firmer ground than personal relationships. Most historical analysis focuses on the year 1793 and dates discord in the profession to the onset of yellow fever. The community seemed to divide between those who considered the fever imported like William Currie and those who thought it was locally produced like Rush. Martin Pernick notably attributed this division as much to politics as to medicine with Federalists favoring importation and Democratic-Republicans favoring local production. More recently Thomas Apel has used religion and philosophy as the great divider. He argues that the form of argument favored by Rush and Noah Webster rested on common sense ideas which resonated with late-Enlightenment Americans. These approaches, however, both ignore early fragmenting (like the very personal feud which developed between Morgan and Shippen in 1777) and the fact that other physicians, like Caspar Wistar moved from one camp to the other during the 1790s.

Despite the discord associated with yellow fever, it is important to remember that the Physicians of Philadelphia were far more alike than they were different and what appear factions grounded in theory also had a personal dimension. When Currie claimed Rush's,

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practices were killing people he said that to someone he knew well. In return when Rush claimed that physicians who did not bleed or use mercury in curing their patients were leaving them to die, it was an attack on their honor as gentlemen. Nevertheless, both men contributed to a 1792 book on the American environment published under Currie's name. Their shared background steeped in neo-Hippocratic views of health led them both to see the external environment as an important aspect of human health. Rush left the College of Physicians in 1793 despite its president, John Redman's support for Rush, and discord within the body as a whole.

Strong personalities and charismatic instructors led to friction and faction within the medical community. The creation of the Philadelphia Academy of Medicine in 1797 is a case in point. Rush resigned from the established College of Physicians of Philadelphia in 1793 after the body refused to accept Rush's treatments for yellow fever. Pride wounded, Rush gave the College a copy of Sydenham's work on epidemics as a snide parting remark. Although the yellow fever debates centered around medical practice and theory, the feuding between doctors did not always revolve around professional matters; it often was personal. The Academy reflected Rush's opinions and also emphasized disease prevention through careful monitoring of the weather and atmosphere of the city but it was also a collection of personal friends. Most of the Academy members were relatively young men (with an average age of 33 in 1797) compared to the College officers, and most of them had studied under Rush as private pupils or attended lectures.
TABLE 1-3

ORIGINAL MEMBERS OF THE ACADEMY OF MEDICINE OF PHILADELPHIA

(1798)

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philip Syng Physic</td>
<td>President, Committee of Revision</td>
<td>Studied under Adam Kuhn (1741-1817) in Philadelphia and John Hunter in London; MD from Edinburgh in 1792; Volunteered at Bush Hill Hospital during 1793 yellow fever epidemic; Professor of Surgery at the University of Pennsylvania (1800-1813)⁵⁹</td>
</tr>
<tr>
<td>Charles Caldwell</td>
<td>Vice President, Committee of Correpondence</td>
<td>Attended Rush's lectures in 1792-93; Professor of Natural History at the University of Pennsylvania 1810-1817; Professor of Materia Medica at Transylvania University 1818-1837; Established Louisville Medical Institute in 1837⁶⁰</td>
</tr>
<tr>
<td>William Dewees</td>
<td>Vice President, Committee of Correspondence</td>
<td>Attended Rush's lectures in 1788-89; Chair of Midwifery at the University of Pennsylvania 1825-1834⁶¹</td>
</tr>
<tr>
<td>John C. Otto</td>
<td>Secretary, Committee of Meteorology</td>
<td>Physician to the Pennsylvania Hospital; Physician to the Philadelphia Dispensary; Physician to the Orphan Asylum and Magdalen Asylum; Private Student of Benjamin Rush in 1792; MD University of Pennsylvania in 1796; Fellow of the College of Physicians 1840-44⁶²</td>
</tr>
<tr>
<td>James Gallaher</td>
<td>Librarian, Committee for annual bills of Mortality</td>
<td></td>
</tr>
<tr>
<td>William Budd</td>
<td>Treasurer, Committee for annual bills of Mortality</td>
<td>Attended Rush's lectures in 1792-93, 1793-94</td>
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</tbody>
</table>


<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>James Mease (1771-1846)</td>
<td>Committee of Correspondence</td>
<td>Graduated from the University of Pennsylvania with an MD in 1792; American Philosophical Society member 1802; secretary of Philadelphia Agricultural Society 1813; first vice president of the Philadelphia Athenaeum 1813; Lectured on pharmacology at the University of Pennsylvania beginning in 1816</td>
</tr>
<tr>
<td>Felix Pascalis-Ouviere (1750?-1833)</td>
<td>Committee of Correspondence</td>
<td>Graduated from Montpellier's medical school and practiced in St. Domingo until 1793; co-editor of the Medical Repository</td>
</tr>
<tr>
<td>James Reynolds</td>
<td>Committee of Correspondence</td>
<td></td>
</tr>
<tr>
<td>John Redman Coxe (1773-1864)</td>
<td>Committee of Meteorology</td>
<td>Private Student under Rush 1793 and his grandfather John Redman; MD University of Pennsylvania 1794; Studied in London, Edinburgh, and Paris 1794-96; Published the Medical Museum 1804-1811; Professor of Chemistry at the University of Pennsylvania 1809-1818 and materia medica and pharmacy 1818-1835</td>
</tr>
<tr>
<td>James Stewart</td>
<td>Committee of Meteorology</td>
<td>Possibly attended Rush's lectures in 1804, 1809</td>
</tr>
<tr>
<td>René La Roche (1755-1819)</td>
<td>Committee of Meteorology</td>
<td>Graduate of Montpellier, practiced in San Domingo until 1793; Father of René La Roche (1795-1872) also a physician</td>
</tr>
<tr>
<td>Benjamin Rush (1746-1813)</td>
<td>Committee of Revision</td>
<td></td>
</tr>
<tr>
<td>Joseph Strong</td>
<td>Committee of Revision</td>
<td>Attended Rush's lectures in 1791-92</td>
</tr>
<tr>
<td>Isaac Heylin</td>
<td>Committee for annual bills of Mortality</td>
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Besides yellow fever disputes, Rush had rocky relationships with colleagues. Formerly close, Benjamin Smith Barton and Benjamin Rush fell out in the early 1800s after Smith heard that Rush had criticized his natural history lectures and told students not to attend them. The relationship between Rush and Charles Caldwell (1772-1853), the founder of the University of Louisville Medical School, is another case in point. In his autobiography Caldwell recounts an evening at Rush's home when he was a medical student at the University of Pennsylvania in the mid-1790s. By that point Rush was a well-known figure and clearly associated with a new theory of medicine based on the unity of all disease. Caldwell claimed that his invitation to dine at Rush's house was an attempt to enlist him to the professor's' view:

He [Rush] habitually sought out, and seldom failed to discover, the best gifted and most promising young men of his class, on their first arrival in Philadelphia...and, by attention and kindness, attached them to him as a man. This being done, he considered them prepared for the reception of his hypotheses, doctrines, and opinions, through the channel of their feelings.67

In the above passage Caldwell manages to both praise himself and cast doubt on Rush's claims to medical greatness. Despite a cordial early relationship and several shared opinions with respect to the local origin of yellow fever, the two would split over a disagreement on the origin and fixity of human races.68 Caldwell became a strong


proponent of polygenism whereas Rush was always committed to the idea of a single creation for the human species.\(^6^9\) Caldwell also came to have a low opinion of Rush's education and learning, specifically the elder physician's limited interest and use of Latin.\(^7^0\) Nevertheless, his emphasis on Rush's use of friendship as a means of teaching and securing the future support of students should not be overlooked. Looking back on his days in Edinburgh and London in 1800 Rush focused on the personal attention and kindness he received from faculty as much, if not more than, their scientific contributions.\(^7^1\) He remembered and followed the lessons from men who were interesting, dynamic, and above all, kind.

1.4 Chapter Outline

All that remains in this introduction is to provide a roadmap for what is to come. The over-arching question this dissertation seeks to answer- how Benjamin Rush became America's physician- resists a simple thematic or chronological structure. Any mode of organization which follows modern scientific and professional categories of medicine and political pursuits forces a division of inquiry which simply did not exist two hundred years ago.

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ago. Rather than dedicate chapters to psychiatry, public health or social reform, this project is organized around a series of research questions which build off one another.

Chapter Two: "A Republican in Medicine" explains Rush's intellectual background and his construction of an American medicine. It reviews Rush's education from his childhood at the Nottingham Academy in Maryland through his medical study at the University of Edinburgh in the mid-1760s. The chapter considers the basic tenets of his physiological theory and how they both resembled and differed from existing medical systems. Chapter Three: "Uniformly Variable" builds on these concepts by asking what made the United States unique in Rush's mind. One clear answer in the eighteenth and early nineteenth century was climate. Inspired by writers like the Baron de Montesquieu and by neo-Hippocratic medical theory, Rush was primed to consider weather and the physical environment as key components in the construction of health and national characters. The United States, however, resisted easy classification as a temperate country. Variable conditions both within specific locations and between far-flung states challenged national unity. Rush, however, attempted to turn the definition on its head by suggesting that American variability in temperature, weather, and geography bound the loosely-confederated republic together. The chapter argues that Rush was acutely aware of and a promoter of American climatic uniqueness. It discusses how he leveraged his connections throughout the country to claim mastery over American geographies and how he used that knowledge in his published work.

Chapters Four: Toxic Geographies, and five: Variations on a Theme consider how Rush accounted for disease and human variation within the United States. Despite his praise for the healthfulness of the American climate, Rush witnessed the dangers of
"unimproved" landscapes. Chapter four discusses two diseases eighteenth and early nineteenth-century physicians considered environmentally dependent: yellow fever and endemic goiter. Rush was involved in conversations about both yellow fever as a threat on the east coast and goiter as a disease native to the interior of the country. Chapter five moves from diseases which affected all Americans to the variation between the country's inhabitants in the form of race and gender. Rush considered bodies to be malleable and changeable based on environment. This held true for most of his discussions of racial difference; which he attributed to social and cultural practice. Gender, however, proved to be the rare occasion where he believed innate physical differences accounted for all gendered-traits.

Finally, Chapter Six: "In the Likeness of God Himself" argues that the culmination of Rush's system is best viewed from the perspective of institutions. This chapter asks how Rush used medical theory to promote American institutions including public education and the development of the Pennsylvania Hospital for the treatment of "mental derangement." These institutions, developed for the perceived benefit of the community, put theory into action. Rush hoped that such institutions could create a generation of "republican machines" or citizens sculpted to carry on the values instilled within them of disinterested public service and moral living. In this way, along with a strong publication record and loyal students, Rush's ideas shaped American life in the nineteenth century in a unified manner previously unrecognized.

This project is not intended as a comprehensive survey of Rush's work or as an intellectual biography. The former would be beyond the scope of any single project and
the latter has been done elsewhere. Therapeutics also play a small role in this dissertation. Although Rush is often first thought of as a blood-letter or popularizer of calomel these "heroic" techniques appear sparingly. On the one hand this is because his therapeutics have already received considerable attention from historians and on the other because they were not particularly unusual for the period. "I Sing the Body Republic" places the emphasis on Rush's theory and the manner in which it shaped practice across several disciplines. I argue that this approach recovers the medical world of the early republic more fully and avoids unhelpful sensationalism. Finally, I wish to note again that Rush and his network were the foundation for an independent medical profession in the United States. In future work, I intend to explore his connections further through correspondence, periodical literature, and publications associated not only with Rush but his colleagues and students. This larger work will build on the methods used in this dissertation and expand access to data sets as well as form the basis for my own written work.

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CHAPTER TWO:
"A REPUBLICAN IN MEDICINE"

In 1785, Scottish physician William Cullen (1710-1790) wrote to his former pupil Benjamin Rush praising the continued friendship between their universities. Cullen noted however, that he “must expect that the spirited exertions which have acquired your independence in politics will acquire the same in physic. The Medical School of Philadelphia as the chief of a great Empire must flourish more and more.” Nearly a decade later on May 31, 1793 New York physician Valentine Seaman (1770-1817) addressed a letter to his Philadelphia colleague Rush referring to him as: a “Republican in Medicine.” Seaman further noted that with respect to the progress of medical publishing in New York that Rush would no doubt “be pleased with the...freedom of Thought [sic] & truly republican Spirit [sic] of enquiry, upon a subject which perhaps has been too much fettered in the tyrannical trammels of great Authorities.” Seaman and Cullen lived in different countries. The latter could have been the grandson of the former. Nevertheless, both men could agree upon the strength of American medicine led by Rush and republican principles.

73 William Cullen (1785), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXIV.
74 Valentine Seamen (1793), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XV.
In the years following American independence from Great Britain some physicians began to argue for an “independence” of their own discipline. In doing so, they not only modeled their language on revolutionary rhetoric of the 1760s and 1770s but viewed themselves as an important component of the same project. No voice was louder or more influential than Rush’s. This dissertation demonstrates how and to what extent descriptions like Seamen’s and Cullen’s -- which emphasized Rush's role as a creator of a new scientifically-rigorous, republican, and American medicine -- were warranted by looking at Rush’s understanding of physiology, epidemiology, human variation, and American institutions. Rush's self-fashioning as a "republican" had scientific as well as political consequences in the years between the Revolutionary War and the War of 1812. To set the stage, this chapter discusses Rush’s intellectual development before, during, and immediately after the American Revolutionary War, roughly the years 1761 to 1789. It considers his relationships with Scottish, English, and colonial medical authorities throughout the Anglophone world. Independence did not mean isolation, but a careful adaptation and curation of political and scientific theories to fit an independent republic in the New World.

To understand Rush the famous professor and writer, this chapter goes back to recreate his intellectual development, beginning with a Philadelphia apprenticeship under John Redman (1722-1808) in the early 1760s. Following his early education, Rush travelled to Scotland in 1766 and attended the University of Edinburgh where he received a medical degree two years later. He completed his study abroad in London and Paris and returned home to Philadelphia in 1769 to take up the chair of chemistry at the city's fledgling medical school. The chapter concludes by discussing Rush's medical theories
derived in part from study, in part from experience, and aimed at more effectively treating disease in the unique social and physical setting of North America.

2.1 Colonial Roots

Benjamin Rush received a classical early education at Presbyterian minister Samuel Finley's (1715-1766) Nottingham Academy in northern Maryland. Finley was a prominent figure on the "New Light" or revivalist side of the Presbyterian split during the First Great Awakening. Educated at William Tennent's Log College, Finley eventually became the fifth president of its successor institution the College of New Jersey (Princeton University) from 1761 until his death in 1766. Finley's religious qualifications were important to Rush's widowed mother, Susanna Hall Rush, a devout Presbyterian, and held sway over her son's early life. After completing his schooling under Finley, it was only natural that the 15-year-old Rush matriculated at the College of New Jersey in 1759 as a junior. He graduated the next year at the age of 16, an achievement not unprecedented, but certainly indicative of the young man's academic talent.

One respect in which Rush was a typical college student and teenager was in his indecision with respect to career and (in retrospect) half-hearted decision to study the law before altering his plans. By his own account it was Finley (poised to take over the presidency at Princeton) who changed his mind and suggested that his former pupil take

75 The Log College was designed as a place to train Presbyterian clergy in the early days of revivalism. Charles Bradford Bow, “Reforming Witherspoon’s Legacy at Princeton: John Witherspoon, Samuel Stanhope Smith and James McCosh on Didactic Enlightenment, 1768-1888,” History of European Ideas 39, no. 5 (2013): 652–53.
up medicine rather than the law. Finley believed medicine was a more Christian profession than the law. Doctors, tried to alleviate human suffering, thus doing God's work. Lawyers, on the other hand, were considered too self-interested. Rush, therefore, began the study of medicine, not from a desire to advance science but to be of the greatest possible use to his community and follow a Christian vocation.

Rush's initial motivation is important. From the very beginning he saw medicine as more than the healing of individual bodies. It could bring peace and comfort to others and model appropriate behavior. Both aspects spoke more to moral and social good than scientific advancement. Moreover, caring for the sick has a foundational association with Christianity harking back to Christ's miracles. Rush's conviction that the practice of medicine could achieve larger goals grew and took on additional secular meaning during his time in Scotland. Religion, and Finley's early advice primed him to see medicine as a vocation worthy of a Christian gentleman and with implications which extended beyond individual bedsides.

Despite medicine's broad mandate, in his youth Rush still saw it as a step below the ministry, indicating the prominent status of religion in his thinking. In a 1761 letter to his Princeton classmate and clergyman Enoch Green (1735-1776), Rush congratulated his friend's profession stating:

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76 Benjamin Rush, Travels Through Life, or An Account of sundry Incidents and Events in the Life of Benjamin Rush born December 24, 1745 Old Style- Written for the Use of his Children, APS, Manuscript Vol I. Mss.B.R89t, 30.
Though now I pursue the study of Physic, I am far from giving it any preeminence to Divinity...We are employed, it's true, in a necessary calling, but a calling that enforces to us the weakness and mortality of human nature...Now how inglorious must this study appear when set in competition with Divinity—the one employed in advancing temporal happiness, the other eternal...Every pursuit of life must dwindle into nought [sic] when Divinity appears.\footnote{Benjamin Rush, “To Enoch Green (1761),” in \textit{Letters of Benjamin Rush, Vol 1.}, ed. L.H. Butterfield (Princeton, NJ: Princeton University Press, 1951), 3.}

This letter demonstrates that Rush did not enter the profession thinking or behaving like a modern secular scientist. He approached medical study from the perspective of a man from his time and upbringing, one which was steeped in the early American evangelical thought. The practice of medicine improved the world, which was good, but it did not do the greatest good. Medicine did not save souls. In his attempts to unify medicine and politics, Rush would attempt to reach a status close to that of what he thought of ministers in his youth. By forming a new American medicine, he used his profession to support the moral development of his country.

Thus, following Finley's advice, Rush returned home to Philadelphia to apprentice under John Redman, a well-respected local physician who had graduated with an MD from the University of Leiden in 1748. Redman's professional history was one grounded in travel in a manner unusual for his generation but became less so by Rush's time. After study under Philadelphia physician John Kearsley, Redman left the colony and practiced in Bermuda. Following his time in the Caribbean, he attended the University of Edinburgh and visited London and Paris in the 1740s before taking his Leiden degree. Redman also shared some of Rush's religious conviction. A fellow Presbyterian, Redman, like Finley, attended
William Tennent's Log College prior to beginning his medical training. This background marked Redman as a highly qualified medical practitioner in mid-eighteenth-century Philadelphia, and all the more in demand as an instructor due to the lack of colonial medical schools.

In the early 1760s no medical school existed in Britain's American colonies. Rush did attend some of the first medical lectures offered in Philadelphia: anatomy lectures from William Shippen Jr. (1736-1808) in 1762 and theory and practice from John Morgan (1735-1789) in 1765 at the establishment of the College of Philadelphia's (University of Pennsylvania) medical department. Morgan had also studied under Redman before leaving for the University of Edinburgh to attain a degree. At the time of their lectures, both Morgan and Shippen (who first apprenticed under his father William Shippen Sr.) were fresh from European study and hoped to build a medical faculty similar to that at the University of Edinburgh, their alma mater and the leading medical faculty of the mid-eighteenth century. Morgan in particular had grand ambitions for reforming medical education and practice in the colonies, as laid out in the 1765 publication *A Discourse upon the Institution of Medical Schools in America*. However, with only two faculty members and scant resources in 1765 medical lectures were insufficient to help Rush stand out as a young physician wishing to start an urban practice. Even Morgan agreed that for Rush to stand out and receive the best education possible he needed to leave Pennsylvania.

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79 Rush, *Travels Through Life*, APS.

80 Morgan, *A Discourse upon the Institution of Medical Schools in America.*
Rush did attend medical school at the University of Edinburgh between 1766 and 1768, but not before spending six years at Redman's side in Philadelphia. Apprenticeship formed a strong pupil-preceptor relationship and provided important clinical experience. Some of the most valuable aspects of studying under someone like Redman in mid-eighteenth-century America were access to printed medical knowledge and practical experience with patients. Looking back on his student days in his autobiography, Rush claimed to have spent a considerable amount of time pouring through his preceptor’s personal library. According to his recollections, much of his day as Redman's pupil consisted of mixing medications in his preceptor's shop (like most American physicians Redman sold his own drugs) and shadowing him on house calls. As a more advanced student Rush reported seeing patients alone.81

From Rush’s autobiography and from letters detailing the experience of Rush’s pupils it is possible to piece together some of what his apprenticeship may have been like. Medical apprentices remained under their instructor for “several years.” Rush, as noted above, spent six years under Redman. A generation later, Frederick Augustus Hall Muhlenberg (1795-1867) agreed to study with Rush for at least four years and attend public medical lectures at the University of Pennsylvania.82 By the time Rush took on students of his own the medical school in Philadelphia existed and included a complete faculty (with Rush as the chair of chemistry [1769-1789] and theory and practice [1789-1813]).

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82 Rush died before Muhlenberg completed his education, however letters between Rush and the young man’s father Gotthilf Heinrich Ernst [Henry Ernst] Muhlenberg (1753-1815), the president of Franklin College in Lancaster, provide unusual details with respect to the educational experience.
Attendance at medical school lectures and at the Pennsylvania Hospital were included in the young men’s training. Private pupils also attended to the business side of medical practice. Apprentices (both Rush himself and his own students thereafter) managed shops, filled prescriptions, and performed simple procedures like bloodletting in addition to their extensive reading. In his manuscript autobiography Rush wrote that “[i]n addition of preparing, & compounding medicines, visiting the sick, and performing many little offices of a nurse to them I took the exclusive charge of his books & accounts.”

83 Medicine was a vocation, scientific practice, and commercial business all rolled into one.

A constant stream of seasonal fevers, injuries, influenza, gout, and smallpox inoculations kept Redman and his students busy. Rush passed what down time he had in Redman's shop reading medical texts, especially Gerard van Swieten’s (1700-1772) commentaries on Herman Boerhaave’s (1668-1738) aphorisms and the works of Thomas Sydenham (1624-1689).84 In the 1760s Boerhaave, van Swieten, and Sydenham formed the foundation of learned theoretical medicine. Rush probably read imported Latin editions of these medical works. It is impossible to know exactly which imprints Rush had access to as a student. Nevertheless, medical books were fairly easy to come by in mid-eighteenth-century Philadelphia so his late in life recollections of reading from Redman's library are likely accurate.

As a student of Redman Rush was also exposed to Caribbean practices his preceptor learned as a young man. Tropical diseases and climates do not prominently feature in the

83 Rush, Travels Through Life, APS.

work of Boerhaave or Sydenham (the figures most read by Rush, see below), but did influence American practice. Philadelphia maintained strong trade and cultural links with the British Caribbean and summer fevers resembled those of Jamaica more than England. In 1762 yellow fever broke out in the city. Rush kept notes on the course of the epidemic for himself and Redman which both men referred back to when the disease returned in 1793. Redman even read aloud from Rush's notes before the College of Physicians during the latter outbreak.

Rush's medical education and experience combined with his education, especially his command of Latin, put him in an elite minority of colonial medical practitioners. At the end of his life, Rush's personal library contained several editions and publications by these authors published before his departure for Edinburgh in 1764. These included: Boerhaave's *Institutiones medicae*, *De viribus medicamentorum*, *Elements of Chemistry* (Latin, French, and English editions), *Libellus de materie medica*, *Dr. Boerhaave's Academical lectures on the theory of physic*, *Boerhaave's Medical Correspondence*, and *Boerhaave's Aphorisms*; and Sydenham's *Opera universa*.85

Curiously, Rush did not own a copy of van Swieten's commentaries from any date of publication. The only van Swieten publication included in James Rush's bequest to the Library Company in 1869 was a 1776 English edition of *The Diseases Incident to Armies*.\(^{86}\) He may have given the commentaries as a gift at some point or borrowed it from the Library Company, the College of Physicians (after 1787) or Pennsylvania Hospital library (after 1765) when necessary.\(^{87}\) It is also possible that James Rush donated, gave away, or lost books between 1813 and 1869. Books may also have been taken or gifted to friends and family during or after Rush's lifetime.

With respect to the editions above, the publication dates do not, of course, mean that Rush owned or had access to all of them prior to his study in Scotland. However, some at least would have graced Redman's bookshelves or those of accessible libraries. All of the volumes mentioned above contained ideas which directed Anglo-American medical practice in the mid-eighteenth century. Boehaave's emphasis on the interactions of nerves and organs eclipsed ancient concepts of humors as central to human physiology. Sydenham's clinical observations of fever and epidemics, meanwhile, encouraged and empowered doctors to make their own observations and conclusions.\(^{88}\)

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\(^{86}\) Rush's personal library passed (and position as Treasurer of the United States Mint) to his son Dr. James Rush in 1813. When James died in 1869 he was without issue and the last surviving child of Benjamin and Julia Stockton Rush. He donated his library (including Benjamin Rush's books and papers) to the library along with money for the building of the Ridgeway Branch named after his wife, Phoebe Anne Ridgeway's (1799-1857) family.

\(^{87}\) According to an 1806 catalogue the Pennsylvania Hospital owned several copies of the commentaries including five volumes of a 1742 Latin edition: Gerhard van Swieten, *Commentarie Hermanni Boerhavii aporphismos de cognossentidia et curandis morbis* (Lugd. Bativia, 1742).

According to Edwin Wolf, medical texts, especially those attributed to Boerhaave and Sydenham were common, even popular, in mid-eighteenth-century Philadelphia beyond the medical profession. Private collections and lending libraries often included medical books on their shelves. In such a world it would be highly improbable that Rush, a student of Redman, would be without access. Based on availability of texts, and Rush’s manuscript evidence, both approaches to medicine -- the physiological system of Boerhaave and the epidemiology of Sydenham -- had lasting effects on Rush’s theory. He looked to the physiology of the blood vessels like Boerhaave and kept records of disease and weather conditions following Sydenham. But Rush had other experiences as well.

In the summer of 1766, as he prepared to depart for Scotland to take a medical degree Rush was steeped in medical theory from the end of the seventeenth century and the first half of the eighteenth century. He carried books by Boerhaave and Sydenham with him across the Atlantic and followed a medical theory he would later describe as mechanical. Politically, he remained a loyal subject of King George III. Like his older colleague and countryman John Morgan, Rush would return to Philadelphia as a different person. Whereas Morgan sought to formalize the medical profession, Rush imported new physiology, politics, chemistry, and confidence in his own observations. In order to become the “American Sydenham” Rush needed to leave America.

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2.2 Scottish Medicine

From his self-described Boerhaavian background, Rush sailed for Scotland on August 31, 1766 with fellow student Jonathan Potts (1745-1781). They arrived in mid-October and traveled overland from Liverpool to reach Scotland in time for the winter course of lectures. The young men were in pursuit of something unavailable in the North American colonies, an MD. Rush and Potts were just two out of approximately two hundred American men who made a similar pilgrimage to the Scottish medical schools during the eighteenth century. This migration in turn gave elite American medicine (and medical schools) a distinctly Scottish flavor.

Between August of 1766 and May 1769 Rush studied medicine, natural history, languages, and politics in Edinburgh, London, and Paris. He spent most of that time in Scotland attending formal lectures, preparing his thesis, and involving himself in the intellectual society of the Scottish capital. During his first winter Rush noted that he attended lectures in anatomy, chemistry, the institutes of medicine, natural philosophy, and the practice of medicine at the Edinburgh Infirmary. The following year he repeated each course (common practice in eighteenth- and nineteenth-century medical schools) and added a course on Materia Medica. Recall, that in Philadelphia he only had the opportunity to attend lectures on anatomy and theory and practice with Shippen and Morgan. The breadth of the curriculum in Scotland expanded the subject matter which fell under the

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90 Potts arrived with Rush but left Scotland before his compatriot to marry, by the end of Rush's time in Europe he could write that his friend was already the father of two.

umbrella of "medicine" for Rush. In his future career he would continue to consider medicine as a tool to address wide-ranging biological, social, and political issues.

Rush’s professors in Edinburgh, John Gregory (1724-1773), Joseph Black (1728-1799), Alexander Monro, _secundus_ (1733-1817), John Hope (1725-1786), and William Cullen (1710-1790) introduced him to new medical theories, an updated account of the nerves, and the theory of chemical affinities. Beyond the medical faculty proper, however, Rush received additional, informal education in contemporary philosophy and politics. Like many American men of the revolutionary generation, Scottish Common-Sense philosophy became central to his world view. Mark Noll notes that with the rejection of tradition as an explanation for social and religious life, Scottish Philosophy formed an "intellectually respectable way for political leaders to reestablish public virtue and for religious leaders to defend Christian truth on the basis of a science unencumbered by tradition."92 Scottish philosophy postulated that scientific work could provide the theoretical scaffolding for moral and virtuous society. For a young man seeking God's work in the temporal world, this approach must have been appealing. By the end of his life, Rush's library included works by influential Scottish philosophers, especially those with an interest in the human body and mind. Notable examples included: Thomas Reid's (1710-1796) _Essays on the Powers of the Human Mind_ and James Beattie's (1735-1803) _Elements of Moral Science_.93 Both authors were key Scottish Enlightenment figures active during Rush's time in Scotland. He cited both in his psychiatric work, discussed in chapter six.


93 Rush's personal library included the following texts and editions: James Beattie, _Essays: On Poetry and Music, as They Affect the Mind_ (Edinburgh and London: Printed for Edward and Charles Dilly in London; and William Creach, Edinburgh, 1778); James Beattie, _Elements of Moral Science_ (Philadelphia: From the Press of Mathew Carey, 1792); James Beattie, _Essai Sur La Poésie et Sur La_
The wide-ranging interests of the city's intellectuals meant that the same societies and dinner tables might include Cullen and Adam Smith (1723-1790) or David Hume (1711-1776) with all participants comfortable commenting on each other’s work. On rare occasions Cullen or Gregory extended an invitation to Rush and his fellow students where they were schooled by example in Enlightenment discourse and practical medicine. Rush found himself with additional invitations as well. Reminiscing on his time in Scotland he noted that he once had the pleasure of dining in the company of Hume at the home of Sir Alexander Dick. Of Hume, Rush simply wrote, "[h]e was civil in his manner and had no affectation of singularity about him." Hume's skepticism and philosophical critiques of Christianity never made him a popular philosopher with Rush, however.

In later years Philadelphia developed a similar intellectual environment of societies and salons. While still in Edinburg Rush wrote to Morgan on the advantages of establishing a literary and physical society in Philadelphia modeled on that of Edinburgh. Rush's commonplace book from the 1790s and 1800s includes mention of numerous meals and social engagements with visiting intellectuals including the Comte de Volney (1757-1820) and Alexander von Humboldt (1769-1859). Given the dynamic setting and political upheaval after the Seven Years' War it is not surprising that Rush developed patriotic and
anti-monarchical sentiments. What is more unusual is that he attributed this change to his rather conservative mentors in Scotland.98

As Roger L. Emerson has argued university appointments in Edinburgh were highly political. Although the Town Council ostensibly nominated and approved appointments, in reality faculty were selected and promoted by strong patrons, usually from the nobility. Attaining a position at the university required familiarly and support of the establishment.99 Hope, professor of Materia Medica, claimed to have secured his position with the help for the Earl of Bute.100 Cullen benefitted from his close association with Lord Kames.101 Professors were political and interested in questions of reform and the social role of medicine but were not radicals. Rush emulated this approach to some extent and certainly took advantage of an introduction and summer spent with the Earl of Leven and his family in 1768.102 His more radical politics would eventually put him at odds with the family although an ocean and Declaration away there were no professional consequences.

The short winter terms at the medical school were not however, Rush's only education. During the summer and early autumn of 1767 Rush furthered his studies in

98 Benjamin Rush to John Morgan (1768) in, Joseph Carson, History of the Medical Department of the University of Pennsylvania [scrapbook], (Philadelphia: Lindsay and Blakiston 1869) College of Physicians of Philadelphia, Cage ZZ10c; John Redman (1768), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XXII; John Morgan (1769), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XXV.


100 Ibid., 193.


102 Rush and Biddle, A Memorial Containing Travels Through Life Or Sundry Incidents in the Life of Dr. Benjamin Rush, Born Dec. 24, 1745 (Old Style) Died April 19, 1813, 30.
languages and auxiliary subjects. Despite his strong American education, he felt behind in subjects like Latin, which he should have had a good command of by the time he reached Edinburgh. To remedy this failure, he hired a tutor in Latin and mathematics. After his time at Princeton Rush had let his Latin slide. In a 1765 letter to his friend and former classmate Ebenezer Hazard he apologized for writing in English after they agreed to correspond in Latin. In Scotland, Rush claimed to enjoy his language work to a greater degree and added to his study writing, "I likewise made myself master of the French language, and acquired so much knowledge of the Italian and Spanish languages as to be able to read them." Beyond his studies, Rush made time that summer to visit John Witherspoon (1722-1794) in Paisley.

The beginning of Rush's association with Witherspoon was an education in itself. At the time the College of New Jersey was courting the Scottish clergyman to be the institution's next president following Finley's death. Richard Stockton (1730-1781), a fellow graduate of both the College of New Jersey and Finley's academy (and Rush's future father-in-law) had unsuccessfully pressed the college's case to Witherspoon from his position as a trustee. Although interested in the position and somewhat politically isolated in Scotland, Witherspoon hesitated to move his family (especially his unconvinced wife) across the Atlantic. Rush credited himself with convincing Witherspoon to change his

103 Ibid., 23.


105 Rush and Biddle, A Memorial Containing Travels Through Life, 23.

106 Ibid., 29.
mind, in part by addressing Mrs. Witherspoon's concerns about the move while a guest at their home.

Beyond his attempt to make his alma mater proud, Rush greatly admired Witherspoon as a clergyman and a philosopher. He remembered the older man as one "of great and luminous mind. He seemed to arrive at truth, intuitively. He made use of his reasoning powers only to communicate it to others. His works will probably preserve his name to the end of time."\(^{107}\) Witherspoon represented the merging of Rush's interests. A man of faith who also contributed to philosophy and encouraged the development of science.\(^{108}\) In the years to follow Witherspoon would also prove an ardent supporter of American independence with a moderating streak which Rush admired. In 1776, Witherspoon officiated Rush's wedding to Julia Stockton.\(^{109}\)

According to Rush's autobiography, his education in Scotland served as a turning point. With respect to both science and politics he noted that, "[t]his great and active truth became a ferment in my mind. I now suspected error in every thing [sic] I had been taught, or believed, and as far as I was able began to try the foundations of my opinions upon many other subjects."\(^{110}\) Rush described an "Enlightenment" awakening of himself as a scholar and intellectual. The “great and active truth” he referred to was that of republicanism.

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\(^{107}\) Ibid., 29–30.


Despite a family history which included John "the old trooper" Rush of Oliver Cromwell’s forces, the youthful Benjamin grew up respecting and admiring the British crown like most American subjects in the mid-eighteenth century.\textsuperscript{111} Scotland, not America, could take credit for turning an apolitical medical student into a fervent supporter of liberty.\textsuperscript{112}

Personal connections with leading figures of Scottish philosophy and medicine sparked Rush’s transformation into an active and questioning participant in Atlantic Enlightenment on a scientific and political level. When he arrived in Edinburgh Rush did so with letters in hand to give entrée to the homes of professors, including Cullen. In a letter home to John Morgan, Rush wrote of the benefits derived from Morgan’s letters of introduction noting, “[w]hen we [Rush and Potts] first waited upon Dr. Cullen and told him we had the honor of presenting him some letters from Philadelphia, he immediately answered, ‘He hoped from his good friend Dr. Morgan.’ After having read his letters he took each of us by the hand, [and] welcomed us to the College.”\textsuperscript{113} A few years later a 1768 letter to Morgan from Cullen praised Rush and his future prospects, stating "I expect that Dr. Rush is to be joined to your number [as a member of the medical faculty] & you will make a valuable acquisition. He has indeed applied to every Branch & study with great Diligence & Success, but Chemistry has always been a principal object & I am persuaded

\textsuperscript{111} For more on American support of the crown leading up to the revolution see, Brendan McConville, \textit{The King’s Three Faces: The Rise and Fall of Royal America, 1688-1776} (Chapel Hill: University of North Carolina Press, 2006).


he may make a Figure in that Profession much to the credit of your College."\textsuperscript{114} This growth, from Rush as a medical student trained through practice to the budding chemist is important. Rush’s time in Edinburgh expanded his knowledge of what might be called the “allied sciences” of medicine: chemistry, physiology, and natural history. In another letter to Morgan, Rush described American physicians as “8 to 10” years behind European theory, largely due to a lack of access to medical society transactions from across the continent.\textsuperscript{115} Indeed, lists of desired publications drawn up by the College of Physicians of Philadelphia in the 1780s included requests for back issues of medical and scientific periodicals. This need indicated the ongoing need for up to date information in the United States and the difficulty of obtaining publications.\textsuperscript{116}

The urgency Rush felt came from a profound sense of change within the profession. Although Cullen and Boerhaave may seem like two representatives of the same tradition in hindsight, from Rush's perspective the change of system from one to another was significant. He did not know a revolution in clinical medicine would come in the nineteenth century, let alone germ theory and bacteriology by the twentieth. What he did know was that his education felt dated and his Edinburgh professors seemed on the verge of a new medicine which was undergoing constant revision and change. In 1767 while a student at the University of Edinburgh he wrote to his friend Jonathan Baynard Smith (1742-1812) back in Philadelphia that, “[t]he present era will be famous for a revolution in physic…The

\textsuperscript{114} William Cullen to John Morgan (1768, copy), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXIV.

\textsuperscript{115} Benjamin Rush (1768), CPP, Scrapbook letters, Benjamin Rush to John Morgan

\textsuperscript{116} Records of the College of Physicians [of Philadelphia], Vol I. (1787-1812), CPP, Manuscript Collections, Z10 227 v.1, 1787
theory of physic is like our dress always changing, and we are always best pleased with
that which is most fashionable.”117 It appears from the letter and hindsight that the
ambitious Rush had a fashion change of his own in his sights, even if the theory did not
exist.

From Rush’s vantage point the world did not look much like that of the ancients,
or even of his parents. When he was born, in 1746, physiological experiments, affinity-
based chemistry, continued interest in climate and health were contributing to the growth
of new medical systems.118 While old books could still be mined for useful observations
the systems themselves could be discarded and replaced. New medical “systems” competed
in a marketplace of scientific ideas and provided competing interpretations of physiological
observations.119 The idea of system was characteristic of the period. Although Rush and
his teachers professed a dedication to Baconian experiment, they also adhered to the idea
that bodies worked in accordance with clear rational rules.

Typically, a system was a mode of medical practice based on a set of physiological
principles. By reasoning beyond the observable medical systems took a physiological
observation, for example a muscle fiber contracting with the application of electricity and

117 Benjamin Rush, "To Jonathan Baynard Smith, April 30, 1767," in Letters of Benjamin Rush,
ed. L.H. Butterfield (Princeton, NJ: Published for the American Philosophical Society by Princeton
University Press, 1951), 41.

118 The best source to gain a sense of the rapid change (or feeling of rapid change) in Scottish
medicine and society is Christopher Lawrence, “Medicine as Culture Edinburgh and the Scottish
Enlightenment” (University of London, 1984).

119 “System” is a slippery word in this period. Typically, it will be used in this dissertation as
shorthand for a mode of medical practice rationally derived from a set of physiological and ecological
principles informed to a greater or lesser extent by empirical observation and “pure” sciences like
chemistry and physics. This fits most eighteenth-century approaches to medicine, but also those of
twentieth century theorists like, Henderson’s biophysical system in 1914.
used it to support a larger conclusion. For example, because electricity caused the muscle to contract, a system might be implied by which living tissue is characterized by its innate ability to react to electrical stimulus and electrical therapy might make malfunctioning bodies work. Systems had the advantage of being logical and self-contained. Different interpretations of the same event, meanwhile, could spawn competing systems and encourage medical feuds. To make a mark in medicine ambitions physicians needed to contribute to its ongoing change.

Rush viewed himself within a version of medical history which positioned him at the cusp of a new medical world predicated on the hard-won progress of previous generations and healthy skepticism of past theory. This feeling impressed itself all the more on Rush given his own education. Boerhaave's work on fever, for example, exhibited a Baconian approach to understanding disease which American physicians adopted and used for nearly a century. The Dutch physician's study of fever located the defining symptom as a rapid pulse. Rush continued to turn to the pulse as a source of information on fever. Although he considered a greater number of states of the pulse to indicate fever than Boerhaave, Rush's focus on the arterial system and its alterations during illness do harken back to the system of his youth. It also included a Boerhaavian appeal to observation and simplicity. Boerhaave's definition of fever also influenced Rush to claim that healthy activity could exhibit some traits of pathologies. Rapid pulse from exercise or emotion which resolved quickly, Van Swieten dubbed a "true fever." Acute fevers, fevers which counted as diseases, arose when accompanied by debility and could not be easily thrown

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off. The "tables of fever" drawn by Rush's students demonstrate a similar principle. The "degrees" of the bodily system could correlate with the healthy course of the day or the pathological progress of fever.

When Rush arrived in Scotland he felt his early eighteenth-century knowledge from Redman and Redman’s library suddenly outmoded. Nervous physiology and chemistry held the potential to understand the body by bringing acidity, alkalinity, and affinities to the table alongside heat, pressure, and humidity. Often (as in the case of Rush) a synthesis of many ideas helped form a new system. He stood on the shoulders of giants from Hippocrates to William Harvey and Isaac Newton made all the more powerful with additional knowledge from Albrecht von Haller, David Hartley, Joseph Priestly, and Cullen. With colleagues on both sides of the Atlantic, he saw a bright future and a new medicine. To show how Rush might have responded to change, it is worth taking a closer look at how Cullen positioned himself in medical history.

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121 Ibid., 126.
Figure 2-1 Timeline of Benjamin Rush's time at the University of Edinburgh, London, and Paris based on his correspondence and autobiography
Scottish medical educator (and Rush’s mentor) Cullen, provided a crash-course in the history of medicine in his textbook, *First Lines of the Practice of Physic*. Without an equivalent document from Rush, Cullen’s history is the best representation of how Rush viewed himself within medical history in the 1760s and 1770s. The history presented by Cullen reflects a progressive and theory-centric view of the medical profession. In his description of the sixteenth and seventeenth centuries he derided both the Galenists for their reverence for the ancients and the Paracelcians for their overly-empirical practice. Afterwards, he lauded the later seventeenth century as the dawn of scientific medicine alongside “science” itself.

In the course of the seventeenth century, Galileo had introduced mathematical reasoning; and Lord Bacon having proposed the method of induction, and thereby excited a disposition to observe facts, and to make experiments. These new modes of philosophizing, it might be supposed, would soon have had some influence on the state of medicine; but the progress was slow. The knowledge of the Circulation did indeed necessarily lead to the consideration as well as to a clearer view of the Organic System in animal bodies; which again led to the application of the mechanical philosophy towards explaining the phenomena of the animal oeconomy; and it was applied accordingly, and continued, till very lately, to be the fashionable mode of reasoning on the subject.

In Cullen’s view medicine came to the new philosophy slowly. Nevertheless, through the familiar narrative of William Harvey, Cullen brought medicine in to the scientific fold.

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122 Rush did not study from *First Lines* as a student in the mid-1760s, however he did manage to obtain a smuggled copy during the American War for Independence and see to its publication in the United States, a fact he boasted to his preceptor in 1783 when communication between the two resumed with the peace. William Cullen to Benjamin Rush (1783-1785), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXIV.


124 The degree to which many of these physicians succeeded in correctly interpreting Newton is certainly debatable and variable based on which aspects of the Newtonian cannon they wished to
From this short introduction to the history of medical science Cullen went on to critique some of his systemic predecessors. Physiological experimentation grew up alongside neo-Hippocratic concerns about the environment. Physicians, surgeons, and educated laymen around the world contributed reprints about diseases and their cures, weather and its molding of bodies and the chemical effects of different substances on living tissue. Of the numerous physiologists working in the seventeenth and eighteenth centuries, Cullen (and subsequently Rush in his own lectures) focused on three system-builders: Georg Ernst Stahl (1659-1734), Friedrich Hoffman (1660-1742), and Herman Boerhaave. Each of these physicians had an outsized influence on learned medicine of the century and, notably, can be associated with Dutch and German medicine as can Edinburgh’s medical school which modeled itself on Leiden.

In *First Lines*, Cullen attempted to consider each system beginning with the one he agreed with the least, that of Stahl. The first principle of Stahl’s system (according to Cullen) was that the *vix medicatrix naturae* (propensity for living things to heal themselves) was “entirely in the rational soul.” This amounted to arguing that the soul was a characteristic of physical living things, essentially animism. Stahl’s animism could claim to explain the workings of the body. However, its reliance on the concept of the soul emphasize (the mechanical or proto-vitalist aether). It is also worth noting that on the continent Cartesian forms of mechanism often held sway during this period. Brown, “From Mechanism to Vitalism in Eighteenth Century English Physiology.”; Robert E. Schofield, *Mechanism and Materialism: British Natural Philosophy in An Age of Reaseon* (Princeton, NJ: Princeton University Press, 1970); Jacques Roger and Keith Rodney Benson, “The New Scientific Mentality,” in *The Life Sciences in Eighteenth-Century French Thought* (Stanford University Press, 1997), 133–204; Anita Guerrini, *Obesity and Depression in the Enlightenment: The Life and Times of George Cheyne* (Norman, OK: University of Oklahoma Press, 2000).


126 Ibid., xxix.
eventually presented a problem both for physicians committed to more empirical investigation and for committed Christians like Rush who were uneasy about the theological implications of a fully material soul.  

Cullen warned his readers to be wary of Stahl and the work of his students Nichols and Gaubius, claiming “that the admitting of such a capricious government of the animal economy, as these authors in some instances suppose, would at once lead us to reject all the physical and mechanical reasoning we might employ concerning the human body.” Moreover, Cullen -- like Rush after him -- cautioned against any reliance on nature healing bodies; “Nature curing diseases, the so much vaunted Hippocratic method of curing, has often had a very baneful influence on the practice of physic; as either leading physicians into, or continuing them in, a weak and feeble practice; and at the same time superseding or discouraging all the attempts of art.” Rush, as shown below, could never be accused of weak practice. Rush did, however, eventually break with Cullen and positively referenced the work of Stahl's protégé Gaubius in his physiology and psychiatry texts.

Hoffman, the next physician to fall under Cullen’s gaze, was a different story. Cullen considered Hoffman a great observer of the animal oeconomy, writing:

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129 Emphasis from original, Ibid., xxxii.
There can be no sort of doubt that the phenomena of the animal oeconomy in health and in sickness, can only be explained by considering the state and affections of the primary moving powers in it... we are therefore particularly indebted to Dr Hoffman for putting us into the proper train of investigation; and it every day appears that physicians perceive the necessity of entering more and more into this inquiry.\textsuperscript{130}

Hoffman's focus on physiology, especially his descriptions of movement in terms of arterial spasm became central concerns for Cullen. Lester King notes that Cullen took Hoffman's spasm and made it the proximate cause for fevers.\textsuperscript{131} Christopher Hamlin argues that Hoffman's fever began with a dense consolidation of particles within the core of the body (like the center of a Cartesian vortex). That density resulted in the bursting of particles visible to the physician in the form of sudden heat and rapid pulse. Cullen left the physics behind but used the sudden action within the body, in his case the nerves based on predisposing debility, as the starting point fever.\textsuperscript{132} In terms of motion, Rush would go even further than Cullen and adopted aspects of David Hartley's (1705-1757) theory of imperceptible vibrations throughout the body as the driving force in physiology. This led him to move away from spasm as a cause of fever. Instead, he focused on inflammation as the main product of debility and underlying cause of all disease. Inflammation in one part of the body disrupted regular movements which in turn produced a general debility.

The final system Cullen discussed in detail was that of Boerhaave, the system Rush was most familiar with when he arrived in Scotland. It was also the system Cullen had learned and followed early in his career. Unlike his approaches to Stahl or Hoffman, Cullen

\begin{footnotes}
\item Emphasis added, Ibid., xxxix–xl.
\item King, \textit{The Medical World of the Eighteenth Century}, 140.
\item Hamlin, \textit{More than Hot: A Short History of Fever}, 73, 128.
\end{footnotes}
began by describing the great depth of Boerhaave’s knowledge and study of many medical theories and systems. He went so far as to call the Dutch professor as a genius.\textsuperscript{133}

Cullen described Boerhaave’s physiology as one which addressed the balance of bodies. Specifically, it focused on the state of solids (tense or lax) and the chemical composition of liquids (like blood). Rush emphasized the latter when he referred to Boerhaave’s “unfortunate attachment to the fluids” as recorded in the lecture notes of one of his students without further explanation.\textsuperscript{134} Rush certainly would not have believed the composition of the blood alone caused disease or that fluids alone drove the functions of the human body. Cullen asserted that although the state of bodily fluids certainly changed and could cause disease, the mechanism was unclear. Boerhaave, he argued, jumped the gun by applying an unproven explanation. Cullen called the fluid-based pathology, “purely hypothetical.”\textsuperscript{135} This suggests that Cullen and Rush had a problem with Boerhaave's use of "lentor" and "viscosity" of blood and nervous fluid as an explanation for disease.\textsuperscript{136} Cullen moved his attention to spasm whereas Rush claimed that a disruption of regular bodily motions triggered fever. Both Rush and Cullen claimed numerous remote causes of fever including gaseous effluvia produced by putrefying matter.\textsuperscript{137}

Cullen’s historical discussion recapitulates a view of medical systems that would have been familiar to Rush on his arrival in Scotland. The creation and destruction of

\textsuperscript{133} Cullen, \textit{First Lines of the Practice of Physic, Vol. I}, xliii.


\textsuperscript{135} Cullen, \textit{First Lines of the Practice of Physic, Vol. I}, xlix.

\textsuperscript{136} King, \textit{The Medical World of the Eighteenth Century}, 140–41.

\textsuperscript{137} Ibid., 141.
rational systems pointed to a form of progress in which he would eventually place himself. Rush’s Edinburgh education exposed him to Cullen but also to John Gregory and Joseph Black. Beyond his formal education in Scotland, he encountered numerous books, practitioners, and personal observations which proved as important as systems or classrooms.

In addition to the systems of Stahl, Hoffman, Boerhaave, and Cullen Rush incorporated the work of numerous other eighteenth-century physiologists into his own work, especially the concepts of Swiss physiologist Albrecht von Haller (1708-1777). Haller had suggested that organs and tissues possessed properties of irritability (the power to respond to and create stimuli) and sensibility (the ability to respond to stimuli). Haller played a much bigger role in Rush's view of medical history. Rush used irritability and sensibility as the basis for his own concepts of "excitement" and "excitability." He also relied on Haller's work on nerves to suggest that bodies were fundamentally excitable (moveable or living) entities. In Rush's students' notebooks, Haller is the sixth most cited individual out of 469 authorities mentioned, see table 0-2.

Haller's basic principles were widely accepted and adapted by medical theorists throughout Europe and European colonies. In 1755 English physician Richard

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Brocklesby (1722-1797) replicated Haller's experiments for the Royal Society in London with success.\textsuperscript{139} Nervous fibers and muscular reflex action or "irritability" pointed to an innate capacity for movement within bodies. Impulses sent from irritable tissues (especially the nerves) seemed to direct the actions of sensible organs. The eighteenth century saw the interest in the potential of the nervous system as an explanation for physiological function in Britain. Early in the century Robert Whytt (1714-1766) argued that the nerves helped unify the body and bring it into sympathy with itself.\textsuperscript{140} Blood vessels conveyed sympathy while the nerves formed the seat of sensibility and formed connections with distant vessels and organs.\textsuperscript{141}

The concept of sensibility and prevalence of nervous fevers permeated lay understanding of bodies by the end of the century. Physician George Cheyne (1671-1743) popularized the idea that Britons were suffering from nervous fevers induced, more often than not, by their lifestyle.\textsuperscript{142} Others argued that the sensibility of nerves and sympathy of bodies connected physical and mental life.\textsuperscript{143} Outward displays of sensibility indicated a

\textsuperscript{139} Brown, “From Mechanism to Vitalism in Eighteenth Century English Physiology,” 180–81.

\textsuperscript{140} Bassiri, “The Brain and the Unconscious Soul in Eighteenth-Century Nervous Physiology: Robert Whytt’s Sensorium Commune.”


\textsuperscript{142} Guerrini, Obesity and Depression in the Enlightenment: The Life and Times of George Cheyne; George Cheyne, The English Malady: Or, a Treatise of Nervous Diseases of All Kinds; as Spleen, Vapours, Lowness of Spirits, Hypochondriacl, and Hysterical Distempers, &c., 3rd ed. (London: Printed for G. Strahan, 1734).

refined character. David Hartley and Erasmus Darwin (1731-1802) hypothesized about unseen motions or vibrations in living bodies. Hartley, in a volume edited by chemist Joseph Priestly (1733-1804), wrote that "sensibility, and the power of motion, seem to be conveyed to all the parts in their natural state, from the brain and spinal marrow, along the nerves." Both men inspired Rush in the United States to argue that such motions were responsible for sickness and health although Rush reduced the power of the nerves themselves and argued that their primary goal was to perceive stimuli rather than to direct the actions of the body. Rush was surrounded with ideas and inspiration for a physiology of balance. Where he began to differ from his British colleagues was in his dogged determination to see the stimulation of the system in the general excitement of the external environment and managed by a heterogeneous assortment of organs.

As indicated above, Rush developed from student to professional during his time in Edinburgh. He expanded his knowledge but also his ability to question and think critically and philosophically. When he graduated in the Spring of 1768, after defending a thesis on theories of digestion, he was only 22 years old, still a very young man and not yet

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finished with his education. At the behest of his mentor Morgan in September he and two companions began their overland journey to London.

2.3 Rush in the Capitals

As noted above, Rush's medical education in Europe expanded beyond the classroom it also extended beyond Scotland. He began supplementing his medical education and knowledge of languages in the Scottish summers between standard medical courses, as noted above. In addition to languages, Rush continued to cultivate important friendships and patronage in Edinburgh and also in London, and Paris. According to his autobiography, Rush arrived in London in September 1768 and remained at lodgings in the Strand until February 1769.\textsuperscript{146} With introductions from Benjamin Franklin (1706-1790) and John Fothergill (1712-1780), he attended dinners and meetings of philosophical figures and frequented the capital's salons. At these events, as in similar settings in Edinburgh, Rush absorbed new ideas about science and especially politics. Franklin became a substitute father-figure for Rush, even loaning him money for a trip to Paris and furnishing him with additional letters of introduction for the French capital.\textsuperscript{147} Fothergill, a prominent Quaker physician, maintained strong ties with Philadelphia and took an interest in the young man. Once a week Rush had breakfast with Fothergill during which time they

\textsuperscript{146} Rush and Biddle, \textit{A Memorial Containing Travels Through Life Or Sundry Incidents in the Life of Dr. Benjamin Rush, Born Dec. 24, 1745 (Old Style) Died April 19, 1813}, 42.

\textsuperscript{147} Ibid., 33, 42, 49.
discussed medicine and politics. Fothergill presented the young man with another example of how physicians fostered diverse interests.148

With respect to medicine, Rush followed Morgan's advice and furthered his education with hospital lectures. While in the city he attended William Hunter's (1718-1783) and William Hewson’s (1739-1774) dissections, Richard Huck's (1720-1785) lectures at the Middlesex Hospital, and those of the physician-poet Mark Akenside (1721-1770) at St. Thomas’s. Rush formed the warmest connection with Huck. The two maintained a mentor-mentee relationship for years, evidenced by their transatlantic correspondence. The elder physician critiqued some of the young American's early publications and tried (unsuccessfully) to find a politically opportune moment to put Rush's name up for election to the Royal Society in the early 1770s.149

Huck also ushered Rush into London medical society by introducing him to Sir John Pringle (1707-1782). Pringle proved to be an incredibly influential figure on Rush, especially in the way he leveraged military experience to promote medical improvement, as discussed in chapter three.150 Pringle was also a physician closely associated with political power as a royal physician.151 Both Huck and Pringle hosted "medical

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148 Ibid., 33.

149 Richard Huck to Benjamin Rush (1771-1775), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. VII.


151 For more on Pringle's association with the crown and political patronage see, Weidenhammer, “Patronage and Enlightened Medicine in the Eighteenth-Century British Military: The Rise and Fall of Dr John Pringle, 1707-1787.”
conversation" parties once a week in their homes to which they invited Rush.\textsuperscript{152} Beyond medical circles Rush continued to involve himself in political and literary circles. He attended Catherine Macaulay’s weekly literary coterie and engaged her publicly in discussions of republicanism.\textsuperscript{153} In 1769, when Rush prepared to return to Pennsylvania she wrote that she would be sorry to lose his conversation from the “Senate” of her “republic.”\textsuperscript{154} In an even more radical act, Rush attended a dinner served in Newgate prison for the detained radical politician John Wilkes (1725-1797). The dinner was arranged by Rush's friend and fellow American Arthur Lee of Virginia (1740-1792).\textsuperscript{155}

In February 1769 Rush left London to visit Paris. He carried letters which introduced him to the chemist Pierre-Joseph Macquer (1718-1784), the physicist Jean-Antoine Nollet (1700-1770), the philosopher Denis Diderot (1713-1784), and the physician Jacques Barbeu-Dubourg (1709-1779). Barbeu-Dubourg was one of the few physicians Rush spent time with in Paris. The short visit (only one month) was not particularly formative for the young man as a physician. As noted in the introduction of this dissertation, Rush had a conspicuous lack of interest in Parisian medicine even at the turn of the nineteenth century. Rather than a place medical improvement, Rush's time in Paris is notable as a place of political discourse, language acquisition, ethnographic observation, and chemical knowledge. With respect to politics Rush found himself in demand as an

\textsuperscript{152} Rush and Biddle, \textit{A Memorial Containing Travels Through Life Or Sundry Incidents in the Life of Dr. Benjamin Rush, Born Dec. 24, 1745 (Old Style) Died April 19, 1813, 32.}

\textsuperscript{153} Ibid., 37; Rush, \textit{Letters of Benjamin Rush}, 70.

\textsuperscript{154} Catherine Macaulay (1769), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XXIII

\textsuperscript{155} Rush and Biddle, \textit{A Memorial Containing Travels Through Life Or Sundry Incidents in the Life of Dr. Benjamin Rush, Born Dec. 24, 1745 (Old Style) Died April 19, 1813, 38.}
American during the imperial crisis. Barbeu-Dubourg introduced Rush to the economist the Marquis de Mirabeau (1715-1789) who expressed his pleasure in meeting a friend of the great Dr. Franklin's and questioned the young man about John Dickinson's (1732-1808) recently translated *Letters from a Farmer in Pennsylvania* (1767-1768).156

With respect to medicine Rush reported little of interest from Paris. While some hospitals were well-run by his reckoning, the Hotel Dieu was a comparative disgrace "crowded and offensive. [he] saw four persons in one bed."157 The absence of French, and especially Parisian medical thought is glaring in Rush's later teaching and work. In the end, Edinburgh, and to a lesser extent London, set the tone for his teaching and professional pursuits. A survey of 36 volumes of student notebooks taken from Rush's theory and practice lectures between 1789 and 1813 include citations for 469 individual medical authorities. Some only appear once, some begin to appear after a specific period of time, and others appear frequently. Tables 1-1 and 1-2 show first, individuals who were Rush's peers, and second, those in ten or more of the 36 notebooks. A perusal of both lists shows the expected and unexpected. Cullen, Boerhaave, Sydenham, and Haller all appear frequently. So too does John Brown (1735-1788) another student of Cullen who formed a new medical system at the end of the eighteenth century. Rush's and Brown's systems are often considered together and they did have important similarities. Both used the terms "excitement" to describe something like stimulus to bodies. Brown claimed diseases arose from too little or too much excitement and treated debilitating diseases with stimulating remedies, notably opium and alcohol. Rush typically began his lectures by distancing

156 Ibid., 42–43.
157 Ibid., 44.
himself from Brown and argued that only debility caused disease and it should be treated with depleting remedies. In the context of the notes generally Rush set himself up in opposition with previous systems and system-makers. The lists also include colonial doctors like Colin Chisholm (1755-1825), James Lind (1736-1812), and George Cleghorn (1716-1789) who wrote on the kinds of warm-weather fevers Rush saw in Philadelphia. The great figures of French medicine, however, François-Joseph-Victor Broussais (1772-1838) and Pierre Jean George Cabanis (1757-1808), are conspicuously absent despite their and Rush's shared interest in physiology and emphasis on inflammation.

As noted above, however, Rush's time in Paris emphasized not medicine, but other sciences, especially chemistry. He probably obtained his copies of Macquer's dictionary and Marie-Genevieve-Charlotte Thiroux d'Arconville's (1720-1805) work on putrefaction during his trip to Paris. It is unclear if Rush met Thiroux d'Arconville, however he certainly shared a broad approach to the applications of chemistry with Macquer. Both publications proved useful to Rush's chemistry lectures in Philadelphia and are cited in one of his first published works, a chemical analysis of Pennsylvania mineral waters.

Rush also spent time observing the French character. In his autobiography, he spends several pages noting the similarities between the decadence of the French upper

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classes and the "savagery" of American Indians in a manner reminiscent of his ethnographic work, *An Inquiry into the Natural History of Medicine among the Indians of North-America* (1774), discussed in chapter five.\(^{161}\)

Although Rush's European travels came to an end in May 1769 his work and research was only beginning. After a few months back in London he sailed to New York City and returned to Philadelphia overland. That winter he began teaching chemistry and based his lectures on the work of Cullen and Black. His mimicry, however was not permanent. Like Redman, Rush incorporated his experiences into his medical philosophy and practice, but he also appreciated the difference between his situation and those of his Scottish and English teachers. America was as different from Europe as tropical colonies were and Rush's future endeavors sought to find the answer to the American medical puzzle.

TABLE 2-1

LIST OF RUSH'S PEERS CITED IN STUDENT NOTEBOOKS (1789-1813) IN WHICH A "PEER" IS CONSIDERED ANY PRACTITIONER BORN WITHIN TEN YEARS OF 1745

<table>
<thead>
<tr>
<th>Name</th>
<th>Country of Origin/Practice</th>
<th>Dates</th>
<th>Notebook Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas Arnold</td>
<td>England</td>
<td>1742-1816</td>
<td>2</td>
</tr>
<tr>
<td>Ernst Gottfried Baldinger</td>
<td>Germany</td>
<td>1738-1804</td>
<td>1</td>
</tr>
<tr>
<td>James Beattie</td>
<td>Scotland</td>
<td>1735-1803</td>
<td>5</td>
</tr>
<tr>
<td>Sir Gilbert Blane</td>
<td>Scotland/West Indies</td>
<td>1749-1834</td>
<td>5</td>
</tr>
<tr>
<td>John Brown</td>
<td>England/Scotland</td>
<td>1735-1788</td>
<td>28</td>
</tr>
<tr>
<td>Colin Chisholm</td>
<td>Grenada</td>
<td>1754-1825</td>
<td>2</td>
</tr>
<tr>
<td>William Cruikshank</td>
<td>Scotland</td>
<td>1745-1825</td>
<td>4</td>
</tr>
<tr>
<td>Andrew Duncan, the elder</td>
<td>Scotland</td>
<td>1744-1828</td>
<td>1</td>
</tr>
<tr>
<td>George Fordyce</td>
<td>England</td>
<td>1736-1802</td>
<td>4</td>
</tr>
<tr>
<td>Luigi Galvani</td>
<td>Italy</td>
<td>1737-1802</td>
<td>3</td>
</tr>
<tr>
<td>Edward Gibbon</td>
<td>England</td>
<td>1737-1794</td>
<td>2</td>
</tr>
<tr>
<td>Matthew Guthrie</td>
<td>Russia</td>
<td>1743-1807</td>
<td>2</td>
</tr>
<tr>
<td>John Haygarth</td>
<td>England</td>
<td>1740-1827</td>
<td>1</td>
</tr>
<tr>
<td>Robert Jackson</td>
<td>Jamaica</td>
<td>1750-1827</td>
<td>3</td>
</tr>
<tr>
<td>Edward Jenner</td>
<td>England</td>
<td>1749-1823</td>
<td>2</td>
</tr>
<tr>
<td>Antoine Lavoisier</td>
<td>France</td>
<td>1749-1794</td>
<td>2</td>
</tr>
<tr>
<td>James Lind</td>
<td>East Indies</td>
<td>1736-1812</td>
<td>2</td>
</tr>
<tr>
<td>Thomas Percival</td>
<td>England</td>
<td>1740-1804</td>
<td>7</td>
</tr>
<tr>
<td>Count Benjamin Rumford</td>
<td>Massachusetts</td>
<td>1753-1814</td>
<td>1</td>
</tr>
<tr>
<td>James Tilton</td>
<td>Pennsylvania</td>
<td>1745 b.</td>
<td>5</td>
</tr>
<tr>
<td>Thomas Trotter</td>
<td>Scotland</td>
<td>1740-1832</td>
<td>3</td>
</tr>
<tr>
<td>Michael Underwood</td>
<td>England</td>
<td>1737-1820</td>
<td>1</td>
</tr>
<tr>
<td>Eusebio Valli</td>
<td>Italy</td>
<td>1755-1816</td>
<td>3</td>
</tr>
</tbody>
</table>
TABLE 2-2

LIST OF MOST FREQUENTLY-CITED AUTHORITIES IN STUDENT NOTEBOOKS (1798-1813)\textsuperscript{162}

<table>
<thead>
<tr>
<th>Name</th>
<th>Country of Origin/Practice</th>
<th>Dates</th>
<th>Notebook Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Francis Balfour\textsuperscript{163}</td>
<td>Scotland/India</td>
<td>fl. 1812</td>
<td>11</td>
</tr>
<tr>
<td>Herman Boerhaave</td>
<td>Netherlands</td>
<td>1668-1738</td>
<td>22</td>
</tr>
<tr>
<td>Thomas Bond</td>
<td>Pennsylvania</td>
<td>1712-1784</td>
<td>12</td>
</tr>
<tr>
<td>John Brown</td>
<td>England/Scotland</td>
<td>1735-1788</td>
<td>28</td>
</tr>
<tr>
<td>James Bruce</td>
<td>Scotland</td>
<td>1730-1794</td>
<td>13</td>
</tr>
<tr>
<td>George Cleghorn</td>
<td>Scotland/Minorca</td>
<td>1716-1789</td>
<td>13</td>
</tr>
<tr>
<td>William Cullen</td>
<td>Scotland</td>
<td>1710-1790</td>
<td>31</td>
</tr>
<tr>
<td>Erasmus Darwin</td>
<td>England</td>
<td>1731-1802</td>
<td>16</td>
</tr>
<tr>
<td>John Fothergill</td>
<td>England</td>
<td>1712-1780</td>
<td>16</td>
</tr>
<tr>
<td>Benjamin Franklin</td>
<td>Pennsylvania</td>
<td>1706-1790</td>
<td>13</td>
</tr>
<tr>
<td>John Gregory</td>
<td>Scotland</td>
<td>1724-1773</td>
<td>10</td>
</tr>
<tr>
<td>Albrecht von Haller</td>
<td>Switzerland</td>
<td>1708-1777</td>
<td>16</td>
</tr>
<tr>
<td>Hippocrates</td>
<td>Greece</td>
<td>460 BCE-370 BCE</td>
<td>10</td>
</tr>
<tr>
<td>Friedrich Hoffmann</td>
<td>Germany</td>
<td>1660-1742</td>
<td>10</td>
</tr>
<tr>
<td>John Hunter</td>
<td>England</td>
<td>1728-1793</td>
<td>24</td>
</tr>
<tr>
<td>John Locke</td>
<td>England</td>
<td>1632-1704</td>
<td>13</td>
</tr>
<tr>
<td>Philip Syng Physick</td>
<td>Pennsylvania</td>
<td>1768-1837</td>
<td>12</td>
</tr>
<tr>
<td>Sir John Pringle</td>
<td>Scotland/Low Countries</td>
<td>1707-1782</td>
<td>10</td>
</tr>
<tr>
<td>Thomas Sydenham</td>
<td>England</td>
<td>1624-1689</td>
<td>27</td>
</tr>
</tbody>
</table>

2.4 Independent Medicine

Rush arrived in Philadelphia on July 18, 1769 and began setting up his practice. With the support of Morgan and Redman he secured the position and began his professional career in Philadelphia. Rush wanted to make a name for himself and build a reputation as

\textsuperscript{162} In this case "frequently" is defined as ten or more citations of an individual authority.

\textsuperscript{163} Balfour could probably count as a peer of Rush, he graduated for the University of Edinburgh around the same time in 1767, however these lists will err on the side of caution as he does not have a readily-accessible birth date.
a scientific practitioner. He did so carefully, fighting against long social odds as neither a wealthy man nor a member of a powerful religious group like the Quakers. In his autobiography, Rush noted the importance of starting his practice among the poor (a tactic he also recommended to his students) which he claimed built his reputation. He also relied on the recommendation of fellow medical practitioners, including midwives. Rush included a reference to his professional association with Mrs. Patten, a Philadelphia midwife. He credited her with his early success – she referred him to her own patients - - which is perhaps what led the mature scholar-physician to stress the importance of good relationships between doctors and women. Ladies, he pointed out, frequently controlled which doctor attended ill family members and how often. Beyond the practicalities of running a medical business in the years after his return from Edinburgh Rush started down a path which would change the way medicine was taught and practiced in the United States.

One path by which Rush became a change-maker was through his role as a professor of chemistry (1796-1789) and theory and practice of medicine (1789-1813) with the College of Philadelphia and its successor organization the University of Pennsylvania. From its inception in the mid-1760s the medical faculty in Philadelphia had attempted to make medical education more accessible to American students and thereby improve colonial (later national) medical practice. During the war Rush left his post to serve in the medical department of the Continental Army supervising hospitals in Pennsylvania, New


Rush continued his role as medical educator after his resignation from the Army in 1780.

When teaching, Rush spent part of his days between November and April standing in front of a lecture hall filled with men attempting to gain medical knowledge. According to his own records classes ranged from 29 students in 1789 to 370 students in 1810. Most of the College of Philadelphia/University of Pennsylvania students came from the Mid-Atlantic and Upper South, the largest proportion from Pennsylvania and Virginia. For a breakdown see figure 1-2 below. With only a few exceptions the men of Rush’s classroom were American and established their practices in the new United States. Rush instructed them in his Americanized view of medicine. It synthesized his Scottish education, English and French travels, local observations, and tropical treatises to form a republican medicine.

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Figure 2-2 Medical Graduates from the University of Pennsylvania by State (1791-1813) for those students with a home state listed on their records at the University of Pennsylvania Archive

The key characteristics of Rush's view were: (1) bodies worked or malfunctioned based on the state of their environment, (2) all organs had distinctive roles to play in the maintenance of healthy balance, and (3) the American environment was unique and therefore provided unique challenges to human bodies. These principles both emulated and altered standard views of physiology. Rush described his work as a revolution in medicine. An evolution may be a more accurate term. The idea that weather and bodies were linked had ancient roots and was ascendant during the eighteenth century, as evidenced by the historical work of Mark Harrison, Charles Glacken, and others.167

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In order to "improve" human bodies Rush needed to understand their underlying principles and alter them to restore health. He came to the conclusion that bodies possessed a certain amount of "excitability" which required stimulus or excitement to keep up and maintain health. Disease came from either over or under stimulation of the system; too much or too little excitement. As suggested above, he benefited from the work of another Cullen student, Brown. Although Rush distanced his system from Brown he shared a vocabulary and desire to simplify disease concepts. Brown claimed his system originated from his own struggle with gout and the inability of standard interventions (moderate eating and abstinence from alcohol) to cure it.

For Rush, “excitement” acted as a common measure of stimuli generated by emotions, chemicals, and physical alterations in the environment. Even a political event, like a parade or election might bring high levels of excitement and stimulate the body. In the same manner, an alkaline water might carry high excitement and so too could a warm bath. So too a brisk walk on a warm day might cause the walker to become flushed and sweaty. Red cheeks and moisture also accompanied the emotional excitement induced by seeing the object of one’s desire. A body unable to return to equilibrium exhibited disease,

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168 King, The Medical World of the Eighteenth Century, 143–47; Neubauer, “Dr. John Brown (1735-88) and Early German Romanticism,” 369. Brown's ideas were taken up by German Romantics, especially Schelling as discussed by Neubauer and Risse, “Schelling, ‘Naturphilosophie’ and John Brown’s System of Medicine.”
typically from some physical blockage, meaning that too much excitement to an already
damaged body could trigger a fever. Love-sickness, to Rush and many of his
contemporaries, could literally be a disease.\footnote{Hamlin, \textit{More than Hot: A Short History of Fever}, 97–98, 131, 306–8. At one point, an
anonymous student left Rush a letter asking for help with this particular disease after losing the lady he
admired, LC, Rush Family Papers, Benjamin Rush Correspondence, Vol I. Box 2, Folder 37.}

Rush began his lectures on Animal life with three general propositions. First,
“[e]very part of the human body…is endowed with sensibility,” defined as “the power of
having sensation excited by the action of impressions” and “excitability” as “that property
in the human body, by which motion is excited.” These definitions were nearly
synonymous with irritability, contractility, mobility, and stimulability.\footnote{Benjamin Rush, “An Inquiry into the Cause of Animal Life,” in \textit{Medical Inquiries and
included motions both visible and imperceptible in its expansive definition. The second
proposition stated that bodies were “so formed and connected, that impressions made in
the healthy state upon one part, excite motion, or sensation, or both, in every other part of
the body. From this view, it [the body] appears to be a \textit{unit, or a simple and indivisible
quality}.”\footnote{Emphasis added, Ibid., 376.} Proposition three, deduced from propositions one and two that “[l]ife is the
effect of certain stimuli acting upon the sensibility and excitability which are extended, in
different degrees, over every external and internal part of the body” and that “stimuli are
as necessary to its existence, as air is to flame.”

Rush called life a “forced state”, following a supposedly abandoned idea of
Cullen’s and a shared with Brown.\footnote{Ibid., 376–77.} By forced, he argued that life could only exist in the
presence of external sources of excitement acting upon human or animal bodies. The excitement spurred on the vibrations which made organs function and sympathize with one another. Life was for Rush inseparable from the forces surrounding it. The “forced state” language appears repeatedly in Rush’s publications and manuscript lectures and those of his students. In his published lectures on animal life, he used the concept to argue that bodies are not “self-moving machines” or automatons, but are moved by the external forces of heat, acidity/alkalinity, or mental stimulation. Bodies, and their associated minds, bombarded with stimulation underwent changes in their physical motions and internal chemistry which induced life. Bodies in this sense could not be considered isolated from their surroundings. In doing so Rush not only showed his connection to his preceptor Cullen, and contemporary his Brown, but to a much wider debate on the nature of living bodies and minds.

In the theory’s mature state Rush moved beyond mechanism to use excitement as a bridge between chemical transformations, bodily motions, and human minds. S. Agnew, a student in 1810, recorded the following:

_Do not the passions and Emotions of the mind, and the increased action of the nerves and arteries, which are found to have a great effect on the secretions act by creating motion which increase Fermentation? Mr. Leibniz to account for it, has supposed, that there are but five original forms of matter in existence, and that all the different properties and appearances [of] bodies are owing to different modifications._ This opinion appears improbable when we reflect on the amazing number of forms which bodies put on as taught as by chemistry the very airs which appear all similar, to be characterized by distinct properties._ And the late new discoveries concerning water, that it consists of two kinds of air in humid form._

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173 Ibid., 377.

174 Emphasis added, S. Agnew, University of Pennsylvania Kislak Center for Special Collections, Rare Books and Manuscripts Mss Coll 225, Box 4, Item 8, Vol I, 327.
Rush’s focus on small motions and life as a collection of vibrations came in part from the work of Hartley and was fostered through his relationship with Priestly, who admired and commented on Hartley’s work. After 1794 Priestly lived in rural Pennsylvania and continued to write and research until his death a decade later.\textsuperscript{175} The above passage also demonstrates the role of chemistry in a general physiology, or at least a hypothetical role for chemical irritation, which could occur in many parts of the body. Rush’s role as professor of chemistry before 1789 should not, in this case, be overlooked. Long after he moved on the chair of theory and practice of medicine in Philadelphia he maintained a toehold in chemistry and introduced into the classroom its evolving concepts from oxygen to fermentation. As suggested above, Rush considered chemical reactions to be a possible source for excitement and explanation for some physiological processes. Digestion, for example, he described as a fermented process which broke down food and drink releasing excitement in the process.

The ability to excite and be excited, was only half of the equation in Rush's physiology. He also emphasized the idea that "excitement" was a fundamental property of all stimuli. This had implications for the roles of different organ systems. In his lectures on animal life, Rush specifically cited Eusebio Valli’s (1755-1816) work on “animal

electricity” as evidence for a different and weaker view of the nervous system than that of his contemporaries. He argued that the nervous system merely ferried stimuli from the extremities and to the brain. Rush, in this manner, broke with some of the dominant trends in British medicine in which physicians and laymen alike were preoccupied with the central nervous system and the possibility of nervous diseases. Rush believed that such focus was misplaced and that physiology only allowed that the nervous system (which included for him, as for Cullen, the muscular fibers) reacted to external and internal doses of excitement. Nerves opened the gate into the body but did not regulate the passage of excitement. The whole collection of nerves, including muscles and brain, only constituted a twitchy collection of matter that resonated with other systems, which could either abstract or amplify its operation. The one-way street meant that the nerves alone could not account for the circulation of excitement and sympathetic bodily motions.

Famously, the blood vessels served as the major conduits for excitement throughout the body, for Rush. Circulation of the blood meant that excitement could travel in a circular rather than simply linear direction. He also viewed them as the primary movers of the body, going everywhere and able to interact constantly with the environment. When excited, the tension of the arterial wall increased, the heart muscle contracted, and together they

176 Rush, “An Inquiry into the Cause of Animal Life,” 450. He probably read about Valli’s experiments in a book sent by his former student James Proudfit from Scotland in 1793: Eusebius Valli, *Experiments on Animal Electricity, with Their Application to Physiology and Some Pathological and Medical Observations* (London: Printed for J. Johnson, 1793). In other notes and publications Rush also indicated a familiarity with the work of the more famous Italian electrical experimenters physiologists Luigi Galvani and Alessandro Volta.


propelled the liquid blood throughout the body; its pressure excited other organs. Meanwhile, the mirror system to the blood vessels, the lymphatics and glands, abstracted excitement by absorbing tense blood and connecting the body's internal organs with the skin and outside world. The best way for a physician to evaluate the state of the body was to pay close attention to the pulse.\textsuperscript{179}

Rush further distanced himself from Brown by focusing not on the simple balance of excitement and excitability, but on the regularity of bodily motions. He argued that the action of the blood stimulated the arteries and heart into motion which in turn imparted “extensive and uniform impressions to every animal fibre.”\textsuperscript{180} Irregular motions in the nerves, but especially in blood and blood vessels caused disease. An elevated pulse could be healthy if regular, like it might be after running, riding, or dancing. Irregular motion, on the other hand, indicated fever.\textsuperscript{181}

Health depended on an even and regular distribution of excitement and motion, something that the nerves could not accomplish. Blood, as suggested above, could change and impart excitement in its own right as well as react to the reciprocal action of the blood vessels. In this sense, Rush’s “excitement” bears a strong resemblance to energy. Like energy, excitement could manifest itself in different forms, mechanical, chemical, heat, and light. It could irritate nerves through the senses, alter blood chemistry through oxygenation

\textsuperscript{179} The metaphor of circulation with respect to commerce and physiology is discussed in Altschuler, “From Blood Vessels to Global Networks of Exchange: The Physiology of Benjamin Rush’s Early Republic.”

\textsuperscript{180} Rush, “An Inquiry into the Cause of Animal Life,” 388.

\textsuperscript{181} Rush, Medical Inquiries and Observations: Volume 3, 18.
in the lungs, and release heat in the combustion of digestion.\textsuperscript{182} Nerves and blood vessels connected each of these sites of excitement thus kept the body in crude sympathy with itself. No action could go undetected. The blood vessels, meanwhile, delivered excitement from places of high concentration to those of low concentration in an attempt to evenly stimulate the body. Blockages or irregularities produced disease.

On a larger scale, as discussed in the proceeding chapters, the fundamental relationship between bodies and excitement had implications for their biological and social relationships. Like Sydenham, Rush believed that geological activity released substances into the air which could encourage putrefaction and disease. In accordance with many colonial counterparts, he argued that maintaining health required adjustments to the local climate in exercise, dress, and diet. Finally, like Montesquieu (1689-1755) Rush believed in a reciprocal relationship between climate, government, and national character. The remaining chapters of this project will consider these relationships and how Rush sought to address them in the republican United States.

Rush, however, explicitly linked ideas of environmental distinctiveness to American republicanism. Put together the North American environment and the new government merged to create a unique bio-social space. One student recorded Rush’s arguments against “monarchical” views of medicine, “Dr Cullen considered them [nerves] as Monarch to the System I conceive them acting a much more humble part they are only

\textsuperscript{182} Rush changed his views of respiration overtime to reflect new information, especially the work of Antione Lavoisier. By 1790 both phlogiston and oxygen appear in student notebooks and Rush translated between one system and the other for students as late as 1810.
door-keepers or Messengers to the Bloodvessels, while the bloodvessels may be considered as the Centinels [sic] of the System.”

This sentiment appears explicitly in the notebook of one of Rush’s students. In the wake of the Revolution this issue became all the more important. Freedom literally imparted health upon a population by creating “an equilibrium of Irritability & Sensibility.” The physiological terms can be traced back to Haller. Rush thought that they could apply to more than muscle twitches and even used them to describe the association between human bodies and political revolution, showing the rational side of medical systems. He went on to provide an example. In 1796 one student recorded in his notebook that Rush followed the physiological comment by saying that such equilibrium “is rapidly taking place in france [sic.]... Errors are opposed to errors & Truths harmonize with each other.”

In this reading the physical and political “truth” of freedom would break out across Europe. Like medical therapeutics, the cure could be as violent as the disease. Freedom and health, despotism and sickness, the pathophysiology of Benjamin Rush sought to reshape the medical world according to republican principles. Bodies were small republics and eventually would demand that the wider world match biological truth.

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183 Hare, vol. I (1796), KCRBM, Ms. Coll. 225, Item 9.

184 Hare, vol. I (1796) Rush attributed his political radicalization to his time in Edinburgh and London in the mid-1760s Rush, The Autobiography of Benjamin Rush: His “Travels Through Life” Together with His Commonplace Book for 1789-1813. The “correction” Rush referenced with respect to the French Revolution may have been a reference to the establishment of the Directory in 1795 and its new constitution which looked more like the American system of government than the radial rule during the “Reign of Terror.”

2.5 Conclusion

In the autumn of 1801 medical student Samuel Agnew recorded the following from Rush's introductory lecture.

An American Physician will in vain attempt to cure diseases which occur only in our Country by European practice, or by that of the West or East Indies. Many an American has lost his life under the care of the most eminent British Physicians, for the mild practice which they use being incapable of subduing a disease of such force as that they encountered. Again, the disease of our own country affords us a strong argument in proof of this position.\(^{186}\)

By the turn of the nineteenth century Rush believed American diseases and American bodies to be fundamentally different from those of other countries. Statements like that recorded by Agnew passed this conviction on to the next generation of American practitioners.

The roots of Rush's feelings came from his education. He took the concept of environmentally-responsive bodies and nervous physiology from Scottish medical training, Enlightenment social theory, and American practice and together concluded that his country was simply different. The unique American climate produced different types and amounts of putrefying effluvia; American bodies performed work under different conditions, and American minds found themselves exercised and challenged by their republican society. American diseases, as a result, were more forceful, came about with a greater degree of excitement and attacked physically stronger bodies. Although general theory could cross oceans, practice could only be derived from local knowledge. In the preface to his 1812 *Inquiries and Observations Upon Diseases of the Mind* Rush explained his use of older sources by stating "the publication of them, it is hoped, will be excused,\(^ {186}\)

when it is perceived, that they are placed under the direction of new principles, and that
new inferences of a practical nature are deduced from them.\textsuperscript{187}

Like Cullen, Rush had a very dubious view of \textit{vix medicatrix naturae}, the healing
power of nature. Nature for Rush could be wrong, impotent, or even capricious. In short,
the benevolence of God did not always extend to his creation. Rush's vision of nature is
often synonymous with wildness or wilderness. In nature the actions of living and non-
living entities were left without regulation or good management. The importance of
improving or managing space had a long history in North America as a sign of use,
ownership, and "civilization" so too did a fear of the wilderness. Both aspects will be
discussed further in chapter three. Rush's capricious nature, or a world out of sync with its
own best interest reflects the Biblical concept of an imperfect world after the Fall in
Genesis. Nature held within it the possibility of perfection (with intervention) but left on
its own nature remained an untrustworthy ally. The following chapters examine the manner
in which Rush came to command local information and put it to use.

\textsuperscript{187} Benjamin Rush, \textit{Medical Inquiries and Observations Upon the Diseases of the Mind}, 4th ed.
(Philadelphia: John Grigg, 1830), v.
CHAPTER THREE:
"UNIFORMLY VARIABLE"

Weather and health went hand-in-hand for eighteenth-century physicians. As early as 1770, Benjamin Rush was collecting books that described the state of health with respect to climate. Only recently returned from England in 1770 he contacted book publishers Charles and Edward Dilly specifically requesting Quaker physician John Rutty’s (1698-1775) new imprint, *A chronological history of the weather and seasons, and of the prevailing diseases in Dublin.*  

Two decades later, in the early 1790s, Rush cited John Huxham's (1692-1768) work on climate and health in Plymouth, England with respect to fevers as a model for students in his theory and practice of medicine class at the University of Pennsylvania. Like Huxham and Rutty, Rush thought that atmospheric observations could provide information about the potential danger of epidemics. Rush's interest in their publications, which might be termed neo-Hippocratic, hints at the persistent association between weather, geography, and health exemplified by Thomas Sydenham.

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Given Rush’s high opinion of Sydenham’s work and his distinction by some as the “American Sydenham” it is unsurprising that the vagaries of the American climate became central to his work after the American Revolution.

Moreover, Rush, in his focus on health and place, conformed to dominant trends in eighteenth century medicine. James C. Riley refers to this approach as "environmental medicine." Riley identifies this interest in health and place in many countries from England and France to Germany and the United States.\(^{190}\) Jan Golinski has addressed this trend with respect to Britain specifically arguing that study of the weather became increasingly important during the eighteenth century and the British people started to understand "normal" versus "abnormal" weather patterns. In the United States, he notes that intellectual debate over the nature of the American atmosphere pervaded arguments about how to best respond to yellow fever, which is discussed in the next chapter.\(^{191}\)

For Rush and others of his generation, the American climate was remarkable and even unified by its variability. Rush wrote that in Pennsylvania, “[t]here are no two successive years alike. Even the same successive seasons and months differ from each other every year. Perhaps there is but one steady trait in the character of our climate, and that is, it is uniformly variable.”\(^{192}\) When he examined the state as a whole, that variability became a microcosm of the whole world’s weather:

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\(^{190}\) Riley, *The Eighteenth-Century Campaign to Avoid Disease*, xvi, 44-45, 104-105, 141-42.


From a review of all the facts which have been mentioned, it appears that the climate of Pennsylvania is a compound of most of the climates in the world. Here we have the moisture of Britain in the spring, the heat of Africa in the summer, the temperature of Italy in June... the cold and snows of Norway and the ice of Holland in the winter, the tempests... of the West-Indies in every season, and the variable winds and weather of Great-Britain in every month of the year.193

The connection between bodies and their environment dates back to ancient medical writing, as previously discussed. Extensive study on the environment itself, however, burgeoned in the seventeenth and especially eighteenth centuries, due in part to colonization. Unlike nineteenth and early twentieth-century perceptions of the environment, seventeenth and eighteenth-century thinkers were more likely to view the climate as changeable. Theories about both long-term trends and shorter atmospheric alterations pepper natural historical and medical literature of the period. Swedish-Finnish naturalist Pehr Kalm (1716-1779) specifically travelled to North American to describe its climate. Colonial medical practitioners like George Cleghorn (1716-1789) and William Hillary (1697-1763) included descriptions of the weather in their published works. According to George C.D. Adamson, by the early nineteenth century, non-medical British inhabitants of India correlated their personal health with the weather.194

193 Ibid., 108.
Temperature, rainfall amount, and other changes by season filled numerous tables, especially when scholars tried to gather information about the Americas and East Indies, whose climatic zones appeared unpredictable to Europeans. Looking back with the benefit of hindsight and twenty-first century climate science, we now know that extensive settlement of North America by Europeans coincided with the climatic instability of the “Little Ice Age.” Moreover, even without the explanation of an unusually cold period North America and Europe have very different climates based on geography and hydrology. The moderating forces of the Gulf Stream – which carries warm water from the tropical Atlantic to Northern Europe – and the Mediterranean do not apply to North America. A large dry continent to the west – which warms and cools more quickly than water -- and cool ocean currents off the coast of New England produce more extreme seasonality than similar European latitudes. Although Benjamin Franklin and Timothy Folger printed an accurate map the Gulf Stream in 1769, the full extent of its relationship to global climate was not known to figures like Rush.


Practitioners of the eighteenth century could not, however, look into the future, so they often looked to the past. Rush openly, and eagerly took lessons from Hippocratic texts, notably “Airs, Waters, Places” and the “Epidemics.” This ancient background predisposed eighteenth-century physicians and patients to look to their immediate environments for explanations of disease and health. Alterations in air composition and quality, relative moisture, temperature, or quality of food could all dramatically change the state of the human body. Rush, like his colonial counterparts, thought that disease behaved differently in the physical and social climate of the United States. French and British nosology, or categorizations of disease, would therefore have been useless.

The previous chapter discussed Rush’s personal development as a physician and introduced his medical system. This chapter grounds Rush’s theory within the geographic context of the United States. Climate and geography made North America physically stand apart from the rest of the world. In turn, this difference could be used to argue for a new and distinctive form of medicine for the American republic. Section one discusses the natural historical work of Rush’s French colleague and friend Constantin-François Volney (1757-1820) as an example of external perceptions of American climate and the manner in which eighteenth-century naturalists studied unique localities. Despite their close association, Rush and Volney used similar data to promote very different views of the young republic’s future with Rush taking an optimistic approach and Volney being doubtful. The second section dives into the professional network Rush built with students.

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Relative Heat of the Sea-Water from Time to Time the Passage of a Ship through the Gulph Stream, and from Deep Water into Soundings, May Be (Philadelphia: Printed and sold by R. Aitken, 1799).

197 For an account of the widespread use of “environmental” medicine in this period see, Riley, The Eighteenth-Century Campaign to Avoid Disease.
at the University of Pennsylvania. In addition to professional development, Rush's continued association with his students meant that he continued to collect geographic information without leaving Philadelphia. Rush’s expertise and knowledge claims came from a network of associates, not only his personal practice and observations. Similarly, professional networks and medical journals (after 1800) supplemented and made public medical correspondence throughout the country and beyond it. Finally, this chapter will consider Rush’s demonstration of climatic knowledge in the production of his “American Editions” of the works of Thomas Sydenham, John Pringle, George Cleghorn, and William Hillary. Each edition was carefully selected and edited to demonstrate the general importance of geographic knowledge for medicine and the specific uniqueness of the America.

Americans grappled with their geography, both the physical limitations of their land and their intellectual geography characterized most often by isolation and distance. This chapter argues that Rush attempted to conquer the tyranny of distance though communication networks. Correspondence, journals, and professional organizations created community across hundreds of miles. By leveraging those communities Rush was able to claim expertise on the American environment. This chapter shows how Rush used his connections to argue for American uniqueness and the necessity of American medicine.
3.1 Volney, Rush, and the American Climate

After visiting Pennsylvania and New Jersey between 1748 and 1751, Swedish-Finnish naturalist Pehr Kalm argued that the globe was gradually drying up and that North America was cooling. Based on the testimony of elderly Scandinavian settlers in the Delaware River Valley, Kalm furthered his arguments about desiccation and poor land-management in North America.\(^{198}\) Around the same time as Kalm's journey, Georges-Louis Leclerc, Comte de Buffon (1707-1788) hypothesized that the whole global system was winding down and would eventually freeze.\(^{199}\) Like Buffon's argument that New World animals were degenerate, fears about a deteriorating climate encouraged American pushback and stoked American fears. Thomas Jefferson was Buffon's most visible antagonist and published *Notes on the State of Virginia* in 1785 to demonstrate American fruitfulness. But he was not alone.\(^{200}\)

Writing a generation after Kalm, Rush took issue with the conclusions of *Travels into North America*. He argued that rather than cooling the United States was warming and becoming more temperate as a result of settlement. Rush took the then popular approach of crediting deforestation and claiming that orderly agriculture increased temperatures and

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productivity. As for Kalm’s oral histories, Rush characteristically turned to physiology as an explanation. According to Rush’s system, the elderly felt the cool more acutely than young people who are full of excitement. A memory of being warmer in one’s youth might therefore actually be a comparison between young and old bodies rather than warm and cold climates. In the wake of independence, the survival of the United States depended on local production, export markets, and immigration to further increase agricultural output. Bad press for the climate could jeopardize growth. By writing about the American climate and entering into debates about the nature of the country Rush acted as both scientist and booster, a combination evident in his relationship with Volney.

Unlike his purely academic associations with figures like Buffon and Kalm, Rush developed a much closer association with French naturalist and travel writer C.-F. Volney, who visited the United States between 1795 and 1798 spending his last winter and spring in Philadelphia. Like Rush, Volney was as interested in the politics of the new nation as he was in its geography and natural history. In the preface to the 1804 English edition of his *View of the Climate and Soil of the United States of America*, Volney noted that he “embarked at Hâvre with that disgust and indifference, which the sight and experience of injustice and persecution impart…to try whether a sincere friend of that Liberty, whose

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name had been so profaned, could find for his declining years a peaceful asylum, of which Europe no longer afforded him any hope."\textsuperscript{203}

With respect to the American climate, Volney, like Rush, characterized the country by its extreme variability. Before his journey to the United States, Volney had made a name for himself as a travel writer and observer. His book, \textit{Travels Through Egypt and Syria}, was known to American as well as French audiences including Rush and Noah Webster, who used Volney's descriptions of plague in his own observations about epidemic disease.\textsuperscript{204} Volney witnessed yellow fever while in the United States, including the 1798 Philadelphia epidemic. In North American, Volney claimed to have experienced many of the same conditions he attributed to the hot countries of the Eastern Mediterranean. The United States, was not however, uniform, and to account for variation he organized the country into four clear divisions: (1) the cold New England climate; (2) the variable middle climate of southern New York, Pennsylvania, and Maryland; (3) the hot climate of Virginia, the Carolinas, and Georgia; and (4) the western climate of Tennessee, Kentucky, and the Northwest Territories. Volney argued that these divisions reflected elevation as much or more than latitude in an attempt to account for the perennial American climate.

\textsuperscript{203} Constantin-François Volney, \textit{View of the Climate and Soil of the United States of America: To Which Are Annexed Some Accounts of Florida, the French Colony on the Scioto, Certain Canadian Colonies, and the Savages or Natives} (London: Printed for J. Johnson, 1804), iv.

\textsuperscript{204} Constantin-François Volney, \textit{Travels Through Egypt and Syria, in the Years 1783, 1784 & 1785: Containing the Present Natural and Political State of Those Countries; Their Productions, Arts, Manufactures & Commerce; with Observations on the Manners, Customs and Government of the Turks} (New York: John Tiebout, 1798); Noah Webster, \textit{Noah Webster: Letters on Yellow Fever Addressed to Dr. William Currie} (Baltimore: The Johns Hopkins University Press, 1947), 28.
problem. Within specific locations he complained about the dangerous variability of weather and its ill effects on his own health, especially in fickle Philadelphia.

Volney also described how he was overwhelmed by the country's wildness and diffuse population when compared with that of France. He wrote that “[t]o a European traveler…the prominent feature of the American soil is a wild appearance of almost uninterrupted forest, which displays itself on the shores of the sea, and continues growing

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205 Volney, View of the Climate and Soil of the United States of America: To Which Are Annexed Some Accounts of Florida, the French Colony on the Scioto, Certain Canadian Colonies, and the Savages or Natives, 5–6.

thicker and thicker as you proceed into the interior of the country.”

His travel in 1796 alone, shown above in figure 2-1, took him through multiple climatic zones. Concern about the forest recapitulated a common worry in eighteenth-century natural history. In northern climates, too much forest cooled a climate and marked a lack of agricultural production. In warmer regions open space was thought to aid in cultivating cooling breezes. Deforestation did have its downside as well. Volney attributed increased drought and larger rivers to forest clearing in Tennessee and Kentucky, indicating poor management of new farmland. Following a statement about the irregularity and unkemptness of American farms he wrote:

Add to this a fickle and variable sky, an atmosphere alternately very moist and very dry, very misty and very clear, very hot and very cold, and a temperature so changeable, that in the same day you will have spring, summer, autumn, and winter, Norwegian frost and an African sun. Figure to yourself these, and you will have a concise physical sketch of the United States.

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207 Volney, *View of the Climate and Soil of the United States of America: To Which Are Annexed Some Accounts of Florida, the French Colony on the Scioto, Certain Canadian Colonies, and the Savages or Natives*, 7.


210 Volney, *View of the Climate and Soil of the United States of America: To Which Are Annexed Some Accounts of Florida, the French Colony on the Scioto, Certain Canadian Colonies, and the Savages or Natives*, 25.

211 Ibid., 12.
Volney made careful observations about the weather he encountered during his journey. While in Philadelphia he obtained climate data from Rush in a semi-informal manner. Rush’s commonplace book indicates that much of his contact with visiting scientists, politicians, and public figures occurred during such private calls. He met colleagues for breakfast, supper, and in groups at Philadelphia’s salons. On February 9, 1798 Rush met Volney to discuss the climate of the southern states as well as whether "the bones of an Italian, and Spaniard [were] heavier than the bones of a German, Hollander, and Frenchman" and whether or not suicide resulted from mental derangement.212 The wide-ranging topics are common for Rush's conversations among colleagues who were as interested in philosophy as in empirical science. It is likely that Rush shared his ideas about the American climate as well as his meteorological data with Volney in such a meeting.

Volney's relationship with Rush led him to defer to the American's observations on the local climate and geography. He credited Rush for correctly noting the similarity of Pennsylvania’s climate with that of Northeastern China and Tartary.213 He also used Rush’s quantitative assessments of the country. At various points, he credited Rush with informing him of Pennsylvania’s highest peak (1,300 feet above sea level), and with observations on the sudden freezing of the Delaware River in 1764 and 1788, and the annual rainfall in Philadelphia (30 English inches).214

The last measure, rainfall, hinted at another aspect of American environmental dangers. Based on Volney's tables, at 30 inches, Philadelphia received significantly more

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212 Benjamin Rush, Commonplace Book (1792-1813), APS, MssB.R89c, 172.

213 Volney, 130.

214 Ibid., 33, 130, 239.
rain than Paris (21 ¾ inches) or other European cities. These measurements came from a list which included rainfall for several American and European cities. Each data point came from a different source: Rush for Philadelphia, Jefferson for Williamsburg, David Ramsay (1749-1815) for Charleston, and so forth. In most cases American towns proved rainier than those of the Old World. The dampness of the country proved a scapegoat for illness. Volney summarized by stating, “that in Europe, at a medium, one third less rain falls than in North America” and “that in America it falls in heavier storms, in Europe in gentler showers; and we have seen, that facts accord with this reasoning.” Volney observed added evidence of American climatic instability.

North America’s relationship with weather confused Volney. It had fewer rainy days, but more rainfall. That rain evaporated more quickly than in Europe. Philadelphia could experience rapid freezing in the winter and tropical storms and heat in the summer. Surprisingly, Rush did not censure Volney nearly as much for his negative views on the United States as he did Kalm and Buffon. Volney's work appears in seven notebooks of Rush’s students including all four volumes written by Samuel Agnew in 1801. Rush referenced the American observations, but more extensively the previous observations on Egypt and Syria. Nevertheless, Volney had a lasting influence on Rush. The French traveler provided Rush with information about the United States from regions Rush never saw firsthand. When making claims about American uniqueness, Rush needed to rely on external sources, including the careful observations of Volney.

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215 Ibid., 239–40.
216 Ibid., 240.
3.2 Networks of Knowledge

Volney serves as a particularly strong example of how Rush’s associations with travelers and natural historians influenced his work. But it is not the sole example. Looking out from Fort Pitt in 1780, soldier and Rush correspondent Hugh Martin surveyed the surrounding country with an optimistic eye. In the middle of the American War the western edge of Pennsylvania was not unknown but remained remote for Anglo-Americans. Martin referred to the region to the north and west as “Indian Country” but implied that the distinction would not be meaningful for long. Westward migration of white Americans and demands for land stoked the fires of rebellion in the 1760s and 1770s, especially in the backcountry. “Scientific” details about the climate and situation of Western Pennsylvania and the Ohio Valley, however, remained rare and highly valuable to the intellectual elite (like Rush) and to land speculators (also like Rush). Martin admitted that traversing the mountains had been difficult and that spring came later in the west but he also held that “the Lands on this side of the Mountains are more fertile than any I have ever seen in our Country. These parts abound with the plenteous production of the Animal & Vegetable Kingdoms and as to the mineral we abound in coal, which is our constant fuel.”¹¹²¹ Seven years later a young James Woodhouse (1770-1809) wrote to Rush from Pittsburgh during his military service prior to his tenure as professor of chemistry at the University of Pennsylvania. While in the west serving under General Arthur St. Clair (1737-1818)

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¹¹²¹ Hugh Martin to Benjamin Rush (1780), LCP, Rush Family Papers, Series I, Subseries I, Vol. XXIV.
described the country, medical practice in the region, and sent botanical samples back to Rush in Philadelphia.\textsuperscript{218}

Letters like Woodhouse's and Martin's were vital to the western expansion and economic growth of the United States. In the introduction to his 1792 volume, \textit{An Historical Account of the Climates and Diseases of the United States of America}, another Philadelphian, William Currie (1754-1828) explicitly made reference to the necessity of correspondence networks.\textsuperscript{219} Currie was a founding member of the College of Physicians of Philadelphia and had apprenticed under James Kersley in Philadelphia, John Redman's preceptor. During the revolution he served in American army hospitals and afterwards returned to Philadelphia to have a strong private practice and actively published and contributed to the city's intellectual life.\textsuperscript{220} In short, he and Rush were peers who ran in the same professional circles and were familiar with the same medical theories. In the case of his work on the American climate, Currie, like Rush, relied on his professional network.

Without contacts throughout the country Currie knew he could not produce a work of scholarship on the climates, diseases, and remedies of the new nation, much less provide suggestions for environmental “improvements.” After listing the goals of his project Currie wrote, “[w]ith these objects in view, I opened a correspondence with several physicians of


\textsuperscript{220} Ibid.
talents and experience residing in the several states, and with their assistance, joined to my own personal observations, and such information as I could collect from the few books which contain any thing relative to the subject, have composed the following pages."221 Those following pages numbered over four hundred and took each region of the new nation into account in turns. Significant sections of the book were not actually written by Currie but are presented as curated sections from letters he received. For example, Benjamin Rush wrote a large chunk of the section on Pennsylvania.222 A year after Currie published *An Historical Account of the Climate and Diseases of the United States* (1792), he and Rush had a professional falling out over yellow fever treatment. Before the summer of 1793, however, they had collaborated. Both saw danger in America's marshy wet places.223

Professional correspondence networks allowed Currie to gain and disseminate knowledge without actual travel beyond eastern Pennsylvania. Another Philadelphia physician and former Rush student, Benjamin Smith Barton (1766-1815) actively cultivated correspondents beyond Philadelphia to supplement his own collections and travel experience. Barton's primary interest was in the natural history of the United States in general. This required a large amount of information and objects from across the country, often obtained from others. Occasionally this took the form of a formal agreement between an employer and employee. In 1807, he hired German-American botanist Frederick Pursh (1774-1820) to collect natural historical information from the Finger Lakes region up

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222 This was prior to the two men’s falling out over different approaches to yellow fever treatment. Ibid., 120.

223 Riley, *The Eighteenth-Century Campaign to Avoid Disease*, 93.
through northern New York and into Vermont.\textsuperscript{224} In most cases, however, Barton continued in the gentlemanly exchange tradition and used personal and professional contacts to expand his knowledge base.\textsuperscript{225} Rush’s correspondence functioned in a similar way. Case studies and consultations increased both his knowledge and his reputation as a national figure.

Although Rush’s interests did not often lead to the swapping of specimens, like Barton, he did engage in the exchange of publications. Letters between colleagues often hinted at enclosed books, pamphlets, or proofs of upcoming work. Glasgow-based physician John Burns (1774-1850), for example, sent Rush early copies of two works on obstetrics, his \textit{Practical observations on the uterine hemorrhage; with remarks on the management of the placenta} (1807) and his \textit{Observations on abortion containing an account of the manner in which it is accomplished, the causes which produced it, and the method of preventing or treating it} (1807).\textsuperscript{226} Both volumes included handwritten

\textsuperscript{224} Between 1807 and 1808 letters arrived for Barton (often asking for money) from Pursh from the Finger Lakes, Milford, Pennsylvania, and Rutland, Vermont. Frederick Pursh to Benjamin Smith Barton (1807-8), American Philosophical Society, Benjamin Smith Barton Papers, Correspondence, Box 5.


\textsuperscript{226} John Burns to Benjamin Rush (1807), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol IIa, Box 6; John Burns, \textit{Practical Observations on the Uterine Hemorrhage; with
dedication notes to Rush as well as numerous corrections (mainly printing errors). Many students and former students sent Rush essays or published letters on their own practice. Rush made a habit of sending out his own publications as gifts. A much earlier letter from fellow American Edinburgh graduate Samuel Bard asked for reading suggestions and made some of his own. He wrote, “I have got the *Dictionaire de Physic* your Recommendation, & am really very much pleased with it- is there anything else new and Excellent, besides Cullen's Lectures which you would recommend to me... for I cannot help longing to see what you so much recommend.”

Physicians like Currie, Rush, and Barton relied upon information from their friends and colleagues to claim expertise and ownership of knowledge. Conevery Bolton Valencius, David I. Spanagel, Emily Pawley, Sarah Stidstone Gronim, and Paul Lucier argue that American science in the early nineteenth century prioritized the acquisition of new knowledge, typically in new territories. Reliable reporters, including physicians and their patients scattered across the country effectively delivered data about the state of the American environment and its people to the metropolitan centers. For example, patients wrote to their physicians and described their location, often with details about the weather or geography.


227 Samuel Bard to Benjamin Rush (1770), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol II, Box 3.

228 Bolton Valencius et al., “Science in Early America: Print Culture and the Sciences of Territoriality,” 80.
Patients included geographic, meteorological, and geological information based on the widespread acceptance of environmental causes for disease. The case of Anthony Jones of Charlotte County, Virginia in 1801 is a prime example of a patient's self-narrative. Jones was both a patient and a physician, but his descriptions of his own health do not differ substantially from those without a medical education. He wrote to Rush:

I left Philadelphia, being then in a very bad state of health, with the pulmonary consumption,... in 97 I removed to the County I am in at present situated on the north side of [the] River, [two miles] above Petersburgh, where it is very sickly in the fall season, Bilious Remittents & Intermittants prevailing very much, which kept me usually very much employed riding from which I acquired a vigor of constitution that I never before experienced... in the Fall of 1800 I was attacked with a violent Bilious fever which confind [sic] me to bed 9 weeks continued fever, extreme debility & good appetite, & cough as usual, I got upon my feet, but have continued weak & feverish ever since, with a good appetite, I've been forced to bleed very often, during the spring & summer last I was bed ridden & my life much despaired of, but since the approach of cool weather I've got better again so that I ride about in my Chair.229

Jones described his health in several ways. He descried his personal constitution (consumptive), the general seasonality of disease where he lived, and specific weather conditions of the present year. This pattern is common for letters of this type sent to Rush.

David Campbell wrote to Rush from Abingdon, Virginia in 1806 claiming that his wife's chronic illness was triggered by dampness and cold.230 Js. Read of Norfolk, Virginia wrote to Rush on behalf of his son in 1802. The son, recently returned from Europe was suffering from ill health which his father attributed to the climate of Southern Europe and

229 Emphasis added, Anthony Jones to Benjamin Rush (1801), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. VIII.

230 David Campbell to Benjamin Rush (1806), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. III.
an abundance of salt in the food.\textsuperscript{231} Other patients traveled on the advice of Rush. William Dawson attempted a mineral water cure and travelled Ball Town Springs (Ballston Spa, New York) in 1807 for an unspecified illness and claimed to be cured. William Norris of Lewistown, Pennsylvania made the common trek to Hot Springs, Virginia in 1812 as did Thomas Perkinson of Amelia County, Virginia. By 1812 Hot Springs and Warm Sprints, Virginia were well-established health spots frequently recommended by Rush after similar reports of success.\textsuperscript{232}

Presumably, from the patient's perspective, the additional information could help their doctor understand their ailment. Over the course of decades and thousands of letters from patients, their families, and their doctors Rush accumulated huge masses of information. It is unsurprising that the experience left him in a position as an expert on American diseases despite the “uniformly variable” climate and his own lack of travel. He gathered more information from fellow physicians and naturalists including Thomas Going, a former student, who described the weather and associated diseases of his Georgia hometown in 1802 in the following manner:

\begin{itemize}
\item \textsuperscript{231} Js. Read to Benjamin Rush (1802), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XIV.
\item \textsuperscript{232} William Dawson to Benjamin Rush (1807), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol IV; William Norris to Benjamin Rush (1812), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XII; Thomas Perkinson to Benjamin Rush (1812), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XIII.
\end{itemize}
I beg leave to mention the *latitude* of Washington [Georgia] & the state of the weather as near as I am able; Washington is situated in about 33’ 40 North Lat; & Wilks County between 33’ & 34’. *The weather in April & May was regularly wet & cold* in so much that fires were agreeable till the 20th of May all the Diseases of those mouths [sic] were highly inflammatory there was but few Cases of vernal fever but Even they yielded with more facility to the Lancet than any other means.  

Other letters from Rush's former students identified which regions young doctors considered beneficial for their careers. In many cases, this meant identifying unhealthy and underdeveloped areas. Three medical students, Richard G. Harris in 1796, J. Bullus in 1797 and Edward Anderson in 1809 wrote to their respective preceptors Benjamin Rush and Benjamin Smith Barton, complaining about the health of the towns they had settled in. All three young men had initially settled in the mid-Atlantic, Harris in Easton, Pennsylvania, Bullus in Reading, Pennsylvania and Anderson in Fredericktown, Maryland. None found the success they hoped for as highly-educated young medical man. For example, in one letter to Rush, Bullus vented his frustration with the state of the medical profession in Reading, Pennsylvania and expressed his desire to move to the south. Pennsylvania was both too healthy and had too many medical practitioners for a young man to make a good living. The south, on the other hand, was considered sickly and feverish, and with a population either respectful of elite medicine (planters) or those who had no say in their treatment (slaves). Bullus’s correspondence did not continue after his move south, if he did

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233 Emphasis added, Thomas Going to Benjamin Rush (1802), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. VI.

234 Richard G. Harris to Benjamin Rush (1796), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. VII; J. Bullus to Benjamin Rush (1797), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol IIA, Box 6; and Edward Anderson (1809), APS, Benjamin Smith Barton Papers, Correspondence, Box 1
indeed migrate, but those of his classmates did. Students settled across the country either of their own choosing, or from traveling with merchant voyages or army regiments.

Another student of Rush, Thomas Horsfield (1773-1859), took the practice of communicating information to a new level. Rather than travel in the United States, the Bethlehem, Pennsylvania native started his career at sea and settled in Batavia, modern Jakarta, Indonesia. After a first voyage in 1799 in which he visited the island on route to China, he returned to Batavia in 1801 and spent the next eighteen years on Java.\(^{235}\) Horsfield wrote back to his preceptor while recovering from illness in 1803. Despite his condition, he had managed to obtain a position at the Dutch East India Company's hospital and promised Rush that he would maintain a rigorous research agenda. The young doctor wrote:

> I have daily opportunities in my observations on the diseases of Batavia of confirming and applying those important truths I acquired by your invaluable instructions...I began some researches into the Natural History and Botany, but especially of the Materia Medica of this Island, I have since continued these investigations under the particular situation...[I have a ] view of making such experiments with a number of native medicinal plants as the cases afford- It is in a pleasant and healthy situation; and I have daily opportunities of observing the diseases of Batavia in their different stages and modifications.\(^{236}\)

Horsfield also planned a trip to the interior of the island to study local languages and "the geology & geography of the same."\(^{237}\) No further letters from Horsfield to Rush survive, but he did follow through on his scientific endeavors. He continued to collect and study the


\(^{236}\) Thomas Horsfield to Benjamin Rush (1803), LCP, Rush Family Papers, Benjamin Rush Papers, Vol VII.

\(^{237}\) Ibid.
plant life of the island in particular and took up official duties with the British East India Company after their 1811 takeover of the island. In 1819 Horsfield left Java and settled in England where he curated the East India Company's collection and published catalogues of animal life on Java.\textsuperscript{238}

The flow of information hinted at by Horsfield allowed physicians to expand their own knowledge base. Although he was collecting information at Batavia, Horsfield early on lamented the lack of guidance and companionship at his foreign outpost.\textsuperscript{239} Similar sentiments plagued physicians in rural and western portions of the United States. Not all students maintained a correspondence with past professors and of those few who did only a fraction went on to make professional connections like those of William Boys, another Rush student who studied in the London hospitals in the 1790s.\textsuperscript{240} Nevertheless, such correspondents also had their uses, in a manner similar to Rush himself a generation earlier. In a 1784 letter to William Cullen, Rush corrected what he considered mistakes regarding the American climate in Alexander Wilson’s book \textit{The Influence of Climates upon Vegetable and Animal Bodies}.\textsuperscript{241} He noted the general healthiness of frontier regions and forests and described changes in Philadelphia, namely deforestation on the banks of the


\textsuperscript{239} Thomas Horsfield to Benjamin Rush (1803), LCP, Rush Family Papers, Benjamin Rush Papers, Vol VII.

\textsuperscript{240} William Boys to Benjamin Rush (1794), LCP, Rush Family Papers, Benjamin Rush Papers, Vol IIa, Box 5.

Schuylkill River by British troops, as a source of disease. In their turn, Rush’s own students provided information from regions beyond Pennsylvania which contributed to the Philadelphia’s authority over all (medical) things American.

3.3 Medical Journals and Associations

Individual correspondence networks were important for Rush to build his base of climatic knowledge and increase his professional geographic reach. Professional organizations and medical journals also contributed to the expansion and exchange of medical knowledge. Philadelphia's College of Physicians, established in 1787, is the most notable example of the early medical organizations and counted Rush, Currie, Redman, Shippen, and most of the city's elite physicians in its membership. It was not, however a lone project, but rather emblematic of a wider impulse throughout the country. Physicians in neighboring Delaware formed a medical society in 1789. The Massachusetts Medical Society organized the same year. In 1788, the College of Physicians of Philadelphia received a letter from the Medical Society of New-Haven County, Connecticut which requested it “to honour them with the annual communications of your learned society. [and that] They [the Medical Society of New-Haven County] would have been happy in rendering their publications more deserving the notice & attentions of your very respectable institution.” In New-York a hierarchical state-wide medical society with

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representatives from each county facilitated the flow of information and was empowered by the state to grant medical licenses, merging both the old corporate power of medical organizations and the newer impulse of exploration.

Medical journals, meanwhile, first appeared in substantial numbers in the United States at the turn of the nineteenth century. Like the societies which privileged transactions, journals modeled themselves on correspondence networks and often printed news or research in epistolary form. They also encouraged the sharing of weather data in a public forum. Regular weather reports also appeared in medical journals alongside articles, book reviews, and published correspondence. New York's *American Medical and Philosophical Register* (1811-1814), for example, included temperature, rainfall, and disease data for the City of New York in each issue. Although journals lacked the professional power of some medical societies-a journal could not grant a medical license for example-they did collect and disseminate information in a similar way and warrant consideration here. Moreover, both American and British medical journals acted as sources of information for Rush and his own work. Numerous citations to journal articles appear in his commonplace books and medical notes, outnumbering those referring the reader to medical books. In teaching, he encouraged students to follow his example. Journals did not possess the same pitfalls as medical books. They largely contained short factual accounts which the reader could interpret and frequent publication prevented that knowledge from becoming stale.²⁴⁴

Each of the early journals took on their own characteristics and forms of published material. Benjamin Smith Barton’s *Philadelphia Medical Museum* (1805-1811), for

²⁴⁴ Notes of Henry Powell (1809), KCRBM, Mss. Coll. 225 Box 3, Item 7, Vol I, 3-5.
example, included large sections of Barton’s own observations or reprinted his personal medical correspondence. Others reprinted medical material from foreign journals or focused on medical book reviews. Even their definition of “medical” varied, with Barton’s publication often leaning towards natural history and away from medical practice. An examination of Barton’s personal correspondence reflects the same bias, in comparison to Rush’s, which leaned toward medical practice.

Few of the American publications of Rush’s time lasted long. As shown in figure 2-2, the first journal, New York's *The Medical Repository and Review of American Publications* (1797-1824) had the longest print run; and not without two multi-year hiatuses. Nevertheless, they had support from the American medical establishment and were praised by Rush as a good alternative to medical books. Journals, both American and European, contained trustworthy descriptions of illness and, with frequent publishing, did not go out of date as quickly as textbooks. Both his commonplace books and lecture notes include references to journal articles, with the *Edinburgh Medical and Surgical journal* as the most common. But American journals also appeared frequently and Rush published a few articles in the new dedicated medical periodicals.

As with Currie’s book on the climate and diseases of North America, many journal “articles” simply re-printed correspondence. Many, like those included in New York’s *American Medical and Philosophical Register* (1811-1814) listed the date letters were written, who they were sent to, and how they ended up in the journal. Journals, therefore, not only benefited from a pre-existing periodical publishing culture, but also from professional correspondence. The New York publications in particular benefited from the
hierarchical county to state system of medical association. Local doctors could relay information from one organization to the next.

Each journal, like each medical society or personal correspondence network possessed a slightly different geographical footprint. New York and Philadelphia represented two publication hubs, each with multiple medical journals. Boston produced one journal during this period, *The New England Journal of Medicine and Surgery*, beginning in 1812. Beyond cities of publication, the various journals drew information from throughout the United States, often along lines that related to professional associations and personal connection. By then end of the 1810s American medical journals had printed information from both eastern cities like Philadelphia, New York, and Boston, and western outposts on the frontier, as shown in figure 2-3. This geographic distribution

![Figure 3-2 Publication life-span of Early American medical journals in print during Benjamin Rush's lifetime](image)
indicated the existence of some form of professional unity, however fragmented it might have been otherwise.

![Image](image.png)

Figure 3-3 Distribution of article authors in the United States from the American Medical and Philosophical Journal (1811-1814), Philadelphia Medical and Physical Journal (1804-1808), Philadelphia Medical Museum (1805-1811), and New York Medical and Philosophical Journal (1809-1810).

Rush believed that a proper medical education and a medical profession of gentlemen best served the interests of the country, as will be discussed in chapter six. Journals and organizations could go a long way in ensuring that such and education continued beyond the lecture hall. In 1812, Samuel Bard similarly proposed to the medical students of New York that: “[i]t is…in the constitution of our frame, and in the natural structure of our minds, that we discover the reason and truth of the maxim, that peace of society and the stability of government, especially of free governments, depend upon the
instruction, information, and correct habits of the people.” 245 Good government for these men literally required educated minds and healthy bodies. Moreover, nature required health and education to function properly in accordance with her own natural laws. For the United States to function, therefore, the bodies which made up the body politic had to function. The future of the country could very literally be in the hands of the young men gathered to hear Rush speak.

3.4 Putting Local Knowledge to Work

Journals, correspondence, and associations collected and disseminated information about the American environment, but to what end? One of the clearest examples of America in intellectual limbo and the importance of geography to medical knowledge is the existence of specially-denoted “American Editions” of British and continental medical works edited by Rush and his contemporaries. A few, like Charles Caldwell’s 1805 translation of Jean Senac’s *A Treatise on the Hidden Nature, and the Treatment of Intermitting and Remitting Fevers*, were also translations from French or Latin into English. Even texts originally in English, however, underwent a translation process as they crossed the Atlantic.

The designation “American Edition” indicated that its original place of publication lay outside the United States but that it was being reprinted locally, often with editing or

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245 Bard, “A Discourse on the Importance of Medical Education; Delivered on the 4th of November, 1811, at the Opening of the Present Session of the Medical School of the College of Physicians and Surgeons. By Samuel Bard, M.D. President of the College of Physicians,” 371.
comments by a well-known American. The genre did not apply only to medical texts. Law books like William Blackstone's *Commentaries* were similarly reprinted for American audiences. Rush first used this phrase in the 1780s to identify American imprints of William Cullen’s *First Lines on the Practice of Physic*. At that point his only addition to the text came in the form of a preface praising his preceptor and the book. The content of the volume did not change much from the smuggled-in British version to the wartime American edition. In post-war letters to Cullen, Rush discussed the great importance that *First Lines* had in the American military hospitals during the revolution. He claimed that “[i]t was read with peculiar attention by the physicians and surgeons of our army…Thus, sir, you see you have had a hand in the Revolution by contributing indirectly to save the lives of the officers and soldiers of the American army.”

Eventually Rush’s observations and compilations encouraged him to write more than a preface to his “American Editions.” After a long hiatus in which he focused on original works, Rush returned to the idea of American editions, but with a twist. Between 1809 and 1815 he published editions of George Cleghorn’s *Observations on the Epidemical Diseases of Minorca From the Production, Inhabitants, and Endemical Distempers of Minorca*, William Hillary’s *Observations on the Changes of the air, and the concomitant epidemical diseases in the island of Barbadoes*, Sir John Pringle’s

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Observations on the Diseases of the Army, and The Works of Thomas Sydenham M.D., on Acute and Chronic Diseases. Each included an extensive commentary and spelled out the connections Rush believed he made between the original work and his own. Moreover, they demonstrate that although Rush believed local knowledge to be paramount, one could still learn by comparison to Britain and her warm-weather colonies. Rush took information from non-American spaces and clearly noted where, when, and how, such information could be used to understand the diseases and conditions faced by his countrymen.

All of Rush’s “American Editions” discuss the intersection of disease with place and situation. Unlike First Lines, they do not fit into the category of textbook. Sydenham, for example, largely presented sets of observations on annual epidemics. Pringle, Cleghorn, and Hillary each recounted their experiences in clearly delineated times and spaces. Their specificity appears to undermine any general relevance they might have for the equally distinct American states. Nevertheless, Rush presented his American Editions as important contributions to American medical literature. He dedicated each edition to the medical students of the University of Pennsylvania and the United States of America. This focus on education and personal enrichment suggests that the editions acted as a training tool and could be used as models for professional development as well as practice. By the end of his career most of Rush's students came from and returned to places their preceptor had never visited, much less practiced medicine in. These circumstances encouraged Rush to teach students how to adapt medical ideas to new environments rather than simply how to treat patients in an existing one. The American Editions demonstrated the kind of work Rush had in mind.
In his edition of Sydenham Rush introduced the great man by saying that there are both many things worthy of praise and many instances of error. Among the latter were Sydenham’s rejection of theory, belief in contagion with respect to plague, and reliance on botanical medicines. Nonetheless, students were also primed to read the work of a genius of the seventeenth century with the words:

His histories of acute disease; his details of the laws of epidemics; his intuitive discernment of old diseases, entangled in new ones; his defence [sic] of cool air, and of depleting remedies, to which millions owe their lives; his sagacity in discovering the precise time, and manner of administering his remedies, and the difference of his practice in the same disease in different seasons, constitute a galaxy of medical knowledge, and ... rare assemblage of discrimination and combining talents, which have elevated him above the claims of the century and nation in which he lived, and rendered him the physician of all ages and countires [sic].

This is the Sydenham that Rush emulated when he recorded and analyzed his observations of annual epidemic diseases. The above observations are also those which Rush found most useful in understanding and combatting illness and tried to emulate in his own habits of recording epidemic diseases. Rush’s system would add reason to the empirical work of his predecessor. Where Sydenham would describe the merging of one disease into another or the changes over time Rush would apply theory. Like the letters he received from across the country and journal articles he read, Rush used Sydenham as a means of accessing general laws of disease which could be applied to specific, regional, situations.

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Rush also felt that the laws uncovered in Sydenham’s discussion of the plague provided the most information for the rejection of nosology, the classification of diseases, which he felt hampered medical progress. Previous translators of Sydenham, John Swan (1742) and George Wallis (1788),\textsuperscript{251} argued that the seventeenth-century physician’s observations marked the beginning of medical nosology. Rush, however, bucked their version of events and used the American Edition to model what he considered the correct interpretation of Sydenham’s work. The blending of symptoms Sydenham witnessed made far more sense if “disease” were a general state of being rather than one of several hundred discrete “diseases.” Amended to Sydenham’s description of the similarities between plague and erysipelas, Rush writes that Colin Chisholm’s erysipelas appeared in the West Indies just before an outbreak of yellow fever. He then attributed the change to one of season rather than disease. Rush thereby argued that plague, erysipelas, and yellow fever are all different manifestations of the same “disease” and merely driven to different presentations.\textsuperscript{252} Most evident in Rush’s adoption of Sydenham’s epidemiology is the primacy of the atmosphere as setting the stage for epidemic diseases. Despite individual variations, epidemics suggested the existence of a general change in the air which affected whole populations in both Sydenham and Rush’s accounts.


\textsuperscript{252} Sydenham and Rush, The Works of Thomas Sydenham, M.D., on Acute and Chronic Diseases: With Their Histories and Modes of Cure, 56.
Many of Rush’s extensive explanatory footnotes added information and commentary. Most of these additions helped readers locate information relevant to American practice. For example, in Sydenham, these notes largely occur in the sections where the seventeenth-century physician discussed the yearly appearance of diseases and their cures. Annual disease cycles and variable symptoms mirrored the American disease environment of the late eighteenth century. Rush used Sydenham's description of London's plague as an analogy for the epidemic fevers he encountered in his Philadelphia practice. American students and practitioners were supposed to see the similarities between the diseases as pointed out by Rush and follow the lead of the two authors in understanding and treating the disease.

Diseases in similar locations, presenting similar symptoms, or similar times of the year might be helpful as one-to-one comparisons. However, Rush demonstrated that different illnesses could be useful as comparisons only if the natural history of both relevant instances were well understood. In still other instances Rush noted the sections his readers could safely ignore. For example, he argued that Sydenham's scorbific rheumatism did not occur in the United States, thus giving the reader reason to discount it as an important piece of medical knowledge.253

Despite the variable forms comments could take, Rush kept his audience in mind: American medical students and young doctors. The editions helped knit together medicine in the United States in direct comparison with practice in other parts of the world. In 1809 he published an American Edition of George Cleghorn’s Observations on the epidemical

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253 Ibid., 191.
diseases of Minorca. From the year 1744 to 1749. With respect to the book’s value he wrote in the dedicatory preface that:

The following work contains a greater mass of practical knowledge in a small compass, than any book perhaps of the same kind in medicine...Its merit consists chiefly in the number and importance of its facts, which afford the surest passport of a medical book to present and future generation[s]. The notes which I have added to this first American edition of this valuable work, are intended to point out a few of its errors, but chiefly to impress those remarks, upon your minds, which accord with the diseases a mode of practice that are common in the United States.²⁵⁴

This preface reinforces the value Rush placed on American editions for himself, and his readers. The volume's value lay in its "mass of practical knowledge" and the "number and importance of its facts." Rush's notes, meanwhile, directed the reader to the most important sections, facts, and observations. The value of medical texts, therefore, came from the quality of observable facts rather than the analysis of a great physician.

Rush’s most congratulatory observations began in chapter two where Cleghorn wrote in a manner which emulated Sydenham’s descriptions of epidemics. As with Sydenham, Rush both noted Cleghorn’s observational skills and translated facts into his own medical mindset. In the case of bilious fevers, for example, Rush agreed with Cleghorn that in both the United States and Minorca children often became ill with cholera infantum prior to the outbreak of the clearly bilious epidemic. On the other hand, despite Cleghorn’s argument to the contrary, Rush used the description of bilious fever in Minorca to argue for a proximate atmospheric rather than an exciting contagious cause. In a note, Rush wrote that “[t]hey [bilious fevers] spread only from the action of an impure atmosphere, and never

²⁵⁴ Cleghorn and Rush, Observations on the Epidemical Diseases of Minorca from the Year 1744 to 1749 to Which Is Prefixed A Short Account of the Climate Productions, Inhabitants, and Endemical Distempers of Minorca, iii.
extend beyond its influence.” This description accounted for the fever’s narrow geographic distribution and the cessation of illness with the onset of cold weather. Contagious diseases, like smallpox, spread in all seasons and only required human bodies to support and carry the morbid matter. Ultimately, only Cleghorn’s empirical observations mattered to Rush. Cleghorn’s analysis, that the bilious fever’s contagion spread from person to person, was quickly and quietly dismissed by the American authority.

Throughout the books, Rush compared foreign diseases with those of the United States. Although the diseases went by different names, Rush showed his readers how and where to garner useful information from otherwise climatically distinct diseases. Through careful observation of one’s own location and wide reading from abroad (viewed through the lens of Rush’s system) young American doctors could better treat the patients and diseases they encountered no matter where they ended up practicing in the new nation.

Just as he had with Sydenham and Cleghorn, Rush simultaneously praised and criticized William Hillary’s work on the climate and diseases of Barbados and set the boundaries of applicability in a dedicatory preface.

The physician, to whose patience and labour we are indebted for performing that useful task by means of the following work, was a pupil of the celebrated Dr. Boerhaave... It is true, some of the theories he adopted, from his illustrious master, have been discovered to be erroneous, but the facts he has recorded in his history of weather, and of its effects upon the symptoms, and cure of diseases, will be true, in like circumstances, in all ages and countries, nor will they be affected in their importance or utility by any of the successive revolutions which may take place in the principles of our science.  

255 Ibid., 80.

256 Hillary and Rush, Observations on the Changes of the Air, and the Concomitant Epidemical Diseases in the Island of Barbadoes. To Which Is Added A Treatise on the Putrid Billious Fever, Commonly Called the Yellow Fever; and Such Other Diseases as Are Indigenous or Endemical.
This preface specifically critiqued Hillary’s theoretical background as a student of Herman Boerhaave. With that warning stated, however, Rush directed his readers to attend to the facts presented "in [Hillary's] history of the weather and of its effects upon the symptoms and cures of diseases." Hillary’s study, like the other American editions, came from a previous medical generation. He included descriptions of diseases and therapeutics in terms of air and weather changes. Like the collection of facts, Rush had a use for the empirically derived treatments for disease as another black canvas from which he could develop medical theory. Hillary prefaced the second part of the book noting “[a]s I have in the preceding observations taken notice of all the most material changes of the air and weather, and of such alterations as happened in their concomitant epidemical diseases: I shall in the following essays, indevour [sic] carefully to observe, and strictly to trace out, and follow nature, both in the descriptions of the diseases, and their symptoms.”

The “following essays” describe a number of specific diseases Hillary encountered during his time in Barbados. Many of his essays, including “Of the Putrid Bilious Fever, Commonly Called the Yellow Fever” were similar to illnesses encountered by Rush in the United States.

Hillary, like Rush, proposed venesection as a common treatment for warm weather diseases and in instances when bodies appeared to be at a low rather than high state of fever. A short, footnoted statement from Rush summed up his feelings on the subject: “See here! a striking proof of the safety and advantages of bleeding in a depressed states of the system, and of being guided by ‘acuteness of pain’ instead of a full or tense

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257 Ibid., 101.
pulse.” Rush used Hillary to support his own opinions on the use of venesection, or bloodletting in most fevers in the United States. In Hillary’s work Rush believed he saw a unity of disease akin to the theory which he wanted to advocate in the United States.

In the American Editions, Sydenham, Cleghorn, and Hillary served as models for how a well-trained physician could adapt his knowledge and skills to fundamentally different disease environments. Their careful observations of their surroundings, both cultural and natural historical, could be emulated by American doctors, both in the east and, presumably, the new western territories, as Rush tried to do himself in Philadelphia. Between these examples and Rush’s additions to the main text, American medicine could grow out of careful and widespread observation. Although present on the individual level in these editions, this movement toward management of places reached its zenith in the final America edition: John Pringle’s *Observations on the Diseases of the Army* (1810). As with the previous editions, Rush’s Edition of Pringle began with a bold address to its potential readership.

Behold! gentlemen, another attempt by your preceptor to transplant a vigorous and fruitful European plant into the soil of our country; or, in other words, behold, in the following American edition of sir John Pringle’s *Observations upon the Diseases of the British Army*, an attempt to increase and diffuse medical knowledge in the United States from a source to which physicians and learned societies have done homage in every part of the world.\(^{259}\)

\(^{258}\) Ibid., 49.

As with the other American Editions, Pringle fit into the same broad circles as Hillary, Cleghorn, and Sydenham. Specifically, Rush highlighted the connections between Boerhaave’s Leyden, physicians from dissenting religious backgrounds, the Scottish Universities, and Rush's American Edition authors. Pringle was no exception. His formal education took place in Scotland and the Netherlands in connection with Gerhard van Sweiten (Boehaave’s student and famous commentator). He then taught philosophy at the University of Edinburgh before taking a post with the British Army which inspired _Observations on the Diseases of the Army_. While he was away, Cleghorn took over his university courses, again demonstrating the intellectual fluidity of the Scottish university and association between medicine and philosophy.

A shared intellectual background was not the only connection Rush had with Pringle. Pringle’s military background also struck a chord with Rush who served in the Continental Army during the American War for Independence. Both during and after the conflict Rush relied on his experiences in military hospitals and regional travel to support his theory and practice. From first-hand experience, association with British military physicians like Pringle, and his friendship with John Morgan, Rush developed strong opinions on the management of military hospitals. As noted in chapter two Rush had also met Pringle in London, although the extent to which they did or did not discuss military matters is unknown. As surgeon-general for the middle department of the Continental

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260 With respect to Sydenham, Pringle was compared to the English physician in his used of fact and adherence to the experimental principles of Francis Bacon. Ibid., xii, xxv.

261 Pringle and Rush, _Observations on the Diseases of the Army_.

Army Rush spent much of 1777 on the road inspecting hospitals and wrangling supplies.\(^{263}\) In later life Rush argued that management of space, food, and exercise of could preserve the health of cities as well as armies. He also campaigned for a stronger medical division within the army and navy. Years later, Rush maintained a strong standing among some military figures. Several students who sought letters of recommendation for positions in the army and navy noted that it was common knowledge that Jefferson's and Madison's Secretaries of War (Henry Dearborn [1801-1809] and William Eustis [1809-1813]) considered recommendations from Rush a near-requirement for a commission.\(^{264}\)

Rush's military background had several effects on his view of Pringle. First, he used Pringle as another node in an important international network of highly respected British physicians who came of age when both the empire and Edinburgh’s medical school were at the height of their powers. As an Edinburgh graduate, chair-holder at a Scottish-inspired medical school,\(^ {265}\) and citizen of a new republic\(^ {266}\) Rush still wanted to associate himself with that legacy. Second, a part of that legacy which Rush wanted to associate himself with


\(^{264}\) Robert Mayo to Benjamin Rush (1808), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XI; I.T. Reese to Benjamin Rush (1808), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XIV; John Scull to Benjamin Rush (1811), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XV; Thomas S.R. Browne to Benjamin Rush (1812), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol IIA Box 5 Folder 80; Josephus Bradner Stuart to Benjamin Rush (1812), LCP, Rush Family Papers, Benjamin Rush Correspondence, XVI

\(^{265}\) The medical school established in Philadelphia which became that of the University of Pennsylvania self-consciously modeled itself after that of Edinburgh (the alma mater of its founding faculty, including Rush) see Rosner, “Thistle on the Delaware: Edinburgh Medical Education and Philadelphia Practice, 1800-1825.”

\(^{266}\) And a republic with distinct imperial ambitions as expressed by Rush’s friend, correspondent, and president, Thomas Jefferson, see Francis D. Cogliano, *Emperor of Liberty: Thomas Jefferson’s Foreign Policy* (New Haven and London: Yale University Press, 2014).
was that of careful observation and a medicine which connected bodies and their surroundings. Third, despite respect and near-reverence for the elder physician, Rush did not hesitate to modify and reinterpret Pringle to better support his own efforts. Lastly, and distinctly related to Pingle’s work, Rush drew on his own military experience during the American War for Independence.

In the preface to *Observations on the Diseases of the Army*, Sir John Pringle made it clear he wanted to addresses two audiences with the work: medical and military.\(^{267}\) Based on his experiences in the Low Countries during the War of Austrian Succession (1740-1748) and Scotland during the Jacobite Rising of 1745 he set out a number of principles for maintaining the health of armies. Despite some poor conditions being unavoidable Pringle argued that it was "incumbent on those who have the command, to make such provision as shall enable the soldier to withstand most of the hardships incident to a military life."\(^{268}\) Such modifications included shading camps in hot weather, ensuring that men slept in their tents at night, distribution of "under waistcoats" for cold months, and strong shoes to prevent damp feet.\(^{269}\) In a period in which more men died of disease than combat Pringle strongly believed that keeping communicable illness a bay was a concern of any officer or quartermaster, not only physicians.

The book is part medical treatise and part instruction manual. Pringle taught officers and quartermasters how and where to set up and healthy camp, what soldiers supplies required, and how to instruct enlisted men to behave and maintain personal hygiene. The


\(^{268}\) Ibid., 83.

\(^{269}\) Ibid., 84.
physician, on the other hand, might learn about certain fevers, conditions under which patients might best recover, and, how best to advise military and civilian governing bodies on the maintenance of healthy populations. War offered an unusual opportunity for eighteenth century physicians. In military camps and hospitals patients fit into a fairly narrow category of person, they lived under similar conditions, and were compelled to follow physician orders. Such experiences forced doctors to think about health as a communal rather than an individual virtue and held the possibility of applicability to civilian practice. Christopher Hamlin notes that Pringle himself applied the lessons of Diseases of the Army to health in British cities and even experimented in London. Diseases could become communicable in conditions which favored putrefaction like poorly-ventilated hospitals and prisons. For Rush, the lessons taught in all four American editions was to carefully observe surroundings, compare and contrast with known locations, and apply facts to theory for the best practice possible.

3.5 Conclusion

On April 28, 1801, the new Secretary of War Henry Dearborn wrote to Benjamin Rush requesting assistance with the medical provision of American army garrisons. Within the request Dearborn assumed that northern and southern troops would require different supplies based on their different climates. He asked Rush for “a memorandum of the kinds and quantity of medicine necessary for one year, for a Garrison of two hundred men in

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270 Hamlin, More than Hot: A Short History of Fever, 114–18.
Georgia or on the Mississippi, and one for a Garrison of the like number of men in the Northern or Western Country.”

In writing the letter Dearborn acknowledged two things. First, the widely-held assumption that climate had a determining factor in health and the course of disease. As shown above, this concept became all the more critical in the highly variable United States. Secondly, Dearborn appealed to Rush as a medical expert for locations in the old north and southwest, neither of which were regions the physician had personal experience with. Nevertheless, Rush proved himself an expert in American medical geography for officials at the highest level of the republic’s government.

Rush successfully collected and interpreted information about American weather, climate, and geography during the late eighteenth and early nineteenth century. By building off of a general commitment to the association between environment and health during the period Rush could argue that the demonstrably unique American space needed a unique form of medicine. The next chapter builds on this association and how it functioned in the face of widespread epidemic disease in the volatile 1790s.

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271 Henry Dearborn to Benjamin Rush (1801), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XXX., Box 1.
CHAPTER FOUR:
TOXIC GEOGRAPHIES

In 1803 Benjamin Rush received a letter from Moses Guest, a tanner living in New Brunswick, New Jersey. Guest, who had never met Rush, noted that he would not have had the courage to write, “had I not been informed of the very great exertions you have frequently made in alleviating the sufferings of the Citizens of Philadelphia when sickness and death were staring you in the face, and it might truly be called the time to try mens [sic] souls.”272 Guest was making a reference to the yellow fever outbreaks which plagued the city of Philadelphia, and other towns on the east coast of the United States, beginning in 1793 and recurring until around 1820 in the north.

The summer of 1793 certainly tried men's souls. Hot and dry weather dominated in Philadelphia which encouraged city residents to stockpile water in open backyard barrels. At the same time the city’s population swelled to include a few thousand white refugees and their slaves fleeing Cap-Français, Saint-Domingue (Cap-Haitien, Haiti). On the voyage from the Caribbean island they may have brought a stow-away pathogen. The yellow, also called the bilious remitting, fever commenced in August and according to contemporary accounts carried off between 4,000 and 5,000 Philadelphians by the time the frosts arrived

272 Moses Guest (1803), Library Company of Philadelphia (hereafter LCP), Rush Family Papers, Benjamin Rush Correspondence, Volume VI.
in late October, close to ten percent of the city’s population.\textsuperscript{273} That loss is equivalent to 150,000 Philadelphians today.\textsuperscript{274} Early in the epidemic a confused and frightened Rush wrote to his wife Julia stating that the ailment caused “a scene…which reminded me of the histories I had read of the plague.”\textsuperscript{275} Rush’s comparison proved apt. Like the plague in medieval and early modern Europe, yellow fever dominated the disease landscape of the young American republic in a violent, visible, and swift manner.

It is difficult to exaggerate the fallout from the yellow fever crisis and how deeply it shaped Americans’ sense of self. In addition to the sheer loss of life, the epidemic struck the political, social, and intellectual capital of the new nation. To a population which equated health with social, political, and geographic "improvement" an epidemic was a sign that the republic was mismanaged on every level.\textsuperscript{276} Physicians feuded over the appropriate treatment, prevention, and presumed immunity of African Americans leaving the lay population confused and frightened.\textsuperscript{277} 1793 tried men’s souls, but so too did 1794, 

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\textsuperscript{276} Harrison, Medicine in an Age of Commerce and Empire: Britian and Its Tropical Colonies, 254; Coleman, Yellow Fever in the North: The Methods of Early Epidemiology; Margaret Humphreys, Yellow Fever and the South (New Brunswick, NJ and London: Rutgers University Press, 1992).

\textsuperscript{277} Many contemporary practitioners in the Caribbean believed that people of African descent were immune to the disease. Believing this, Rush encouraged the Black population of Philadelphia to act as nurses during the outbreak to devastating effect. He later retracted his endorsement of immunity. There is no documented genetic immunity to yellow fever and its existence would be extremely unlikely. Physicians who claimed to see racial immunity were either seeing what they wanted to (an enslaved workforce acclimatized to their location) or acquired immunity in individuals who contracted and survived the disease
\end{footnotesize}
1795, 1796, and onward into the 1810s. “Yellow fever”, “bilious remitting fever”, and even the “American Fever” (all terms for the same ailment) became the default diagnoses for dangerous summer epidemics up and down the eastern seaboard.

The yellow fever crisis and subsequent medico-political debates have proven to be a rich ground for historical inquiry. Historians have discussed the spread of the disease, its relationship to America politics, and its effect on the medical community. Martin S. Pernick specifically connects the fever and debates over its cause with the development of the First Party System along pro- and anti-French lines. He claims that pro-French Jeffersonian physicians argued that the fever was produced locally while anti-French Federalists pointed to Francophone refugees as carriers of the new plague. William L. Hedges and B. Waterman associate the fever and the instability it brought with one of the earliest American novels, Charles Brockden Brown's *Arthur Mervyn or, Memoirs of the Year 1793*. Jacquelyn C. Miller and Phillip Lapsansky focus on what the fever meant for the African American community in Philadelphia. Recently Thomas Apel argues in his

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book, *Feverish Bodies, Enlightened Minds*, that the debate over the fever's origin reflected fundamental differences between philosophical and religious ideas in the early American republic.281

When Rush is remembered as a physician it is often for his dual “heroic” actions during the fever; advocacy for “heroic” therapeutics (copious bloodletting and use of calomel) or his heroism for remaining at his post throughout the crisis. Despite variation in the portrayal of Rush and his therapeutics, the vast majority of literature on yellow fever looks at the disease as a disease. Scholars assume that a single distinct entity invaded American space in the 1790s and brought conflict and chaos in its wake. While important and valuable perspectives, they skirt around the core issue of the fever for Rush and many other Americans who looked at the epidemics as problem of geography and unstable landscapes. As discussed in the previous chapter, Americans worried about their unstable climate and its consequences. Yellow fever was an extreme consequence. It is less important to document American yellow fever as modern yellow fever than to understand it as a challenge to the future success of the United States.

Jan Golinski addresses the general anxiety of Americans and argues that yellow fever fundamentally changed the way they thought about their climate. In his assessment, yellow fever was important as an atmospheric disease. General confidence about the United States and its healthy air plummeted after 1793, as Golinski puts it “[s]ome writers suggested that the atmospheric constitution had suffered some kind of corruption…Others insisted that the air had been contaminated by noxious influences brought to American

shores,” and nearly everyone agreed the air was the problem. Golinski's characterization and was a champion of the corruption argument, claiming that a "revolution in the atmosphere" was the root cause of the disease. Airs, waters, and places, the very stuff that made American became the source of corruption during the epidemic. When diseases threatened the population, they indicated to those who believed the disease was imported and those who thought it was produced locally that something had gone awry with their immediate environment.

Sudden death, however, was not they only manner in which disease served as a proxy for understanding the toxicity of the America environment. Rural Americans were far more likely to encounter agues, remitting and intermitting fevers (of the “usual” kind), dysenteries, and endemic goiter than yellow fever. In The Health of the Country, Conevery Bolton Valencius notes how antebellum settlers of the Old Southwest and Lower Mississippi Valley discussed the relative health of their geography based on physical cues (like dampness) and disease cues, typically “ague.” The patterns she describes were a continuation of the kinds of theories used by Americans at the turn of the nineteenth century to understand their health and their land including the "American fever". Like yellow fever, agues and other remittent and intermitting fevers (typically presumed to be one of the four forms of malaria by scholars) pointed to dangerous ground, effluvia, and the perils of geography. They also proved far less deadly than yellow fever and marked long-term

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284 For a discussion of the biology and epidemiology of malaria see, Franck Prugnolle et al., “A Fresh Look at the Origin of Plasmodium Falciparum, the Most Malignant Malaria Agent,” PLoS Pathogens 7, no. 2 (2011); Espinosa, “The Question of Racial Immunity to Yellow Fever in History and
sufferers and regions by their fatigue, general ill-health, and, to the trained eye, swollen spleens. In this way malaria played a key role in why nineteenth-century Americans considered the South inherently unhealthy. Furthermore, the disease has received considerable attention from historians as an important geographically-bound ailment.

Malaria, however, was not the only disease which physically altered chronic sufferers and was the product of unhealthy land. A generation before Valencus’s settlers crossed the Mississippi, endemic goiter worried physicians, boosters, and migrants to the trans-Appalachian west. Unlike yellow fever, a disease of “civilization,” these Americans encountered the dangers of isolation and strong geographic influences. While eastern intellectuals feared the possibility of breakaway republics and Americans turning to “savagery,” westerners faced physical challenges in their new homes. Moreover, as discussed below, goiter was not a disease unique to the United States, but unique in how

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and where it appeared within them, which made it similar to yellow fever. Both diseases existed elsewhere but they also came to characterize the American people and places. Rush, and others drew on a robust trans-national goiter, or bronocele, literature to compare and contrast their findings. That broader literature also explains why chronic endemic goiter frightened Americans: its association with inherited mental debility and physical disability. For the purpose of this dissertation, endemic goiter serves as yellow fever's opposite. It provides additional insights to the perceived toxic uniqueness of the United States.

Using the diseases of yellow fever and endemic goiter as prime examples, this chapter argues that Rush considered endemic diseases as evidence of an environmental problem which needed correction. The previous chapter considered the manner in which Rush and his contemporaries used the observations of Americans and outsiders to build a medicalized understanding of the nation’s environment. Building on that foundation the present chapter considers the powerful role disease played in carving out biological American identities and targets for improvement. Widespread illness (both acute and chronic) indicated to practitioners that a region was inherently sickly and associated with geographic degradation. This chapter considers two differently but equally geographic disorders: yellow fever on the coast and endemic goiter in the trans-Appalachian West. In the late eighteenth and early nineteenth century nearly all physicians on both sides of the Atlantic considered endemic goiter a disease of specific environment. Debate remained over the exact environmental features responsible, a discussion made all the more urgent by Benjamin Smith Barton’s observations on goiter which suggested a significant difference between the disease’s American and European topographies.
4.1 The American Fever

Yellow fever struck Philadelphia in 1793 with memorable force. Rush, and some of his students, argued that despite its perceived newness the fever came from the city itself rather than a foreign invasion. In his 1794 account of the disease he blamed "revolutions in the atmosphere" which caused cargo of coffee left on the Arch Street Dock to putrefy and produce dangerous disease-causing effluvia.\(^{288}\) Nearly a decade after Rush's death his once controversial opinion had become the standard American explanation of the fever's cause. This transition is illustrated by the story of French physician Nicholas Chervin (1783-1843).

In 1822 Chervin, arrived in Philadelphia to learn about yellow fever. He sent a short survey to local physicians and asked if, in their opinion, the fever was or was not a disease passed from one person to (i.e. contagious) another and if it was produced locally or imported from tropical climes. Around twenty Philadelphia physicians responded and nearly all of them agreed on the cause of the fever.\(^{289}\) Doctors in the city ascribed to the view that the fever was locally-produced and non-contagious which Rush supported in the 1790s. They argued that victims fell ill when noxious organic effluvial from marshes or rotting matter (which abounded in early nineteenth-century cities) entered their systems and threw them out of equilibrium to devastating effect.

\(^{288}\) Benjamin Rush, *An Account of the Bilious Remitting Yellow Fever as It Appeared in the City of Philadelphia in the Year 1793* (Philadelphia: Thomas Dobson, 1794), 12.

\(^{289}\) Samuel Powel Griffiths broke with the majority and argued that the disease was introduced annually from the tropics and spread from person to person. "Samuel Powel Griffiths to Nicholas Chervin, 8 May 1821," CPP, MSS 2/0141-01.
Philadelphians had reason to believe this theory. The elimination of sources of effluvia and inspection of “dangerous” cargo after 1800 correlated with a reduction in yellow fever’s frequency and severity in the city.290 Such a stance had become characteristically American by the 1820s (with the exception of the New York City Board of Health), and the opposite of the prevailing wisdom in Chervin’s native France which only experienced sporadic outbreaks. The answers collected, however, are less important than the purpose of the study. Chervin wanted to learn about yellow fever from the source and that meant learning from Americans and extensive travel in the western hemisphere. Despite strong opinions on the fever on both sides of the Atlantic Chervin associated the epidemic with the Caribbean and United States of America.291

As Chervin’s interest indicates, by the 1820s, yellow fever had become a characteristically American ailment. Katherine Arner argues that physicians in the United States at the turn of the nineteenth century actively claimed ownership of the disease and the experience of it international yellow fever debates. The fever which attacked Philadelphia, New York, and Baltimore was American and while it shared characteristics of tropical yellow fever, the treatment and severity differed in the urban climate. They insisted that their first-hand knowledge of the disease in temperate climates granted them

290 For a discussion of Philadelphian’s management and definition of “dangerous” cargo see, Barnes, “Cargo, ‘Infection,’ and the Logic of Quarantine in the Nineteenth Century.”

expertise that European and Caribbean colleagues needed to respect.\textsuperscript{292} Much like their interest in local natural history as a way of claiming the importance of national research, yellow fever indicated the uniqueness, in this case deadly uniqueness, of North America's people and environment. Later in the nineteenth century Philadelphians in particular continued to promote their own preeminence in fever knowledge. As late as 1855 they made public health recommendations to Norfolk, Virginia on how to alter their environment to end and prevent epidemics. This occurred over thirty years after the last major Philadelphia outbreak in the early 1820s and despite Norfolk’s previous experience with the disease.\textsuperscript{293} Beyond ownership, these actions suggest that yellow fever formed an important part of American medical topography. Fever came out of the airs and soils of the United States, alternately aided or inhibited by the built environment and personal hygiene. The fever made American distinct in the eyes of the world and success as an American physician, city, or citizen meant overcoming the dangers of geography and shaping nature.

In 1833 Francis Boott (1792-1863) concisely described the conditions he deemed necessary for epidemic yellow fever:

\begin{itemize}
\item \textsuperscript{292} Arner, “Making Yellow Fever American: The Early American Republic, the British Empire and the Geopolitics of Disease in the Atlantic World.”
\end{itemize}
This form of fever requires the cooperation of four concurring causes: viz., malaria; a state of atmosphere like that so often insisted upon by Sydenham, favouring [sic] the development of epidemic diseases; a high temperature; and that predisposition of body which is connected either with a sudden change from a high to a low latitude, or with a great range of temperature from winter to summer.\textsuperscript{294}

These are not Rush's words, but they certainly fit his assumptions about how a combination of geography, weather, and personal constitution allowed the disease to appear.

Rush's opinions remained strong in the United States through the early decades of the nineteenth century. He was a founding figure of a medical narrative in which the seemingly epidemic yellow fever was merely an expression of the ordinary endemic American autumnal fever. He argued that the disease was not imported and (sometime after 1794) that it could not pass from one person to another.\textsuperscript{295} The locally-produced illness, he claimed, was a more severe variant of the annual autumnal fevers which allowed him to argue 1) that “yellow fever” was not a new or specific disease, and 2) that this variant of bilious fever appeared in epidemic and non-epidemic forms based on personal constitutions, proximity to effluvia, and regional or global atmospheric constitutions.

Rush cast yellow fever as the new normal, the new version of the old autumnal fever(s) driven to higher malignancy by improper waste-management and chemical alterations or “revolutions in the atmosphere.” Like Sydenham’s “epidemic constitutions,” which Rush considered an essential source, these “revolutions” resisted medical

\textsuperscript{294} Francis Boott, \textit{Memoir of the Life and Medical Opinions of John Armstrong...: To Which Is Added an Inquiry into the Facts Connected with Those Forms of Fever Attributed to Malaria or Marsh Effluvium, Volume 1} (London: Baldwin and Cradock, 1833), 232.

\textsuperscript{295} Rush earliest accounts of the fever are ambiguous and lean towards supporting its ability to pass from human to human. Rush, \textit{An Account of the Bilious Remitting Yellow Fever as It Appeared in the City of Philadelphia in the Year 1793}; Benjamin Rush, “Dr. Rush’s Directions, for Curing and Preventing the Yellow Fever,” \textit{Dunlap's American Daily Advertiser}, September 13, 1793.
management and were likely produced by geological activity like earthquakes and volcanoes releasing as yet unknown chemicals into the global atmosphere.296 Decades later, Rush's former pupil and successor to the chair of theory and practice at the University of Pennsylvania, Nathaniel Chapman (1780-1853) described the disease to Chervin in strikingly similar terms. He wrote, "from 1793 to 1805, there was an universal distemperature of the atmosphere pervading, in various degrees, this immense continent, and annually, the fever broke out in several of our cities, attended by all the phenomena of a widespread morbid influence."297 During the time of "universal distemperature" articles in early American medical journals showed an interest in events like earthquakes and their potential relation to disease.298 As was the case with weather reports, doctors actively sought evidence which would connect geological activity with human health and continued to do so into the nineteenth century.

Yellow fever as a continental epidemic was a new development. Rush and his supporters considered it a new endemic disease initiated by long-term changes to the atmosphere.

296 Sydenham and Rush, The Works of Thomas Sydenham, M.D., on Acute and Chronic Diseases: With Their Histories and Modes of Cure.

297 "Nathaniel Chapman to Nicholas Chervin, 17 May 1821," CPP, MSS 2/0141-01.


299 Boott, Memoir of the Life and Medical Opinions of John Armstrong...: To Which Is Added an Inquiry into the Facts Connected with Those Forms of Fever Attributed to Malaria or Marsh Effluvium, Volume 1, 234–35.
atmosphere rather than a persistent import. Despite previous experience with autumnal fevers and a few instances of yellow fever from the early eighteenth century, citizens of the United States recognized the 1790s as unusually violent. Importation of the disease on cargo ships from the sickly Caribbean was one explanation, poor management of cities in the wake of social and atmospheric revolutions was another. Neither hypotheses initially garnered enough support to be the clear winner. Rush's rival in the debates, Philadelphia physician William Currie, claimed that yellow fever had been a sporadic, imported visitor to North America for nearly a century by 1793. He reported that Philadelphia and Charleston experienced their first outbreaks in 1699, Boston in 1693, and New York in 1702. Currie used these dates to argue against Rush's local production argument – seventeenth-century American cities were small and could not produce the required urban filth -- and support for a French theory. This alternate theory stated that yellow fever originated in what is now Thailand in the 1680s. From Asia, the theory went, a British Man-of-War brought the fever to Martinique where it found a new endemic home.300

On the other side of the argument, Rush's former student, Charles Caldwell (1772-1853) ignored early examples of yellow fever and addressed only the current epidemics. He claimed that urbanization had changed the atmosphere by increasing the heat of city centers to produce a local tropical climate. This local torrid zone promoted the violent and

300 William Currie, “Facts and Arguments in Favour of the Foreign Origin and Contagious Nature of the Pestilential or Malignant Yellow Fever, Which Has Prevailed in Different Commercial Cities and Seaport Towns of the United States, More Particularly since the Summer of 1793,” *American Medical and Philosophical Register, or Annals of Medicine, Natural History, Agriculture and the Arts* 1, no. 1 (1811): 181–96; Boott, Memoir of the Life and Medical Opinions of John Armstrong...: To Which Is Added an Inquiry into the Facts Connected with Those Forms of Fever Attributed to Malaria or Marsh Effluvium, *Volume 1*, 245–46.
more frequent outbreaks. The deadly combination of a charged atmosphere, hot weather, and plentiful organic matter ready to putrefy made American cities prime targets for fever from Caldwell's and Rush's points of view. The artificial tropics created by citizens unwilling or unable to maintain clean, cool cities brought the preventable disease.

Their claims were bolstered by the fact that Philadelphia – and most of the mid-Atlantic -- did not fit comfortably in a healthy “temperate” zone. As noted by Volney and others in the chapter three, the region's weather swung between extremes and supported the diseases of many climates. Cold winters and hot humid summers shifted the definition of “temperate” in the North American context to one which was more variable and less stable than in Europe. Close proximity to the Caribbean and a robust coastal trade meant that the climatic spectrum of the United States could easily overlap with their southern neighbors. If the atmosphere changed, the geographies of both places suffered. Yellow fever erupted in both the Caribbean and the United States in the early 1793 following a progression from south to north as demonstrated by Billy G. Smith.

Epidemics classified as yellow fever affected Americans from Maine to Georgia during this period. If anything, southern towns reported fewer outbreaks in the medical

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301 Caldwell, Medical & Physical Memoirs, Containing Among Other Subjects a Particular Enquiry into the Origin and Nature of the Late Pestilential Epidemics of the United States, 8–15.

302 Smith, Ship of Death: A Voyage That Changed the Atlantic World.

303 Benjamin Vaughan noted the fever in Hallowell Maine, while cities like Waynesborough and St. Mary’s in Georgia experienced a similar epidemic. Benjamin Vaughan (1799), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XVIII; Joshua E. White, “Topographical Description of the Country around Waynesborough, in Georgia, with the State of the Thermometer and Weather, for Part of the year 1802. To which is added, some Account of the prevailing Diseases, and a few Observations on Yellow Fever, and on the principal Remedies of Fever,” The Medical Repository, 3.1 (1806); James Seagrove, “Origin of yellow fever in the contaminated air of a coasting vessel, and of the town of St. Mary’s in Georgia; with an enumeration of its symptoms and mortality, and the beneficial effects of volatile alkali as a remedy,” The Medical Repository, 1.2 (1810).
literature before 1800 than mid-Atlantic towns. The domestic news section of the New York-based *Medical Repository* stated in 1798 that,

> The northern, southern and western parts of the Union have chiefly escaped this calamity [yellow fever]. The commercial towns, situated to the eastward of the bay of Chesapeake, and the river Susquehanna, have principally suffered. Portsmouth in New-Hampshire, Boston, New-London in Connecticut, New-York, Philadelphia, and Wilmington in the State of Delaware, besides some other places in inferior degree, have largely shared in this epidemic.  

The geography described by the *Medical Repository* authors is predominately that of the mid-Atlantic and southern New England. This assessment matches that of other American publications and printed reports of yellow fever in travelogues and medical journals between 1790 and 1811 as shown in figure 4-1.

Some of the reports submitted to American medical journals almost certainly were not modern yellow fever. Towns like Saratoga Springs, New York or Fort Miami (near Toledo), Ohio are too far from the coast and too far north to have maintained a robust population of the *flavivirus*-carrying and annually-imported *Aedes aegypti*, the vector for modern yellow fever. On the other hand, American physicians did not discuss an outbreak in New Orleans until 1802, despite the city’s antebellum reputation for frequent “seasoning” outbreaks of the disease and a climate more than capable of supporting tropical mosquito populations during the summer and fall. Meanwhile, some fevers in the western states which produced the characteristic “black vomit” of yellow fever were not

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305 The association between the New Orleans and “yellow jack” became so strong that many Louisianans believed the fever, not Confederate troops, would drive Union soldiers out of the city during the Civil War. In the end neither manpower nor virus-power succeeded. Union blockades of southern ports probably limited opportunities for the introduction of infected mosquitoes during the war, hence the lack of outbreaks and increased support for the importation hypothesis. Humphreys, *Yellow Fever and the South*. 

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given the same label. While serving in Congress, New York physician Samuel Latham Mitchell (1764-1831) wrote to Rush in 1805 about a mysterious disease of the western country, “attended with malignant symptoms, not infrequently ending in Death with black vomiting.” Experienced in a location other than the Shenandoah Valley, “malignant symptoms” and “black vomiting” might have spelled yellow fever, not mystery.306

Figure 4-1 American Municipalities with at least one published report of yellow fever (1790-1811)

306 Samuel Latham Mitchell (1805), LCP Rush Family Papers, Benjamin Rush Correspondence, Vol. X.
American physicians and lay observers in the 1790s used the term “yellow fever” to invoke an image of a dangerous epidemic disease most frequently associated Atlantic seaports. Some outbreaks were probably modern yellow fever; some were other, unknown epidemic diseases which produced similar symptoms which convinced sufferers and on-lookers of its identity. Teasing out the "real" yellow fever is beyond the scope of this dissertation, nor is it critical to the arguments made here. It mattered that Americans up and down the coast feared and believed they suffered from yellow fever. In part it bound them together as a nation to have a near-national disease.

As early as 1793, supporters sent Rush evidence to try and confirm this local view of yellow fever which by its very geography challenged pre-conceived notions of the epidemic. Physician Francis Bowes Sayre of Crosswicks, New Jersey provides a particularly good example of such evidence. In the late autumn of 1793, Sayre sent the following case to Rush:

My patient Mr. Abbott, whose case I stated to you a few days after I had written that of his wife, [died] two hours after I left him, on the day on which I wrote. Since the death of those two persons, I made every inquiry, and engaged their friends to do the same, in order to discover whether they had been exposed to the infection, by any communication with persons or goods from Philad; and the result of these inquiries is, that they neither of them had been from home previous to the wife’s attack- that they had recd; no goods of any kind either from the city or from any persons coming from thence and that they had not seen any one from that place for many weeks. The situation of Mr. A’s house is peculiar and unlike that of any other in the neighbourhood, being placed on the dulivily [sic] of a hill facing the north-some thick woods on the west and a considerable rising ground round with an orchard to the south. At the food of the hill, on the side of which the

307 The defining eighteenth-century symptoms of delirium, jaundice, and black vomit are fairly subjective meaning, that if you went looking for yellow fever in a world with frequent summer fevers and the possibility of liver damage, you could probably find it.
house is situated, is the beginning of a large tract of meadow much of which is in a rude and very unimproved state. *How far the exhalations from this marshy ground together with the almost total exclusion of the South and west winds,* which are almost the only winds we had thro’ the latter part of summer, may have anasiwned [sic] the disease in these instances I leave you to judge—*The remainder of the family were immediately removed—no persons took the infection from them that I ever heard of.*

The Abbots serve as an example of how the disease was not necessarily epidemic and that it was neither infectious nor imported. These were key arguments for Rush both in the fact that they connected the disease with the local environment and that they suggested concrete geographic causes which might be remedied.

The Abbots lived in a unique geographic location with a house positioned near a marsh or meadow (an excellent source of effluvia). High ground and trees around their dwelling blocked prevailing winds which might have swept the disease agent away and trapped it around the home instead. Malignant marsh effluvia, in this reading, permeated the bodies of Mr. and Mrs. Abbot, blocked the circulation of “excitement,” and created the diseased state. The fact that other family members escaped the ailment by moving further cemented the notion that the fever (in individual instances) remained confined to strict geographies.

Crosswicks, just east of Bordentown, New Jersey, is less than 50 miles from the former location of the Arch Street Warf, the 1793 fever’s metropolitan epicenter. Other cases suggested that the disease ravaged cities, towns, and rural retreats much further afield. North and South, urban and rural, even occasionally the unknown west could fall

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308 Emphasis added, Francis Bowes Sayre (1793), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XV.
victim. The terror of yellow fever grew over time and became rooted in its routineness rather than its strangeness. American medical periodicals described a sharp increase in the number of yellow fever outbreaks in the 1790s and 1800s, before it retreated from northern cities in the 1810s.309 Rush’s personal correspondence includes descriptions of “yellow” fever, “bilious remitting” fever, and “malignant autumnal” fever.

In a decade rife with anxiety from the rise of partisan politics, Atlantic revolutions, and fear of anarchy, yellow fever in the 1790s both added to the constellation of worries and appeared as a physical manifestation of the country’s situation. Americans noticed that something had changed in the regional disease landscape. Their healthy country felt threatened and unhealthy regions became death traps, especially those which held effluvial in the built environment. In a letter to Rush in 1796 New Yorker E.H. Smith wrote “I doubt whether it would be possible to generate or import, either the one or the other [yellow fever or low fever], into well built & well-ventilated Towns, whose inhabitants were temperate & cleanly.”310 Locations could prevent or exacerbate the fever. Smith provided an example in the case of Newburyport, Massachusetts where he claimed the fever “which has been so fatal this very summer…originated from the putrefaction of a large quantity of Mackerel.”311

Low and marshy ground (characteristic of a damp continent) harbored yellow fever, like it did any other autumnal intermittent or remittent fever. For example, in 1810, Rush’s

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309 After this point, yellow fever rarely appeared in Philadelphia or New York and took on a new role as a sectional disease, specifically of cities in the South like Charleston and New Orleans. Humphreys, Yellow Fever and the South.

310 E.H. Smith (1796), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XV.

311 Ibid.
former student Robert P. Archer wrote from Chesterfield, Virginia that he considered himself “bound” as Rush’s pupil to report local cases of fever in low-lying areas of the county.\footnote{312}{Robert P. Archer (1810), LCP, Rush Family Papers, Benjamin Rush Correspondence, Volume I, Box 2, Folder 19.}

The general wetness of the eastern United States became a serious threat the in the late 1790s. Transient marshes, meadows, and estuaries became pathological geographies which cried out for environmental engineering. In London, George Pinckard (1768-1835), a retired British Army physician, wrote to Rush annually asking after the character of the fever in Philadelphia and elsewhere in the United States. After practice in the West Indies and a visit to Philadelphia in 1797-98, Pinckard knew about the disease first-hand. He included descriptions of it in his three-volume \textit{Notes on the West Indies}, published in 1806.\footnote{313}{George Pinckard, \textit{Notes on the West Indies: Written during the Expedition under the Command of the Late General Sir Ralph Abercromby: Including Observations on the Island of Barbadoes, and the Settlement Captured by the British Troops, upon the Coast of Guiana: Likewise Remarks relating to the Creoles and slaves of the Western colonies and the Indians of South America: with occasional hints, regarding the seasoning, or yellow fever of hot climates}, (London: Printed for Longman, Hurst, Rees and Orme, 1806).} Like Rush, Pinckard considered the ailment to be locally produced and altered by each year’s particular atmosphere. Their correspondence, which lasted for over a decade, frequently mentioned the character of epidemics in both Philadelphia and London with yellow fever reigning in the former and typhus in the latter.\footnote{314}{George Pinckard (1798-1810), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XIII.}

Another long-term correspondent, Rush’s former pupil Nathaniel Potter (1770-1843), regularly reported on the nature of the autumnal fever in Baltimore and expected information about Philadelphia in return. Some of his reports arrived in Philadelphia with
a hint of secrecy. Potter asked that Rush refrain from sharing or publishing the information he sent. He claimed in 1800 that the fever clearly raged around Fell’s Point, but that the Baltimore board of health refused to recognize the epidemic. Writing openly about an officially-denied epidemic might have hurt Potter’s standing in the community. The city might have been trying to avoid panic, a shutdown of trade, or bad press that might hurt their reputation. Potter did blame cities. He fiercely supported his preceptor's theory of local production. Upon hearing about the Philadelphia season of 1799 Potter wrote that his sympathy for the city would have been greater, "but could I ascribe their affliction to any other causes than their own ignorance & prejudices."

In an 1808 epidemic, again at Fell’s Point, Potter noted the disease’s variance with the weather writing that it died down during the September frosts but came back later in the month and still raged at the end of October. In a letter to Rush in 1800, physician James Tongue explained why Fell’s Point suffered so severely. He described the neighborhood as:

[S]everal acres of land which lay between the point and the Town which is overflowed by the tide when full; and is left naked (as I am informed) when the tide ebbs and leaves to the action of the sun a large quantity of grass which putrefies together with the roots. This in the spring of the year whilst vegetation is active produces health by giving out pure air; but now is an ample source of disease.

315 Nathaniel Potter (1800), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XIII.
316 Nathaniel Potter to Benjamin Rush (1799), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XIII.
317 Ibid.
318 James Tongue to Benjamin Rush (1800), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XVII.
The above description supported Rush’s 1793 argument that an alteration in the chemical composition of the atmosphere—its constitution—increased the putrefaction rate of a pile of coffee left out on the dockside. Similar effluvia-producing events in subsequent years could be blamed for the illness. Nor was the idea of a disease-ridden city particularly difficult for Americans to imagine. Even small towns possessed enough danger for residents to take notice. In 1803, physician Benjamin W. Dwight described the Hudson River town of Catskill, New York as a cesspool. The drinking water in particular appeared downright dangerous. Dwight described it as “hard, and abounds in hot weather with animalcules…and not unfrequently with small worms.” Meanwhile the organization, or lack thereof, of the town itself provided an explanation for the production of disease.

In most instances they [malignant fevers] have clearly been owing to local causes, and have generally been confined to those places where such causes operated in an especial manner… [the] greatest number of cases have occurred in places considerably remote from the wharves. The reason is obvious. In addition to the stagnant water in the gutters, &c. as above-mentioned, not more than two years ago a slaughter-house was opened near the middle of the main street, a little east from the road…All the offals [sic] were thrown into the year, and lay there from season to season. After every rain, the water which proceeded from this yard ran into the street, and there became either partially or wholly stagnant. In the neighborhood of this stink of filth and poison it has, in several instances, been very sickly.

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319 Rush, An Account of the Bilious Remitting Yellow Fever as It Appeared in the City of Philadelphia in the Year 1793.


The vomit-inducing smell of a slaughterhouse certainly appeared sufficient to harbor more dangerous ailments. Although not as stomach-churning as the Catskill scenario, Rush pointed to the dangers of fever-producing city rubbish as a target for governments to improve public health. At other times Philadelphians noted the contamination of wells with waste water, especially in dry weather. They assumed the chemical impurity of the water (rather than a specific pathogen) incurred disease. The products of putrefaction— that is rot— could damage sound bodies. If a small river town like Catskill could provide such sources of putrefaction certainly a busy and rapidly-growing port city complete with marshy low lands held the danger in epidemic proportions. The process of putrefaction (abundantly evident in most large towns of the time) clearly altered the state of waste. Why not in living human bodies as well? In this manner, yellow fever was to the United States what nervous diseases had become for Britain, a disease of “civilization,” although the former presented a more immediate and deadly problem than the latter. As the country’s largest city and temporary capital, Philadelphia’s susceptibility to the American plague reinforced

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323 By the end of the eighteenth century the extent of “nervous” disease was considered a potential threat to national security as discussed in, Beatty, *Nervous Disease in Late Eighteenth-Century Britain: The Reality of a Fashionable Disorder.*
the association between urban squalor, immorality, and disease. This combination of flaws dangerously resonated with the future of the country as a whole.\footnote{Currie, “Facts and Arguments in Favour of the Foreign Origin and Contagious Nature of the Pestilential or Malignant Yellow Fever, Which Has Prevailed in Different Commercial Cities and Seaport Towns of the United States, More Particularly since the Summer of 1793.” For a discussion of the debate see, Apel, \textit{Feverish Bodies, Enlightened Minds: Science and the Yellow Fever Controversy in the Early American Republic}.}

Despite stories like the Abbots', which proved the ailment could exist far from urban dangers, the truth remained that the deadly American ailment raged the most in her cities. Importationists used this fact to bolster their own cause. If the fever killed port-city dwellers, they reasoned, the ailment probably arrived on board ships originating in tropical ports where the disease was long-believed to be endemic. An example of what such an approach meant manifested itself in an observation of a subsequent outbreak. After relatively mild years for Philadelphia yellow fever returned with a vengeance in 1798 and 1799. French military physician Louis Valentin described the situation in the following manner:\footnote{Louis Valentin, \textit{Traité de La Fièvre Jaune d’Amérique: Ouvrage Dans Lequel on Recherche Son Origine, Ses Causes...on y Examine, d’apres Les Faits et l’expérience, Si Elle Est Contagieuse, on y}

\begin{quote}
Dans l’automne de 1798 et 1799, la tereur était encore la même parmi les habitans de Philadelphia, qu’en 1793. Le drapeau jaune était arboré sur les maisons où il y avait des maladies. Les magasins étaient fermés, toutes les affaires commerciales suspendues, les rues absolument désertes, et le Gouvernement avait établi son siege à Trenton, dans le New-Jersey à trente milles de Philadelphie (1). Dans tous les ports de mer on faisait observer la quarantaine. Comme dans les années précédentes, le voyageur ne pouvait pas poursuivre sa marche.

During the fall of 1798 and 1799, the terror came again among the inhabitants of Philadelphia the same as it had in 1793. A yellow flag was placed on the homes of the sick. The shops had closed, all commercial trade suspended, the roads completely abandoned, and the government had established its seat in Trenton, New Jersey, thirty miles from Philadelphia. All of the sea-ports observed quarantine. As in the preceding years, the traveler could not continue his journey.\footnote{Louis Valentin, \textit{Traité de La Fièvre Jaune d’Amérique: Ouvrage Dans Lequel on Recherche Son Origine, Ses Causes...on y Examine, d’apres Les Faits et l’expérience, Si Elle Est Contagieuse, on y}
Valentin’s observations largely reflect a concern over the person-to-person spread of yellow fever. The yellow flags, closed shops, and suspended commerce would all prevent the healthy and ill from coming into contact with one another. If the fever spread from body to body than such measure might mitigate its effects.

Even after the fever itself passed, the memory of it lingered in Philadelphia. In 1793 Rush reported that bilious symptoms continued to affect survivors in their normal winter ailments. This followed what he expected as a reader of Sydenham. Epidemic diseases like plague or yellow fever came from strong atmospheric conditions which tainted the expression of other diseases like smallpox, measles, and influenza. Recovery from the fever could take months and the physical signs of illness haunted the streets. On the domestic side, homes needed to be purified of any lingering miasmata (or contagion depending on an individual's philosophy), an act which visibly changed homes. Some residents fumigated with niter to purify the air, others buried and baked furniture in an attempt to remove any lingering contagion or effluvia. In a particularly dramatic act, some survivors threw bedding and clothing into the Delaware River.326 Despite assurances that such steps were not necessary, Rush failed to comfort even his own wife in this regard.

In letters home from the relative safety of Trenton, New Jersey, Julia Rush expressed a great deal of anxiety throughout the epidemic over the winter clothes she had

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left behind and the miasmata Rush and his pupils brought into the house.\textsuperscript{327} Death stalked the place. Three out of Rush’s five students died that summer, Rush nearly died, and his widowed sister Rebecca Rush Wallace succumbed to the fever while keeping house for her brother and nursing the sick. Several years later he added an epitaph on her grave stating that she “died October 1, 1793 aged 49 years while she was performing the highest acts of kindness to him [Rush], and of humanity to the distressed Citizens of Philadelphia.”\textsuperscript{328} In 1794 the Rushs moved to a new house, perhaps in an attempt to leave the memory, if not the miasma of fever behind.

Yellow fever and Philadelphia act as an ideal case study to explore Rush’s vision of epidemic disease. He relied on specific examples in Philadelphia, often related to yellow fever, to support his general theoretical concepts about the unity of fever and ubiquity of effluvia in the United States. Yellow fever shook Americans pride in the health of their country and reminded them of how easily they could emulate the unhealthy characteristics of European urban squalor or suffer from the dangers of hot climates. Cities like Philadelphia exhibited both. They were urban spaces embedded in toxic atmospheres and damp, dangerous places. Even those physicians who believed international trade and refugees from the Caribbean brought the plague saw the danger as a warning about the future of American society.

Despite the urban terror of yellow fever in New York, Philadelphia, and Baltimore, Rush’s correspondence and contemporary journal literature tell a different story. Small

\textsuperscript{327} Julia Rush to Benjamin Rush (October 24, 1793), APS, Julia Stockton Rush Collection of 20 Letters, Mss.B.R894.

\textsuperscript{328} Benjamin Rush, Commonplace Book, 1792-1813, APS, Mss. BR 89c.
towns like Catskill and rural retreats like the home of the Abbots near Crosswicks could also harbor the dreaded American fever. Rural as well as urban Americans worried about new and more violent summer fevers. Charles Caldwell cited the North Carolinian Dr. Harris who argued that fevers had become more dangerous in the 1790s. These accounts help explain why yellow fever could be viewed as a disease of the American environment. Its links to multiple geographies meant that the common denominator between individual ill bodies was not trade links to the Caribbean, or even crowded conditions. It was American dampness, an unfortunate accident of charged atmospheres, and a lax approach to personal and municipal hygiene which allowed fever to rage in the minds of many Americans.

4.2 A Slow-Moving Crisis

In 1801 W. Brackenridge, a doctor in Pittsburgh, Pennsylvania wrote to Philadelphia naturalist and physician Benjamin Smith Barton. The letter responded to a short book Barton had written on the prevalence of goiter in North America, *A Memoir concerning the Disease of Goitre as it prevails in Different Parts of North-America* (1800). Like many letters between colleagues at the time, Brackenridge wrote to both praise Barton’s work and offered his comments and advice. He appreciated Barton's attention to the topic, although he did not agree with Barton’s hypothesis as to goiter’s cause, miasmata, or putrid exhalations from marshy ground, the same source that Rush argued caused yellow fever. Nevertheless, Brackenridge emphasized the importance of facts Barton had gathered.

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and the urgent need to find a cure for goiter in the west. Ne} 330 Near the end of the letter he wrote “[a]s the population of this country increases the malady [goiter] becomes extensive- and is felt. It is a serious drawback. Humanity is greatly interested in the investigation of the cause and ascertaining a preventative or cure.”

At a time in which yellow fever ravaged the coasts why was goiter a concern in the west? Although largely forgotten by historians, Barton’s work on goiter spoke to a larger literature on endemic goiter and provoked not only epistolary reaction, but formal consideration in book reviews and sparked its own origins debate, discussed below. 332 Rush received similar pleas regarding the ailment and its danger including a letter from E. Daugherty of Morgantown, Virginia (West Virginia) who asked the Philadelphian “wether [sic] you… Discovered any cure fo } 333 Goiter led Rush to think about the gendered nature of disease and placed him in an active dialogue with his peers, including Barton.

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330 Barton cited the low terrain and prevalence of remitting fevers in central New York as well as goiter and thought they might share an exciting cause. Benjamin Smith Barton, A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America (Philadelphia: Printed for the author by Way & Groff, 1800), vii.

331 W. Brackenridge to Benjamin Smith Barton (1801), Benjamin Smith Barton Correspondence, American Philosophical Society.

332 Christian Schultz, “Review: A Memoir Concerning the Disease of Goitre, as It Prevails in the Different Parts of North-America,” Medical Repository of Original Essays and Intelligence Relative to Physic, Surgery, Chemistry, and Natural History IV, no. 1 (1801): 47–53; Caldwell, Medical & Physical Memoirs, Containing Among Other Subjects a Particular Enquiry into the Origin and Nature of the Late Pestilential Epidemics of the United States.

333 E. Daugherty to Benjamin Rush (August 13, 1803), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. IV.
Physicians and lay observers viewed goiter as a challenge to the success of the country in a manner that spoke to the continent rather than the coast. To begin with, the condition prevailed in the interior at a rate much higher than in the east and presented as a chronic rather than acute disease of the environment. Like malaria in the 1830s and 1840s, observers could see the changes wrought to bodies by goiter. From New York's Mohawk Valley westward, incidence of the condition rose. Barton witnessed the condition in the 1790s. In 1797 he wrote about the disease in a letter to Rush stating, "I saw several cases of the disease called Goitre [sic]. It is a common complaint, both among the whites and Indians.- I cannot make up my mind respecting its cause: but I do not entertain a doubt, that the disease is somehow connected with the water of the country." Rush was already interested in the role of glands, including the thyroid, and used Barton’s insights to make claims about its function. Barton’s interest, however, was not in physiology, but in medical topography. An accurate description of goiter incidence in the United States and its relationship to the environment would be important for successful settlement.

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334 The goiters observed in North America probably occurred due to chronic iodine deficiency in western diets. Coastal-dwellers had access to ocean-fish, shellfish, and sea-salt (Cape Cod boasted a sea-salt manufacturing industry in the eighteenth century), all of which are rich in iodine, hence the difference based on location. Goiters that did appear in the East were probably due to conditions like Grave’s Disease, hyperthyroidism, or Thyroid cancers. Inhabitants of Central New York in particular used local salt sources from bine springs in and around the Onondaga reservation (Syracuse) in the 1780s and 1790s. The Onondaga and Oneida also exhibited goiter, according to Barton, possibly due to their reliance on food preservation by smoking and similar isolation from iodine-rich foods and salt. William B Meyer, “Why Did Syracuse Manufacture Solar Salt?,” *Source New York History* 86, no. 2 (2005): 195–209.

335 Benjamin Smith Barton to Benjamin Rush (1797) LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XXVII.

One of the reasons goiter piqued Barton's curiosity was its peculiar geography. In the United States goiter presented itself as a condition of the west. In Europe, however, the disease was closely, if not exclusively, associated with elevation. The Alps, Pyrenees, and hills of Derbyshire all exhibited high rates of goiter. In both places topography appeared essential, but in fundamentally different ways.

At the turn of the nineteenth century British and continental literature benefited from several decades of interest in the geography of goiter. Physicians and lay travel writers identified specific locations with high rates of goiter, or bronchocele, and corresponding high rates of “cretinism,” or developmental disability. In cases of cretinism, goiter served as one symptom of a general disorder defined by physical deformities of the skull and low cognitive ability. Most believed that goiter in the extreme or congenital forms of the ailment led to this unusual form of “imbecility.” By the time Barton visited Central New York, Britons on the “Grand Tour” had identified alpine valleys in northern Italy, Switzerland, and the Pyrenees as regions of endemic bronchocele and cretins. By the nineteenth century the association became so strong that tourists to the picturesque valleys could purchase postcards or illustrated books depicting the disease, see figure 4-2. British physician Benjamin Moseley (1742-1819) noted that on a trip to Italy “[i]n the hospital della Carita [in Turin], there was scarcely one female, from the age of four or five years, to the oldest woman, exempt from more or less of it [goiter].”

337 Moseley, Medical Tracts, 255.
Modern epidemiology can explain the divergent patterns of goiter based on iodine deficiency. Neither the American west nor Europe's mountains had a naturally-occurring supply. Rush, Barton, and their contemporaries, however were unaware of iodine's existence, let alone its role in goiter production. French chemist Bernard Coutou first described iodine in 1811 with additional work performed by English chemist Humphrey Davy (1778-1829) in 1813. English physician William Prout (1785-1850) first associated the element with goiter in 1816, three years after Rush's death.\textsuperscript{338} Iodine is naturally-

occurring in ocean water, which explains the American east/west divide. Coastal settlements had access to iodine-rich sea-salt and ocean fish whereas western settlers did not. After the establishment of salt works in Central New York at the end of the eighteenth-century residents had a ready supply of the mineral, but one which lacked iodine.339

In the United States, the fear of goiter did not come from the present events, but the future. It was worrisome and unstable entity to the first generation of Americans. Goiters did not kill, but they did produce visible signs of unhealthiness of a region and possibly future degeneration.340 For an intellectual elite already hyper-aware of any charges of deficiency from Buffon’s Histoire Naturelle, any hint of “degeneration” came across as threatening. This anxiety was all the stronger in light of the association between goiters and "cretinism" a form of developmental disability. Horace Bénédict Saussure noted in his travels through the Alps that the most evident symptom of cretinism was goiter.341 In an account of his travels in Switzerland, British traveler William Coxe hinted at the danger the disorder brought to regional character, claiming of the Vallais in the Italian Piedmont:

With respect to manufactures; there are none of any consequence: and indeed the general ignorance of the people is no less remarkable than their indolence; so that they may be considered, in regard to knowledge and improvements, as some centuries behind the Swiss, who are certainly a very enlightened nation. The peasants seldom endeavor to meliorate those lands where the soil is originally bad; nor to draw the most advantage from those,


340 This general sign of unhealthiness is analogous to the type of insalubrity indicated by “ague” in the nineteenth-century Mississippi Valley as described in Conevery Bolton Valencius, The Health of the Country: How American Settlers Understood Themselves and Their Land (New York: Basic Books, 2002).

which are uncommonly fertile: having few wants, and being satisfied with the spontaneous gifts of nature, they enjoy her blessings without much considering in what manner to improve them.\footnote{342 Emphasis added, William Coxe, \textit{Travels in Switzerland. In a Series of Letters to William Melmoth, Esq. from William Coxe, M.A. F.R.S.F.A.S. ...} (London: printed for T. Cadell, 1789), 396–97.}

Coxe’s comments highlight two concerns: the “ignorance” and the “indolence” of the people. The lack of “improvement” to the land and satisfaction with a state of nature echo similar stereotypes Euro-Americans ascribed to Native Americans and deemed “savage.” Could goiter and eventual “cretinism” hasten a descent into “savagery?” Not only did goiter appear in some locations at a higher rate than others, but some scholars thought that the disease could become progressively worse and lead to increased rates cretinism over generations. Coxe claimed that a mother with a goiter could give birth to a child with congenital “cretinism” and more pronounced goiters at birth.

The American goiter authors, including Rush and Barton, did not make that specific conclusion. However, they did worry about the effects of the ailment on individuals and what it might mean for western settlement. Given Rush's promotion of improvement and skepticism of both nature and savagery (discussed in chapter five) it would have been easy for him to make a link between goiter, mental degradation, and loss of "civilization." Accounts like Barton’s demonstrated the prevalence of the illness among all ethnic groups including the “savage” Native Americans, the group exposed to such conditions longest.

In the American and British contexts goiter and cretinism did not appear closely associated, but the threat remained. This connection led Rush to his conclusion that the thyroid was associated with the regulation of mental function. A dysfunctional thyroid, for
example one enlarged by goiter, opened one up to the possibility of hysteria, mania, or death from an unprotected brain. This was especially the case, as discussed in chapter five, when he considered women. When citing Francis Rigby Brodbelt’s 1794 Edinburgh dissertation, “Disputatio medica inauguralis, de bronchocele,” Rush noted that the inhabitants of Derbyshire, England experienced enlargements or pain in the thyroid as a result of increased excitement from running or strong emotions. He presumed that this increased pain came from an already overtaxed system by the disease and mal-functioning gland. An already-enlarged thyroid was already over-worked and therefore could not contend with additional blood flow. The excitement of the rush of blood could, in this situation, bypass the thyroid and reach the vulnerable brain unimpeded. Rush noted that his own thyroid patients suffered greater disturbances of the mind than those with normal glands. It remains unclear how often “cretinism” appeared outside specific geographic regions or if Rush treated cretins in either private practice or the hospital. In his 1807 essay on the spleen, liver, and thyroid gland Rush wrote, “[t]he bronchocele of the Cretins is generally accompanied with imbecility of mind.”

Throughout the trans-Atlantic goiter literature multiple theories existed to explain the condition’s geographic specificity, if not its physiological effects. Water was considered the most frequent culprit. Specifically, William Coxe wrote in his *Travels* that

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343 Rush learned of this dissertation from the author’s father, Rigby Brodbelt, who wrote to Rush about the book (which a heavy dose of paternal pride) in 1794 stating “my Son (who is not in his 25th year) graduated in September last at Edinburgh after studying in that University upwards of Seven years. His Thesis is on the Bronchocele, and if I do not say with too partial an Eye I think it a very good one.” Rigby Brodbelt (1794), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. Ila, Box 5, Folder 60.


345 Ibid.
he believed calcareous minerals (from limestone) in local water sources led to obstructions in the body which caused the swelling. Surgical studies by Haller and Morgagni found stones or calcium deposits in thyroids which seemed to support the argument as well. Moseley argued that temperature was the real culprit and lamented that the ailment could not be cured, only prevented by keeping the chests and necks of women warm by proper clothing.

With this context in mind consider Barton's surprise to find it in relatively flat Central New York. His observations began as a side-project associated with his expedition to central and western New York State to study local botany, ecology, and geography. Barton had a long-term interest in the natural history of the region and continued to collect information about upstate New York. His work on goiter charted the ailment’s prevalence across space, gender, and species in the region. It also critiqued previous theories regarding the cause of goiter and presents an alternative explanation with implications for both America and Europe.

The trans-Atlantic aspect of the project is evident from the dedicatory preface to German naturalist Johan Frederick Blumenbach (1752-1840). Unlike most of his America colleagues Barton maintained an active correspondence with physicians and

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346 Barton, A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America, 27, 32; Coxe, Travels in Switzerland. In a Series of Letters to William Melmoth, Esq. from William Coxe, M.A. F.R.S.F.A.S. ..., 401–3.

347 Moseley, Medical Tracts, 263.

348 Unlike many of his Philadelphia colleagues, much of Barton’s European medical training came from the continent in addition to an unsuccessful stint in Edinburgh, although he returned home without taking a medical degree. In 1796, he received a medical degree from Christian-Albrechts University at Kiel, after he begin teaching in Philadelphia. For a full account of Barton’s training and character as a student see, Whitfield J Bell, “Benjamin Smith Barton, M.D. (Kiel),” Journal of the History of Medicine, 1971, 200.
naturalists in German as well as in French and English. Barton noted that goiter was not an exclusively American disease, but that its appearance differed based on place.

As the disease of Goitre [sic] is extremely common in some parts of Germany, and in other parts of Europe, the philosophical physicians of those countries will not deem it an incurious point to examine…what affinity there is between the soil, the climates, and exposure of the European districts in which this disease prevails, and the soil, the climates, and exposure of those countries of America in which it also prevails. If the facts contained in my memoir should serve to throw any light upon the nature of this complaint, I shall think the time which I have employed in the investigation has not been altogether misapplied.

Beneath the polite dedication Barton set up the context in which he wanted to discuss American goiters; related to, but possibly different from, European accounts of the disease. Finding the commonality in conditions which would trigger the physiological response of goiter meant taking a critical and comparative look at geography. Barton’s observations began with a collection of local information about the goiter. Following a narrative approach, he described his initial interest in the disorder’s prevalence in the region. He claimed to have noticed goiters on two Oneida women in the Western Mohawk Valley. This sparked his interest and with minimal inquiry he learned that endemic goiter could be found not only in the American Indian populations (both established and newly-arrived), but in Dutch New Yorkers, and recent migrants from Connecticut heading west.

Unlike Alpine descriptions of the disorder which included instances where it was congenital, Barton’s goiters affected adults almost exclusively. Beyond age exclusivity,

349 Barton Correspondence, American Philosophical Society.

350 Barton, *A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America*, v.

351 Ibid., 6–8.
however, the ailment readily crossed cultural and even species lines. Like Valencus’s “ague,” Barton’s goiter existed within the local geography and left its physical mark on livestock as well as humans.  

Unlike yellow fever, which some physicians argued affected white people more severely than those of African descent, endemic goiter was not a racially-dependent disease, or even one mitigated by a process of “seasoning.” All people, regardless of ethnic or racial background seemed equally subject to the disorder. Variation only existed in terms of gender, and Barton's observations confirmed similar European accounts. Wherever it prevailed, endemic goiter was a disease of women, as noted above in Moseley’s hospital observations. Whatever the source of goiter, it clearly appeared tied to specific geographic locations and strongly influenced female constitutions. Strangely, the exact type of geography proved elusive.

Barton’s study challenged the prevailing assumption in medical and lay literature from Europe that endemic goiter was a disease of mountain valleys, or at least high elevations. American goiters certainly appeared in river valleys, but not in exclusively mountainous regions which eliminated the snow-melt hypothesis. Furthermore, while

352 Ibid., 12.


354 The snow-water theory already seemed to have been in weak standing, as English surgeon Benjamin Wilmer noted, “it is difficult to say why the Laplander, who drinks nothing but snow-water the greatest part of the year, should not be equally subject to the complaint as the inhabitants of the Alps, and mountains of Tyrol, where the bronchocele is so common, that it is esteemed a personal advantage.” Benjamin Wilmer, *Cases and Remarks in Surgery: To Which Is Subjoined, An Appendix, Containing the Method of Curing the Bronchocele in Coventry* (London: Printed for T. Longman, 1779), 237.
Pittsburg and Vermont met the qualification of a mountain valley of the kind theorists like Saussure associated with trapped and vitiated air, the flat military tract of New York State or low regions along the Wabash River in the Indiana Territory did not.\footnote{Saussure, Voyages Das Les Alpes: Précédés d’un Essai Sur l’histoire Naturelle Des Environs de Geneve, 299. The same topography which made the region a good choice for building the Erie Canal two decades later. Barton, A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America, 54–55.} In none of these places did water come from snow-melt or ice, which some associated with the disease, and air moved freely precluding any alteration of the atmosphere in enclosed and isolated areas.

Areas with goiters and those without appeared almost arbitrary in Barton’s assessment and his frustration is palpable in the text. The village of Manlius, New York proved exceptionally dangerous whereas Seneca Lake seemed immune. The map in figure 4-3 marks areas Barton associated with goiter. West of the Genesee River, Barton pled his ignorance and claimed that the region held too few people to know if goiter would be a problem or not. Almost ominously he noted that the region’s health would “be ascertained in the future population of the country. Meanwhile, I shall observe, that there are some cases of goitre [sic] among the Tuscaroras, who are settled near the utmost western verge of New-York, about ten miles from the Falls of Niagara.”\footnote{Barton, A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America, 16–17.} The goiter lands seemed to stretch unchallenged into the west. In the case of Western Pennsylvania Barton relied on the descriptions of George Stevenson a doctor in Pittsburgh who claimed to have observed significant numbers of cases along the Allegheny and Monongahela. He wrote to Barton that in Pittsburgh “out of 1400 inhabitants, there are not less than 150 persons who have

\footnote{Saussure, Voyages Das Les Alpes: Précédés d’un Essai Sur l’histoire Naturelle Des Environs de Geneve, 299. The same topography which made the region a good choice for building the Erie Canal two decades later. Barton, A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America, 54–55.}

\footnote{Barton, A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America, 16–17.}
it,” a proposed morbidity rate of 11% of the population. Rates were higher among women and children.\textsuperscript{357}

Figure 4-3 \textit{Locations identified as having high rates of goiter according to Benjamin Smith Barton, A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America (1800)}

Despite the significant numbers observed by Stevenson, Barton interpreted them in an unalarmed voice stating, “[i]t does not appear from Dr. Stevenson’s letter, that the disease has…arisen to a very troublesome or alarming height.”\textsuperscript{358} If eleven percent did not alarm Barton what did? How prevalent did he believe the disease was in New York, or would be further west? No numbers back up his impressions, but they must have \textit{appeared} to have

\textsuperscript{357} Ibid., 18.

\textsuperscript{358} Ibid., 19.
been substantial, if not ubiquitous, probably akin to Cox and Moseley’s account, so whole villages in the Alps lacking any unaffected people.\textsuperscript{359}

Barton described a medical geography of goiter which represented a range of geological and climatic conditions. Pittsburgh may resemble the tight river valleys of Old World but the wide and relatively flat expanses of western New York and the St. Lawrence Valley did not fit the bill. This difference led Barton to suspect that neither soil nor mountainous airs caused the appeared of goiter and informed his miasmatic hypothesis. As in the case of yellow fever the general dampness of the continent was again to blame for its health.

Following standard arguments, largely coming out of the European literature,\textsuperscript{360} most of Barton’s correspondents blamed the ailment on local water sources, specifically pointing to mineral impregnation. Although he reviewed the idea, Barton set his readers up from the beginning to see water (or at least drinking water) as a dead end. He wrote, “the great mass of the people of a country are seldom remarkable for a talent of discovering the connection between physical causes and effects.”\textsuperscript{361} While some regions in the United States shared the limestone bedrock associated with endemic goiter in Europe others, like

\textsuperscript{359} Cox, Travels in Switzerland. In a Series of Letters to William Melmoth, Esq. from William Coxe, M.A. F.R.S.F.A.S. ...; Moseley, Medical Tracts.

\textsuperscript{360} Barton heavily cited William Coxe’s description of goiter in Northern Italy and Switzerland. Coxe argued that locals blamed the disease on water and those who refrained might see improvement. Coxe, Travels in Switzerland. In a Series of Letters to William Melmoth, Esq. from William Coxe, M.A. F.R.S.F.A.S. ..., 398–99.

\textsuperscript{361} Barton, A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America, 22.
Pittsburgh and Fort Dayton (Herkimer, New York) did not. Without limestone tuff infused in the water Barton looked elsewhere for a cause.362

Goiter seemed to prevail in most types of landscape in North America and proved indifferent to the existence or absence of limestone. Like yellow fever in the East, Barton saw goiter in the West as an illness tied to the land and to fairly common interactions between land, air, and water. Despite the extensive variety of situations, Barton found one typical topographical feature in both America and Europe: lakes. He noted at the end of his topography section that: “[i]n this respect…the American goitre [sic] bears a close affinity to the goitre [sic] of Europe. The disease is extremely common in Switzerland, in the neighborhood of the lakes of that country, or about the waters which empty themselves into those lakes.”363 Yet even this generalization had its glaring fault: Pittsburgh has no lake. In the end, Barton settled on miasma as a source for goiter. For the second time, the defining American geography came down to wet and miasmatic ground.

Barton’s goiter demonstrated the importance of American knowledge in two ways. First, it reinforced the idea that the United States possessed a unique environment which required study to properly manage. Second, the oddities of the American disease landscape could have implications for theory and treatment throughout the world. Barton did not try and argue that his goiter was different from those described in Europe. On the contrary, he saw his research as contributing to the same body of literature. American goiters could eliminate the explanations for the disease based solely on altitude. Barton’s work

362 Ibid., 28.
363 Ibid., 57.
demonstrates the dual goals of elite American science and medicine; the promotion of unique local knowledge and the contribution to an international scientific fraternity. Of course, Barton did not solve the problem of goiter in the United States or produce a consensus around its possible cause.

Caldwell, for example, fundamentally disagreed with Barton's miasma theory. He claimed that because miasma was ubiquitous goiter. He did not, however, provide any alternative system. Meanwhile, Jonathan Dorr in Vermont supported Moseley’s idea and blamed cold weather and impractical women’s clothing.364 Despite their interest goiter remained a problem. Barton did, however, demonstrate that endemic goiter was a particular concern in the country and the study of diseases in North American could provide new insights applicable in local and global contexts. He also set the groundwork for Rush’s 1807 theoretical work on thyroids and their gendered physiology.

Women, all parties agreed, exhibited goiter more frequently than men in a pattern which transcended race. Barton wrote, “[f]rom all my inquiries concerning the goitre [sic] of New-York, I think there can be little doubt, that females are much more liable to it than males.”365 Not long after he published on goiter in New York, Dorr remarked on its gendered nature in Vermont. He suggested that cold exposure of the lips, throat, mammae, and female genitals triggered goiter. Dorr added that in mountainous regions “girls and young married women, from a pernicious custom, go without their necks and a portion of

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365 Barton, *A Memoir Concerning the Disease of Goitre as It Prevails in Different Parts of North-America*, 10.
their breasts being covered through much of the frosty season.”

This argument agrees with Moseley’s pessimistic note that goiter could not be cured, only prevented by warm clothing. He further noted that one quarter to one half of women in the towns of Sandgate, Camden, and Chester suffered from goiter whereas “[i]n the three towns there is hardly such a thing as a male being affected with goitre [sic].”

In short, goiter in the early nineteenth century was an excellent disease to demonstrate the utility of medical geography and encourage a gendered view of disease. Debate continued over the exact environmental and/or hereditary causes of the twined disorders, however it is clear that the disorder encouraged research and deeply concerned medical authors. This worry carried over to the United States where goiter, and fear of its consequences, threatened Anglo-American western settlement. All the more so because unlike England or Switzerland, American goiter did not play by the same geographic rules. The alpine ailment of Europe grew up just as easily in flat central New York or Indiana as it did mountainous Vermont or western Pennsylvania.

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366 Dorr, “Facts Concerning Goitre, as It Occurs in the Towns of Camden, Sandgate, and Chester, within the States of New-York and Vermont; and Conjectures Concerning Its Cause,” 143–44.

367 Ibid., 142.
4.3 Conclusion

In 1801 the Medical Repository of Original Essays and Intelligence Relative to Physic, Surgery, Chemistry, and Natural History reviewed Barton's work on goiter. It began with a common theme: the sheer vastness and variability of the United States:

In a widely extended country, reaching from the confines of Acadia to the limits of Florida, there exists a great variety of climate. And in the range from the ocean to the stream of the Mississippi, the diversity, occasioned by alteration of latitude, is exceedingly increased by intervening and local circumstances, which checquer [sic] the scenes and the seasons in a remarkable manner.368

Volney presented a similar view of the country, if in less enthusiastic terms: “the United States include the extremes of all the countries I have mentioned [Egypt, Morocco, China, France, Tartary (Russian Steppe), etc.].”369 He preceded it with the ominous note that “it will be obvious, that this extensiveness of territory is in reality a cause of weakness at present, and does not promise to be a source of union in future.”370 How was such diversity to be managed? Could it?

No one specifically brought up the image of a “city upon a hill” in the wake of the yellow fever outbreaks or news of goiter in the west, but the sentiment applied. If the United States fell victim to disease its future promise would be compromised. Americans in the 1790s feared their country would not thrive as a well-regulated republic populated with

368 Schultz, “Review: A Memoir Concerning the Disease of Goitre, as It Prevails in the Different Parts of North-America,” 47.

369 Volney, View of the Climate and Soil of the United States of America: To Which Are Annexed Some Accounts of Florida, the French Colony on the Scioto, Certain Canadian Colonies, and the Savages or Natives, 5.

370 Ibid., 4.
self-sufficient, moral, and healthy citizens. Disorders like endemic goiter and yellow fever represented the potential dangers of an under-studied environment and the limitations of imported knowledge. In light of all this a pessimistic attitude could be forgiven. However, despite the challenges, significant optimism remained. Although eighteenth- and early-nineteenth-century Americans believed their environment shaped them, they also believed they could shape their environment.

Within his purview as a man of science and medicine Rush became convinced that one way forward was to revamp the American medical system. Caldwell echoed this sentiment and argued “[s]ince the year ninety three [sic], a memorable revolution has occurred, in the type and state of fevers, in many parts of the United States. The event has, necessarily, given rise to a corresponding revolution in their medical treatment.”371 By doing away with what they considered incorrect theories and an over-complicated educational system American doctors would be better prepared to manage their country. The continued collection of information on disease, climate, and geography by trained eyes would better explain the unique challenges Americans faced and hint at ways to ameliorate the destructive forces of nature. In the east, careful management of bodies and institutions would shape men (and women) into “republican machines” fit for their new world and new society. Medicine and her allied sciences might show the way forward. The first step was to define just what that American medicine would be.

371 Caldwell, Medical & Physical Memoirs, Containing Among Other Subjects a Particular Enquiry into the Origin and Nature of the Late Pestilential Epidemics of the United States, 138.
On July 27, 1795, Benjamin Rush wrote in his commonplace book that he had:

> Visited Harry Moss - an African born in Virginia - his grandfather was an African by birth his grandmother an Irish woman But his father black & his mother mostly so. From years ago he began to grow white first at his finger nails, then on the back of his neck - the parts that were covered & sweated, advanced most rapidly…his face slowest- His skin was exactly like a white man- no rubbing accelerated it. The black skin did not come off, but changed. He has two Brother[s] in whom no change has taken place…no previous change in his manner of living- has a wife but no children.372

The case of Henry Moss appears in Rush’s published work as an "example" of the potential "cure" for blackness. For intellectuals like Rush, C.-F. Volney, and Princeton president Samuel Stanhope Smith, committed to the idea of racial fluidity, especially as a means to end slavery, Moss became a key example.373 For popular audiences, Moss’s change was more spectacle than philosophical marvel.374 As Eric Herschthal articulates, Rush’s held

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372 Benjamin Rush, Commonplace Book, APS


two seemingly contradictory positions on race at the same time. The first was, that slavery was immoral and insupportable, but the second, that citizenship in the American republic belonged to white men. Physical differences between individuals and groups of individuals in the United States held serious social and political consequences, not only medical ones. Blackness, in Rush's view was a form of leprosy contracted in Africa and perpetuated by the degrading mental and physical conditions of slavery. It could only be mitigated by the end of the practice which would bring the eventual elimination of the physical distinction. He made no mention of Moss’s mixed-race background as an explanation of his “whitening,” suggesting the irrelevance of hereditary. Rush did, however, look for African Americans of clear intellectual talent to promote the idea of racial “improvement” and eventual assimilation in color as well as intellect. He maintained a correspondence with James Durham an African-American medical practitioner in New Orleans. He also supported Richard Allen's and Absalom Jones's work to establish an African Church in Philadelphia and attended the opening dinner on May 22, 1793.

Meanwhile, in Rush's opinion, American Indians maintained physical difference (darker skin, strong bodies, characteristics of the "noble savage") through cultural practice and lifestyle. In his mind they did not belong in the republic because of culturally-imposed physical and psychological differences from white people. Women of any race, meanwhile,


appeared invariably different from birth. Rush assumed structural differences between men and women were permanent, determined by God. He informed the careful observer about “healthy” gender roles.

Chapters three and four demonstrated how Rush viewed bodies as essentially the same and shaped by their environments over time. The present chapter pushes beyond theory and asks how he used those ideas about cultural and geographic variability to make sense of his multi-ethnic, multi-racial, and highly gendered reality. From his perspective, and that of many Western intellectuals of the time, the physical construction of bodies necessarily altered that body’s physical relationship to the outside world. This could work on a very small scale, on the level of families. If your father had a body prone to gout (under the right, or wrong, stimulating conditions) then you too might find yourself struck because of a similar constitution passed on from parent to child. With respect to sex, Rush reasoned that innate physical differences in men and women’s bodies led to different relationships with the world, pathological and otherwise. Physical differences between male and female bodies were used to inform a “scientific” basis for the observed differences between men and women. Rush’s mechanism explained inherited diseases, and differences in disease experience between men and women.

The physical construction of bodies necessarily altered that body’s physical relationship to the outside world. With respect to sex, Rush reasoned that innate physical differences in men and women’s bodies led to different relationships with the world,

pathological and otherwise. For Rush, and others of his generation, bodily differences between the sexes could be found throughout the human body. In lectures on the difference between men and women’s bodies and on the peculiarity of female diseases Rush discussed the different bone densities of women, their more extensive lymphatic systems, larger thyroids, and earlier puberty. He associated each natural physiological difference with the ideal feminine lifestyle, one less prone to stimulation than that of men. Women’s bodies abstracted excitement through their lymphatic system and large thyroids.

The success of Rush’s medicine came from its ability to account for variation. His simple concepts could be adapted by physicians throughout the country to explain the people and diseases they encountered. In doing this, Rush borrowed arguments from other eighteenth-century physicians and ethnographers. For example, from the Baron de Montesquieu he adopted the idea that heat led to reduced mental capacity. Rush claimed that the heat of North Africa and the Middle East over-taxed the mind and body which led to the cultural habits associated with those regions as well as what Rush considered a despotic form of government in the Ottoman Empire.\textsuperscript{378} Even within a temperate climate,

however, the minds and bodies of a population might suffer if starved of the mental activity associated with political engagement, an attack he leveled at ancien régime France.\textsuperscript{379}

In a young, multi-ethnic republic with a notoriously unstable climate Rush wanted to find a formula for success. To do so he needed to understand the forces which drove human difference, and how different "races" and societies persisted in the same region. Through the use of personal anecdotes, informal correspondence, and travel literature, Rush presented an explanation for numerous cultural differences in both the old world and new. Such variation did not create a firm categorical difference between people, since proper management of self and society could produce healthy and political engaged populations in many different climates: if culture were managed appropriately.\textsuperscript{380}

The following pages address a few examples of Rush’s interest and use of geography, sex, and culture to account for racial and gender difference within the borders of the American Republic. Section one focuses on his construction of race and ethnicity in the 1774 American Philosophical Society oration, “An Inquiry into the Natural History of Medicine Among the Indians of North-America; and a Comparative View of their Diseases and Remedies with those of Civilized Nations.” This chapter next considers gender and gendered physiologies in Rush’s theory and especially in his teaching. Finally, this chapter

\textsuperscript{379} Benjamin Rush, Lecture Notes, LCP, Volume 166 and Benjamin Rush, “An Inquiry into the Natural History of Medicine Among the Indians of North-America; and a Comparative View of their Diseases and Remedies with those of Civilized Nations” in Medical Inquiries and Observations, vol. 1, 2\textsuperscript{nd} edition (Philadelphia: J. Conrad, 1805): 1-68.

considers the intersectional roles of race and gender and Rush’s use of women’s bodies as “civilization” barometers.

5.1 The Americans

As a young doctor in 1774, Benjamin Rush delivered an oration on comparative medicine and ethnography to the American Philosophical Society. Although the American speech took place early in his career, only five years after his return from Britain and two years before the American colonists declared independence, it demonstrated principles which informed his work for decades. Rush included it in his anthologized medical text, Medical Inquiries and Observations, as late as 1805. Its general theme of racial fluidity and slavery as an ultimate cause of any racial "inferiority" also appeared in the work of Rush to close personal and professional friend Samuel Stanhope Smith, An Essay on the Causes of the Variety of Complexion and Figure in the Human Species (1787).\(^{381}\) Smith was trained as a clergyman, not a physician, however he and Rush wrote and spoke often on a variety of subjects, including human physiology.\(^{382}\) Rush and Smith continued to support a fluid theory of race and single origin for the human species that did not change from 1774 to the 1810s. In Rush's view human bodies changed over generations, influenced by climate and culture.

\(^{381}\) Smith, An Essay on the Causes of the Variety of Complexion and Figure in the Human Species.

This theory effectively made race a product of culture, but that did not take away from the fact that Rush gave "race" a biological reality. As demonstrated below, difference in disease expression became a key marker of culturally-determined biological difference in Rush's view. The result is as disturbing as any assertion of scientific racism or arguments of racial superiority. More than skin color or any other physical feature this difference the presence or absence of disease and expressions of culture clearly marked one race from another and suggested that they had little to learn from each other with respect to medicine. Rush’s mind a body exposed to a variable climate was so different from and equivalent body in the same location but shielded from the elements that they were medical incomprehensible to one another. Rush made race in this essay by literally saying, “we don’t have the same diseases you do.”

Despite the differences between British and Native American Bodies Rush maintained in 1774 that colonists could learn from the successes and failures of each group. His text, and added footnotes, clearly inform the reader that the information provided could be useful for the future; not only a curiosity for the present. It was an attempt by Rush to use comparative ethnography to argue for a unique Euro-American culture, neither British nor Indian. The two cultures he compared stood at opposite ends of an Enlightenment-era spectrum of “civility.”

“savage” state, whereas the British (especially the well-to-do of London, Edinburgh, and Bath) sat at the pinnacle of refined and sensible society. It was too refined a society by his measure. Americans of European descent had not, in Rush’s view, firmly settled into a pattern and had the ability to plan their institutions around the knowledge presented. In the midst of the American revolution, Rush used the oration to make a statement about what type of people Anglo-Americans could be if they applied themselves. They were neither Indian nor British and had the ability to maintain healthy, informed, balance.

Rush highlighted the comparative nature of his work in the paper’s title “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations.” As noted in chapters three and four, disease, cure, and culture could not be separated in Rush’s view of physiology. How someone lived altered the manner in which they exposed themselves to disease and therefore right living and the prevention of illness in the first place was the best cure. A poorly-planned city or a miasma-ridden home could lead to yellow fever or goiter. Society functioned analogously. If a group of people engaged in culturally-mandated unhealthy or healthy behavior it would show in their bodies. A key example of this is found in a slightly later ethnographic work on Pennsylvania’s German

384 Rush defined the different states of “civilization” by how they obtained food: “The savage live by fishing and hunting; the barbarous, by pasturage or cattle; and the civilized, by agriculture.” Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 5.
population, *An Account of the Manners of the German Inhabitants of Pennsylvania* (1789). Germans, Rush argued, maintained their characteristic robust health though the consumption of vegetables all year by using sauerkraut in the winter. German-American health stood in stark contrast to the illness of fashionable Anglo-Americans and their meat-heavy diet.\(^{385}\)

Mention of Rush's work on Pennsylvania Germans also draws attention to his sources. As with his German neighbors, in the case of Britons, Rush relied on first-hand knowledge from his time as a student in Edinburgh and London in addition to numerous texts on the diseases of the British elite, most famously George Cheyne’s *The English Malady*.\(^{386}\) Worry about nervous diseases only grew over the course of the century aided by the nerve-centric physiology promoted at the University of Edinburgh. During Rush's student days the diseases were closely associated with the British gentry and middling sorts. By the turn of the nineteenth century it was considered a danger to all people as nervous fevers attacked the poor as well as the rich.\(^{387}\) Rush was early in his assessment that such diseases could become national epidemics in the 1770s.

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386 For a discussion of the Cheyne’s life and work see, Guerrini, *Obesity and Depression in the Enlightenment: The Life and Times of George Cheyne*.

Meanwhile, Rush's knowledge of Native Americans came from a combination of written sources, stereotypes, and conversations with western travelers with varying degrees of reliability. Although he certainly would have seen American Indians in eighteenth-century Philadelphia on occasion, the ethnographic work addresses a world far beyond the Schuylkill. Rush specifically cited written histories of Canada and the verbal testimony of physician and Revolutionary War general, Edward Hand (1744-1802). From these sources he generalized about Indian traditions and made no attempt to differentiate by region, tribe, or language group. Meanwhile, neither group appears favorable in the work itself. Rush’s complaints about British habits and the pathological nature of their society from the perspective of a still young professional and colonial subject (and in 1774) may have been one reason why London booksellers Edward and Charles Dilly advised against publishing in England.

In the course of his comparative ethnography Rush described the actions of both American Indians and wealthy Britons in sickness and in health. Although he dedicated considerably more time to Indian bodies, both received critique and analysis. This oration is an early attempt by Rush to document the specific alterations that culture and climate made on individual bodies. In the case of his Anglo-American audience, they found themselves in a sort of limbo--not fully British due to their climate, and not Indian because of their culture.

388 Presumably Hand obtained information prior to the war, however Rush notes that his information from Hand came via conversation and tracking down its source is impossible. Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 6–7.

389 Edward Dilly and Charles Dilly (1774), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXXI.
The short essay marked a few key points which highlighted the complexity of race, climate, and culture in North America. At its core sat the essential question: if climate influenced culture, as theories like Montesquieu's claimed, could two distinctive societies permanently exist in the same location? Was one inevitably doomed to failure? White Americans and Indians lived in the same climate and they ate many of the same foods, especially those derived from plants and animals native to the Americas, like maize and venison. In addition to the similarity of their physical environments Native Americans and European-Americans had at least one important social trait in common. Both groups consisted of free people, not slaves. This difference was extremely important for Rush. He attributed many of the “inferior” or “pathological” traits associated with people of African descent with the mentally and physically damaging state of slavery as discussed above. In the second edition of his treatise against slavery, published in 1773, Rush wrote:

I need hardly say anything in favour of the Intellects of the Negroes, or of their capacity for virtue and happiness, although these have been supposed, by some, to be inferior to those of the inhabitants of Europe. The accounts which travellers give us of their ingenuity, humanity, and strong attachment to their parents, relations, friends, and country, show us that they are equal to the Europeans, when we allow for the diversity of temper and genius which is occasioned by climate... But we are to distinguish between an African in his own country, and an African in a state of slavery in America. Slavery is so foreign to the human mind, that the moral faculties, as well as those of the understanding are debased, and rendered torpid by it. All the vices which are charged upon the Negroes in the southern colonies and the West-Indies, such as Idleness, Treachery, Theft, and the like, are the

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390 Reliance on American crops seems to have been more common the further west one traveled. Although corn grew throughout the United States, Volney noted that farmers cultivated wheat as well until he reached the French settlement at St. Vincennes (Vincennes, Indiana) where maize was the only cereal. Volney, *View of the Climate and Soil of the United States of America: To Which Are Annexed Some Accounts of Florida, the French Colony on the Scioto, Certain Canadian Colonies, and the Savages or Natives*, 145. L.J. Jardine noted the prevalence of venison in American diets with much approval in, L. J. Jardine, *A Letter from Pennsylvania to a Friend in England: Containing Valuable Information with Respect to America* (Bath: Printed by R. Cruttwell and sold by Silly, London; Lloyd, and Cottle Bristol; and Bull and Co. and Evans, Bath, 1795).
genuine offspring of slavery and serve as an argument to prove that they were not intended for it.\textsuperscript{391}

Enslaved people could not control their own bodies. They suffered mental anguish and physical harm due to their unfree state. Rush’s students noted that the diseases considered particular to enslaved Africans, like yaws and “dirt-eating,” were impossible to separate from the sufferers' unfree state. This did not mean that Rush had any scruples about believing stories of general vice and inferiority spread by slave owners. Slavery in Rush’s view created and perpetuated physical and psychological inferiority which could only be corrected by the end of the practice. Nevertheless, African American slaves did not, in Rush’s view, equal the humanity and sensibility of their free African ancestors or free African-American descendants. Generations of slavery, in his mind, would take generations to undo, but potentially lead to the literal whitening of the population.\textsuperscript{392}

From this perspective, Rush viewed Black Americans as inferior to their White counterparts, but the blame for it fell on the shoulders of White America.\textsuperscript{393} Rush thought poor living conditions, dangerous work environments, and a separate culture prevented African Americans from attaining “health.” Rush’s support of emancipation efforts and correspondence with African American intellectual and religious leaders can be explained

\textsuperscript{391} Benjamin Rush, \textit{An Address to the Inhabitants of the British Settlements, on the Slavery of the Negroes in America, the Second Edition}, 2nd ed. (Philadelphia: Printed and Sold by John Dunlap, 1773), 1–2., emphasis added.


\textsuperscript{393} Although slavery was being gradually phased out and made illegal in most Northern States, including Pennsylvania in the wake of the Revolution, the institution remained in place in New York (gradual abolition began 1817 and abolished 1827) and New Jersey (gradual abolition began 1804) as well as the nearby “border” states of Maryland and Delaware until passage of the thirteenth amendment in 1865.
as support of the institutional changes which might end “blackness” as a “disease.” One of his students, Elijah Griffiths, recorded in his notebook that Rush had stated, "I imagine, that their color arose in the first place from the leprosy; & that they exhibit all or most of the sings of that disease, a big lip, flat nose & the offensive smell they emit from their bodies, indicate the presence of leprosy, together with nervous insensibility" and that Rush had witnessed a case of a white girl abandoned and living in squalor who took on characteristics of blackness. 394

On the other end of a spectrum of destitution, Rush took an interest in exceptionally talented and intelligent Black men to support the idea of circumstantial rather than absolute inferiority. In Philadelphia he financially and publicly supported Allen and Jones in the establishment of the African Episcopal Methodist Church in 1793. Within the medical profession, he maintained a correspondence with an African-American practitioner in New Orleans, Dr. James Durham. Durham was born into slavery in Philadelphia (although it is unclear when) and at some point, was sold to a Dr. John Kersley Jr. who moved to Louisiana (when it was a Spanish territory). Rush and Durham maintained a professional correspondence between 1789 and 1802 and Rush used Durham as a public example of African-American ability before abolitionist groups. 395

394 Elijah Griffiths, "Notes from Dr. Rushes [sic] Lectures (1797-1798)," CPP, 10a 106, Vol. II. A similar account is found in: John Stevenson, "Notes from Doctor B. Rush's Lectures delivered [sic] in the University of Pennsylvania commenced 27 Nov: 1797," CPP, 10a374, Lecture 39. Rush also believed standard leprosy was a hereditary disease another perceived connection to blackness, George F. Lehman, "Student lecture notes," CPP, 10a 239, Vol I.

Blackness, however, was the exception to the rule with respect to Rush’s ideas about “race.” Most ethnic groups, in his view, developed their unique physical traits from a combination of climatic adaptation and cultural practice. In short, “race” was a socially constructed entity which usually developed on such long time-scales that people forgot or did not realize the role choice played in the evolution of culture. European and Native America practices, like those of Asian, North African, and Indian nations, developed in specific places and times.

During the American revolution, however, Anglo-Americans self-consciously tried to recreate the world. Knowledge gleaned from around the globe, from physiology, travel literature, and philosophy could explain physical human difference and provide the rules with which a new republican society could flourish. Choices helped construct the perceived differences between white and Indian bodies. Rush therefore attributed any “inferiority” on the part of indigenous people to their “savage” state rather than to heredity. To the eyes of an observer like himself, the two groups, the British and the Native American, possessed obvious physical differences. The most striking seemed to be the diseases the groups were susceptible to and the best means of cure. Those physical differences, however, were not as “natural” as they first appeared.

In his lecture to the American Philosophical Society Rush took an ethnographic approach and used both his own observations and those of others to make generalizations.

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396 Rush was never quite clear about why free Africans in Africa remained black other than some vague allusions to a possible tropical disease and “savage” state of living.
about the lifestyle of his two study groups. In both cases, he followed the same mode of inquiry:

First, Mention a few facts which relate to the birth and treatment of their children.
Secondly, I shall speak of their diet.
Thirdly, Of the customs which are peculiar to the sexes, and,
Fourthly, Of those customs which are common to them both.397

The first step stands out as quintessentially Rush. In his general physiology lectures, he presumed an infant’s early care substantially affected its future health and well-being. In medical lectures the treatment of newborns and mistakes of midwives are found early on and in multiple student notebooks. Early shocks to the system could turn into permanent alterations to the constitution and leave a child susceptible to disease throughout his or her whole life. In the case of midwives, Rush blamed tight swaddling in infancy for later pulmonary problems.398 British émigré and physician, Benjamin Vaughan, lamented in an 1807 letter to Rush that poor infant care in Maine led to disease. He encouraged Rush to address the subject:

Permit me to suggest that the subject in this country [Maine] solicits your best attention, because the sickness & the mortality of children is beyond its proportion, compared with that of adults; notwithstanding a mother’s milk & a country air are so generally their lot here. - I cannot but observe in these parts a want of cleanliness, & thin clothing, and coarse addition to their diet, as among the probable causes of a part of their misfortunes; & that multitudes of children pine till they come to the ages when these are circumstances do them less mischief.399

397 Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 6.


399 Benjamin Vaughan (1807), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XVIII.
Like Rousseau, Rush believed the influence of culture at this stage was at its strongest. All bodies were fundamentally shaped by their environment, but in infants the clay was at its softest, easily molded by the hands of nature and of parents. In infant care, Rush agreed with Vaughan’s concerns and suggested that in many ways American Indian parent served their children better than their white counterparts.

In the case of Native Americans, Rush argued that the actions of parents on their children consistently reinforced a “hereditary firmness of constitution.” The theme of Indian “firmness” appears frequently in this essay and fits general stereotypes about Indians perpetuated by European settlers. The concept of a strong “noble savage” living close to nature permeates the essay. As such Rush claimed that all Indian babies were purposefully “hardened” in cold water, shaped on cradleboards, and given strong nourishment as a result of prolonged breastfeeding. The low temperature of the water caused the body to tense and, over time, hold that shape. Similarly, the cradleboard, he claimed, encouraged the growth of straight and strong limbs; accounting for adult physical strength. Suitable nutrition, in turn, aided both of the previous practices. Rush wrote that babies only needed the simple nourishment from milk and encouraged Anglo-American mothers to breast-feed for a minimum of twelve months. He claimed that in “civilized”


401 Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 7.

402 Rush noted that Indian children nursed for at least two years. At this time, white American women typically nursed their children for one year while in Britain wet-nurses still retained some popularity among the upper classes. Ibid.; Mary Beth Norton, Liberty’s Daughters: The Revolutionary Experience of American Women, 1750-1800 (Ithaca and London: Cornell University Press, 1980).
societies parents gave children, solid food, especially meat, before their bodies could properly digest flesh. As a result, Rush argued, Indian children grew up to be vigorous and develop societies which lacked debility or “deformity.”

From the diets of children Rush moved to the diets of adults and again found much to praise in the Indian way of life (or, at least, his abstracted view of it). As noted above, Rush considered vegetables generally healthful and wild game easier on the digestive system than the meat of domesticated animals. Elsewhere in Rush’s writings, he complained about the diet of his fellow English-speaking North Americans, especially in cases of illness, and frequently extorted the healthiness of a vegetable over an animal-based diet. He followed standard neo-Hippocratic medical advice which required the sick to survive on a low diet lacking stimulating or filling food. In this instance both the Indians and Pennsylvania Germans mentioned earlier showed healthier habits in which vegetables were incorporated into their meals.

Despite the general health of the food itself, Rush fell back on stereotypes of laziness with respect to Indian reliance on hunting and fishing. He also expressed surprise at the absence of salt in Indian diets or as a means of preserving meat despite the

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403 Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 14.

404 Ibid., 8.


406 Because of time spend hunting and fishing (leisure activates for aristocratic European men) colonists typically considered Indian men lazy and women overworked. Examples of this mindset in the sixteenth, seventeenth, and early eighteenth centuries can be found in, Demos, The Unredeemed Captive: A Family Story from Early America; Joyce E. Chaplin, Subject Matter: Technology, the Body, and Science on the Anglo-American Frontier, 1500-1676 (Cambridge and London: Harvard University Press, 2009). In this Rush was no exception.
fact that “the interior parts of our continent abound with salt springs.” Rush generally presumed a certain “naturalness” to the Indian lifestyle. Their use of meat’s own juices to cook it in to aid digestion and lack of a fixed meal schedule were examples. Given his negative views of nature in medicine, however, the discussions of Indian “naturalness” should not be taken as unequivocally positive. Rush certainly stressed the danger of living “naturally.” He noted how Indians fell ill through exposure to the variable elements, limited physical barriers between humans and the environment, and settlement too close to streams and rivers. Stanhope Smith wrote with a similar eye to the danger of dampness near Indian dwellings and associated it with difference in skin color; stating that,

The American Indian inhabits an uncultivated forest, abounding with stagnant waters, and covered with a luxuriant growth of vegetables which fall down and corrupt on the spot where they have grown. He generally pitches his wigwam on the side of a river that he may enjoy the convenience of fishing as well as of hunting. The vapor of rivers, therefore, which are often greatly obstructed in their course by the trees fallen, and the leaves collected in their channels, the exhalations of marshes, and the noxious gases evolved from decaying vegetables, impregnate the whole atmosphere, and give a deep bilious tinge to the complexion of the savage.

Smith essentially argued that the whole of the American atmosphere produced bilious diseases. The bilious climate led to liver secretions which altered skin-tone, not unlike jaundice. Anglo-Americans only escaped the change (and only in part) from mediating

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407 Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 8. Tribes in what is now the Northeastern part of the United States frequently smoked food to preserve it, Meyer, “Why Did Syracuse Manufacture Solar Salt?”

408 Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 9.

409 Ibid., 16.

410 Emphasis added, Smith, An Essay on the Causes of the Variety of Complexion and Figure in the Human Species, 151.
cultural practices. Rush appealed to out-door living, sun tanning, and skin-painting to explain the difference. He argued that the skin of American Indians was not originally darker than the skin of Europeans, but rather had tanned from habit and custom just as European laborers tanned in the sun.\footnote{Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations.”} Both men, however, attributed physical difference in skin color to the Indian’s lack of separation from the humid and varied geography.\footnote{Ibid., 13; Smith, An Essay on the Causes of the Variety of Complexion and Figure in the Human Species, 7, 49–51.}

In the case of medicine, the art of healing often worked against nature. Rush argued that the Indian lifestyle also predisposed those communities to specific diseases, most notably from irregular and variable environmental circumstances. Rush wrote:

> We need only recollect the custom among the Indians, of sleeping in the open air in a variable climate; the alternate action of heat and cold upon their bodies, to which the warmth of their cabins exposes them; their long marches; their excessive exercise; their intemperance in eating, to which their long fasting and their public feasts naturally prompt them; and, lastly, the vicinity of their habitations to the banks of rivers, in order to discover the empire of diseases among them in every stage of their lives. They have in vain attempted to elide the general laws of mortality, while their mode of life subjects them to these remote, but certain causes of diseases.\footnote{Emphasis added, Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 16.}

Unlike White Americans, Rush thought Native people did less to mitigate the impact of climate on their bodies. They were people without “improvement.” Living in lands considered by Euro-Americans as “wild,” Rush perceived Native people as debilitated, too subject to highly variable stimuli in the atmosphere. As such, he argued that Indian customs tried to mitigate the effects of heat and cold upon the body by hardening and strengthening.
In a somewhat confusing use of the term "natural" he claimed that death and disease appeared in their natural state among native populations. Rush wrote, concluding the section on Indian diseases that, “[h]aving thus pointed out the natural diseases of the Indians…we may venture to conclude that FEVERS, OLD AGE, CASUALTIES, and WAR are the only natural outlets of human life.”

Not too far removed from this state, the poor laborers and rural White farmers exhibited some of the same traits that Rush and others associated with Indians. They developed darker skin and appeared immune to gout and nervous diseases, diseases of “civilization”.

Rush’s discussion of the British is much shorter than that of Native Americans, however it follows the same general pattern discussed above. In both cultures unnatural practices had the greatest effect on the health, appearance, and diseases of individuals. For children, tight clothing, improper education, and damaging food predisposed to disease both in infancy and later in life. Rush similarly complained about the effects of fashion (again clothing that was too tight) and idleness on elite women, discussed below.

Meanwhile, civilization and what sounds like class inequality brought new diseases to working men from “idleness and intemperance among the rich, and of hard labour and penury among the poor!”

Above all, Rush argued that “civilization” produced artificial and complicated diseases among the British. In his description of the United States, Rush’s colleague and

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414 Ibid., 20.

415 Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations.”

416 Ibid., 31.

417 Ibid., 32.
sometimes rival, William Currie made a similar comment with respect to cities. He believed the close proximity between people and buildings made spaces more complex and diseases more dangerous. In response to the claim from a correspondent that Boston’s diseases were different from those of the surrounding countryside. Following standard Hippocratic reasoning Currie wrote that disease existed "in all large cities where the houses are built close together, and the occupations of the inhabitants are unfavorable to exercise; and the more so, as they recede from habits of temperance; especially where luxury and fashion take the lead of reason and common sense. This lifestyle he contrasted with that of the farmer who through labor "acquires vigour of body and resolution of mind...[and who] respires a salubrious air."

Currie did not exaggerate the when he described the close quarters of working-class city-dwellers. In his description of early-nineteenth-century Philadelphia, Sam Bass Warner notes that most families lived in small row-houses of three rooms: a front work room, a back room, and an upstairs room. At the same time, many Philadelphians lived in alleys constructed within the original grid pattern creating a much denser city center than the one William Penn envisioned. Very few people owned their homes. In Rush’s description he claimed that the city extended three miles up and down the riverfront, but only penetrated a half-mile westward toward the Schuylkill at its widest. Meanwhile the

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418 Currie, *An Historical Account of the Climates and Diseases of the United States of America and of the Remedies and Methods of Treatment...*, 5.

419 Ibid.

most populous street, by Rush’s reckoning, only sat a few feet above the waterline. These parameters made for a very high population density. The crowded nature of the city certainly did not aid in its health.

Meanwhile, as described in the first passage, citizens who had the leisure to care for their health often did not and fell into indolent and fashionable behavior. These complaints are similar to those in Britain at the time. For different reasons, both the rich and the poor lived sedentary lives damaging to their future health. In the United States the diseases were largely inflammatory whereas in Britain they continued to plague the nervous system. British physician William Cadogan (1711-1797) similarly called out his countrymen for cultivating disease with their lifestyle. He wrote that most physical and moral evils “we most undoubtedly bring upon ourselves by our own indulgencies, excesses or mistake habits of life.” Rush dedicated some of his own early work to Cadogan and he continued to share the English doctor's conviction regarding disease and indulgence.

If neither civilization nor savagery led to heath then what was the purpose of Rush’s comparative ethnography? On page 63 of the essay he gets to the heart of the matter: how would Americans of European descent preserve their own health? From lessons learned from both the “savage” and “civilized,” inhabitants of the North American colonies could shape their culture in such a way as to promote health. His prescription was generally-

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422 Beatty, Nervous Disease in Late Eighteenth-Century Britain: The Reality of a Fashionable Disorder, 169.

423 William Cadogan, Dissertation on The Gout, and All Chronic Diseases, Jointly Considered, As Proceeding from the Same Causes; What Those Causes Are; and A Rational and Natural Method of Cure Proposed (London and Philadelphia: Re-printed and Sold by William and Thomas Bradford, 1772), 1.
speaking Jeffersonian. Rush recommended a natural approach to education (discussed in chapter six), reduction of the availability of “spirituous” liquors, prevention of manufacturing which kept men sedentary and indoors, and the encouragement of agriculture.\textsuperscript{424} Indians may have been subject to countless fevers and “natural” diseases, but diseases of “civilization” among Britons proved more difficult to cure and, likely, more dangerous.\textsuperscript{425} In a more creative, and likely less serious suggestion, Rush considered a change of clothing to mimic that worn in China because:

The climate of China appears, in many particulars, to resemble that of Pennsylvania. The Chinese wear loose garments of different lengths, and increase or diminish the number of them, according to the frequent and sudden changes of their weather; hence they have very few acute diseases among them. Those inhabitants of Pennsylvania who have acquired the arts of conforming to the changes and extremes of our weather in dress, diet, and manners, escape most of those acute diseases which are occasioned by the sensible qualities of the air.\textsuperscript{426}

At one point, he argued that in a state of nature bodies could cure themselves, but civilization tricked the body and caused it to try to cure itself incorrectly. The high level of sympathy associated with civilization meant that organs could malfunction not because they were diseased but because they responded sympathetically to disease elsewhere in the body. Such a difference explained the perceived incompatibility of Indian and Euro-American diseases and medical treatments. Indians, Rush argued, suffered from simple fevers cured by medicinal specifics, sweating, and cold bathing, which could abstract morbid excitement. The upper-classes in Britain, however, lived artificial lives, lacking in

\textsuperscript{424} Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 63–66.

\textsuperscript{425} Ibid., 20–21.

stimulation for men and predisposing both sexes to the fashionable “nervous” disorders. Unlike the so-called simple fevers of “savage” cultures, the artificial nervous fevers were less straight-forward. Symptoms might occur far from the site of obstruction and thus required a skilled physician’s care.\footnote{Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations.”}

In following years and editions, the oration’s most powerful points came in the form of instructions for managing a temperate republic which required thoughtful and delicate balance. Two contrasting paragraphs highlight the distinctions.

In the first instance:

The diseases introduced by civilization extend themselves through every class and profession among men. How fatal are the effects of idleness and intemperance among the rich, and of hard labour and penury among the poor! What pallid looks are contracted by the votaries of science from hanging over the “sickly taper!” How many diseases are entailed upon manufactures, by the materials in which they work, and the posture of their bodies! What monkish diseases do we observe from monkish continence and monkish vices! We pass over the increase of accidents from building, sailing, riding, and the like. War, as if too slow in destroying the human species, calls in a train of diseases peculiar to civilized nations.\footnote{Ibid., 32–33.}

The second, in contrast, stated:

The blessings of literature, commerce, and religion were not \textit{originally} purchased at the expense of health. The complete enjoyment of health is as compatible with civilization, as the enjoyment of civil liberty. We read of countries, rich in every thing that can form national happiness and national grandeur, the diseases of which are nearly as few and simple as those of the Indians. We hear of no diseases among the Jews, while they were under their democratical form of government, except such as were inflected by a supernatural power.\footnote{Ibid., 58.}
This point was vital to Rush’s larger project which argued that republican governments were naturally and even divinely ordained for health and productivity. He went on to list modern countries which managed to balance health and civilization including China, Scandinavia, and New England (especially Connecticut). Yet danger lurked and colonists could suffer the same fate as Britons back home. Diseases of civilization started to bear down on the Americans. Rush lamented that “[o]ur bills of morality…show the encroachments of British disease upon us. The NERVOUS FEVER has become so familiar to us, that we look upon it as a natural disease,” consumption spread rapidly, and “[t]he HYSTERIC and HYPOCHONDRIAC DISEASES, once peculiar to the chambers of the great, are now to be found in our kitchens and workshops. All these diseases have been produced by our having deserted the simple diet and manners of our ancestors.” Not only did it require a revolution, the country required reformation.

Essentially, America in Rush’s view still had a chance to become a country both healthy and “civilized,” the literal best of both worlds. To maintain a healthy future, neither British nor Indian, white Americans needed to: educate children according to nature (which he does not elaborate on); reject the use of “ardent spirits”; and be cautious with the development of industry to prevent rickets. Disease prevention came down to balance and the appropriate use of art. The variable climate of North America physically stressed bodies. Changing temperatures and high humidity predisposed bodies to fever, as evidenced by the experience of Indian bodies and diseases. Rush proposed a fundamentally

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430 Ibid., 59.
431 Ibid., 57.
432 Ibid., 63–65.
different form of adaptation to the environment, one which separated bodies from their surroundings and altered the landscape through drainage, city planning, and agriculture. At the same time, he cautioned against pathological luxury, indolence, and enervating practices and industries which caused diseases of civilization. By avoiding disease and shaping their surroundings Anglo-Americans could create a rationally-designed healthy nation.

5.2 The Republican Woman

For the most part, all bodies were created equal in Rush’s medicine. Only time, place, age, inherited peculiarities, and climate physically altered them. As demonstrated above, he thought that the combination of these circumstances resulted in the differential health between individuals as well as the shared general health, characteristics, or illness of groups. This explained the differences between cultures and accounted for both individual and epidemic diseases. The one categorical difference that Rush discussed in depth among healthy bodies was sex. Rush not only argued that women were physically distinct from men, but that their physiology determined their appropriate role in society. This anticipated a view of women's bodies common in the nineteenth century as described by Carroll Smith-Rosenberg and Charles Rosenberg who argued that medicine reinforced concepts of female weakness and domesticity.433

For Rush, his fluid divisions of race and ethnicity did not translate to a similarly fluid notion of sex. As he put it, gender came from “an original difference in the bodies & minds of men & women, stamped upon both in the womb, by the hand of nature.” Women in different societies suffered from and had to compensate for their “unhealthy” lifestyles, as shown below, because they naturally required a sedentary and domestic life. Racially and ethnically circumscribed behaviors might change over time making a stadial shift in a population via environmental change or political revolution. Gendered division of labor might change with different levels of civilization, as predicted by the Scottish philosophers, however, the fundamental physical and mental differences between men and women remained static. As demonstrated below, Rush found markers of sex throughout human bodies. This categorical physical difference made sex a fixed category tied to strict gender roles.

Rush believed the vast majority of people fit clearly into one of two sex/gender boxes determined by their physical differences and demonstrated by their behavior and roles in society. Londa Schiebinger argues that during the eighteenth-century physicians looked for signs of sex throughout human bodies in search for material evidence of two distinct genders rather than looking for homologies.

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434 Rush, Lecture Notes, LCP, Vol 166.


claims that physicians were beginning to think of humans in terms of two separate sexes rather than view women as lesser versions of men. Rush and his contemporaries looked at women less and less as imperfect or alternative versions of men and more as distinctly different physiological machines.437 Men and Women formed two distinct sexes with physiologies that required special consideration. In his medical courses between 1789 and 1813, gender difference comprised a substantial portion of his physiology lectures.

Using Rush's physiological terms, men absorbed and women abstracted stimulus or "excitement". Gender acted as a category which dictated all parts of a person’s life. Recall that in Rush's physiology all human actions contributed to the careful balance of excitement required for healthy function. If men and women needed and reacted to excitement in fundamentally different ways then they needed to live fundamentally different lives. Each year in his medical lectures Rush discussed the physiological differences between male and female bodies. Beginning with women he discussed the general differences between the sexes, differences deemed obvious to the casual observer. Anyone could point to a woman’s stature or lack of beard to identify her as female as easily as clothing. Beyond obvious structural differences, however, lymph, glands, and the system of abstraction they belonged to, helped create that distinction.

Rush began his instruction by comparing women’s bodies comparing to those of men and contextualizing their physiological function with their roles in society. Women, in this framework, appear as men’s opposites, designed to fill roles and perform tasks men were physically unsuited to and vice versa. With respect to the general female constitution

he argued that women were shorter than men and grew to their full height sooner, had softer bones, softer and hairless skin “ascribed to the greater activity of the Lymphatics which terminate under them absorbing & carrying away all the redundant [stimuli]…which are thrown upon it. This greater activity of the Lymphatics is happily calculated to defend them from the inconvennices [sic] of their sedentary lives which favor abstraction everywhere.”

Using similar logic in his 1807 essay "An Inquiry into the Functions of the Spleen, Liver, Pancreas, and Thyroid Gland," he argued that the last of these acted to block excitement from surging into the brain and causing inflammation. Part of his conviction came from the fact that women had larger thyroids than men and suffered from bronchoceles or goiters at a higher rate than men.

Together glands like the thyroid -- which absorbed excitement by redirecting blood away from the brain -- and the lymphatic vessels – which directed excitement away from irritable female organs – protected women's bodies from a world full of excessive excitement. It is not completely clear what Rush was referring to when he wrote about the lymphatic vessels. They clearly included vascular structures found throughout the body which did not carry blood. Occasionally he lumped lymphatics together with the lacteals (vessels found in the abdominal cavity) or assigned similar functions to the two sets of vessels: the movement of excitement from inside the body to the skin's surface. His first exposure to the lymphatics as important structures probably came from Boerhaave. In a

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440 Ibid., 27–29.
volume of Boerhaave's lectures owned by Rush the Dutch physician described the lymph fluid as a rarefied form of blood (lacking red globules or red blood cells) and the lymphatic vessels as a small continuation of the circulatory system.\textsuperscript{441} Rush did not follow Boerhaave's anatomical assertion, however, his association of lymphatic vessels with the larger circulation of excitement resembles Boerhaave more than it does later physicians like William Hunter and Alexander Monro secundus who argued that the lymph vessels absorbed substances from the skin.\textsuperscript{442} Rush knew about the more contemporary description of the vessels and did not deny that they might have an absorptive function but couched it as firmly secondary to their role (especially in women) of abstracting excitement.

Much of what Rush said about the lymphatic system appears in student lecture notes, Rush’s manuscript notes, and vague references in published material. This lack of a systematic, published treatise means that the lymph, like the glands, slips out of the usual Rush narrative. An examination of the manuscript materials, however, tells a very different story, one in which the lymphatics do act as a key system for understanding health and disease. As with the thyroid, Rush viewed the lymphatic system somewhat idiosyncratically for the period. It occurred alongside a broader interest in the anatomy and physiology of the glands, vessels, and substance of lymph. Much of the work built on ideas

\textsuperscript{441} Herman Boerhaave, \textit{Dr. Boerhaave’s Academical Lectures on the Theory of Physic Being A Genuine Translation of His Institutes and Explanatory Comments, Collated and Adjusted to Each Other, as They Were Dictated to His STUDENTS at the University of Leyden, Vol II.} (London: printed for W. Innys, at the West End of St. Paul’s, 1749), 227.

of absorption, on anatomical work of the seventeenth century, and interest in lymph-related
diseases like dropsy and cancers.

As discussed in chapter four, by the early nineteenth century, it was common
knowledge in medical circles that women had proportionally larger thyroids than their male
counterparts. From Rush’s perspective, this difference made perfect sense and reinforced
his ideas regarding thyroid function. In his 1801 lecture notes, Rush student Russel Clark
noted that the larger thyroid of women led Rush to believe that the organ was associated
with the protection of the sensitive female brain.\textsuperscript{443} Going the other direction, during a
paroxysm of mania or hysteria the thyroid could swell and take in blood from the head in
a condition called \textit{globus hystericus}. Later, in \textit{Diseases of the Mind}, he listed \textit{globus hystericus}
as one effect of fear. The strong passion, he argued could trigger many
physiological effects, including the rush of blood and subsequent swelling of the thyroid.\textsuperscript{444}

Women, according to Rush, possessed a higher sensitivity to environmental
stimulus. This ability allowed them to live the sedentary domestic lives he believed they
were designed for, however it also left them in greater danger of disease. The larger thyroid
enabled women to abstract excess excitement which might take their systems by surprise.
Rush explained that the larger thyroids were “necessary to guard the female system from
the influence of the more numerous causes of irritation and vexation of mind, and the more
acute bodily disease, to which they are exposed than the male sex.”\textsuperscript{445}

\textsuperscript{443} Russel Clark, Lecture Notes (1801), KCRBM, ms. Coll 225, Item 11, Vol I.

\textsuperscript{444} Rush, \textit{Medical Inquiries and Observations Upon the Diseases of the Mind}, 323.

Rush’s psychiatry presents an important window into the way in which glands, the lymphatic system, and gender worked together to inform the way he viewed the bodies and minds of the American republic. In a round-about way the prevalence of systems of abstraction, the glands and lymphatics, in women indicated their role in maintaining mental as well as physical health. Extensive systems of abstraction in female bodies protected them, thus indicating their proper social and familial role. This intersection reinforced the growing but not yet standard association between femininity and mental illness. Over-stimulated or over-indulged women fell prey to mania and hysteria when not living the republican domestic lifestyle their bodies demanded.

The sedentary and soft women of Rush’s ideal took in more excitement than then required. Their ever-outward-flowing lymph vessels moved it away from delicate organs. Glands (including the thyroid) protected those same sites from a sudden influx of dangerous motions. The lymphatics even managed to take on an additional subsidiary role in women with respect to reproduction. In lectures and his own notes, he suggested that semen entered the lymphatic vessels after being absorbed by the walls of the vagina.446 Rush rejected the notion that sperm and egg met in either the fallopian tubes or uterus. His reasons were mechanical. Firstly, penis size or location of ejaculation in the vagina did not appear to alter a person’s chance of becoming pregnant. Rush’s version of his lectures included a foot note stating, “I knew a student of Physic in Edinburgh who was called upon to marry a girl to whom he was engaged, in consequence of her having become suddenly pregnant, who assured me that he had never had such a connection with her as had injured

her badge of virginity [hymen].” In addition to several cases of pregnancy in young women who appeared “intact,” related by man-midwives, Rush concluded that semen did not need a deep entry into the female system to fertilize the ovum.447

Once inside the body the semen needed to travel at least as far as the ovaries outside the reproductive structures. Two candidates present themselves and appear in different versions of Rush’s medical lectures. First, through the arterial, or circulatory system: semen could travel throughout the body and find the ovum no matter where in the vagina or uterus absorption occurred. In 1797 John Stevenson reported that “[g]eneration is effected by Absorption of the Sem: masculinum in from Uterus or Vagina and entering the Circulation is brought in contact with the Ovaria and exerts its specific Stimulus & produces Conception.”448 Stevenson’s discussion is limited and does not clearly specify which vessels the semen traveled through. As shown above, prevailing eighteenth-century thought gave the lymphatic system a role in absorption. English physician and anatomist William Cruikshank (1745-1800), connected this absorbing tendency to reproduction when he stated that some of the vessels terminated in the glans penis in men and clitoris and vagina in women.449 By 1809 student Henry Powell specified the role of the lymphatic vessels in transporting semen and notes that Rush credited David Hartley with the idea rather than attempting to claim originality.450 Rush’s own notes most closely resemble

447 Ibid.

448 John Stevenson, Lecture Notes 1797, College of Physicians of Philadelphia, 10a 374.


450 Henry Powell, Lecture Notes 1809, UPenn Kislak, Ms. Coll. 225, Item 7.
Powell’s which might suggest that the lymphatic version was his final word on the matter.\footnote{451}{Rush, Lectures on Physiology, Library Company of Philadelphia, Vol. 181.}

The second reason Rush rejected the concept of fertilization within the uterus had to do with ectopic pregnancy. If sperm travelled through the vagina and uterus, then how did it then manage to exit the female reproductive tract altogether and help create an embryo in the abdominal cavity? Several cases of ectopic pregnancies show up in the medical literature of the period.\footnote{452}{J. Augustine Smith, “A Case of Extra-Uterine Conception, in which an Operation was performed,” \textit{The New-York Medical and Philosophical Journal}, 1.1 (1809); William Baynham, “An Account of two Causes of Extra-Uterine Conception; in each of which the Foetus was extracted by an Operation with success,” \textit{The New-York Medical and Philosophical Journal}, 1.1 (1809); George Clark, “A Case of Extra-Uterine Gestation,” \textit{Philadelphia Medical Museum}, 2 (1806); David Ramsay, “A Case of Extra-Uterine Foetus, with some Abstractions on the Subject generally,” \textit{Medical Repository and Review of American Publications}, 1.3 (1804)} An early example of this kind can be found in Boerhaave's lectures. Rush marked descriptions of the phenomenon in his copy of the printed lectures, likely to use in his own at the University of Pennsylvania.\footnote{453}{Herman Boerhaave, \textit{Dr. Boerhaave's Academical Lectures on the Theory of Physic Being A Genuine Translation of His Institutes and Explanatory Comments, Collated and Adjusted to Each Other, as They Were Dictated to His STUDENTS at the University of Leyden, Vol V.} (London: printed for W. Innys, at the West End of St. Paul’s, 1749), 120, 131.} At the end of the eighteenth century the first American medical journals published several cases of the disorder. In 1796 the College of Physicians of Philadelphia received a letter from physician William Bayham of Caroline County, Virginia detailing the existence and eventual surgical removal of a fetus from a woman’s abdominal cavity. The College approved the case study for publication.\footnote{454}{William Bayham to College of Physicians of Philadelphia, “Case of an extra-uterine Conception” May 12, 1796, College of Physicians of Philadelphia Manuscript Archives.} Bayham’s work also appeared in the \textit{New-York Medical and Philosophical Journal} in 1809, in which he detailed and additional case of what he called
"extra-uterine pregnancy." J. Augustus Smith of New York City included a ectopic case study in the same volume. In 1804 Rush’s South Carolina colleague David Ramsay published an article in the Medical Repository & Review of American Publications outlining yet another case study and general observations on the condition. Lastly, The Philadelphia Medical Museum carried a similar story the same year on a case of “extra-uterine gestation” in the West Indies authored by George Clark. Each of these accounts show an interest in the immediate cure of an extra-uterine event, essentially they are surgical studies. Although typically considered a death sentence Bayham claimed success: in both cases in which he removed fetuses surgically from the abdominal cavity, the mothers recovered their health. Rush’s interest brings the narrative back to the lymphatics and the female body as a whole. If extra-uterine events occurred, which based on the articles might have seemed surprisingly frequent in the early nineteenth century, then semen needed a way out of the female reproductive structures which still brought it into contact with the ovum.

In addition to accounting for pathological births, Rush also suggested that peak health of the lymphatics could improve fertility. Following his arguments on unwanted


458 Baynham, “An Account of Two Cases of Extra-Uterine Conception; in Each of Which the Foetus Was Extracted by an Operation with Success.”
conceptions Rush wrote of the importance of strong lymphatic movement to absorb the semen as a matter of the system as a whole. To encourage pregnancy, he had the following advice:

The two last [power of lymphatic vessels and state of ovaria] are greatly influenced by a peculiar state of excitability in the female system- hence we find conception to be most certain, immediately before or after menstruation- after a fit of sickness particularly a malignant fever, after a long absence [sic]- After the action of fresh steam upon the system by a woman’s visiting a foreign country and after using the warm Bath.459

Each of the above-mentioned instances would have increased the general excitement of the female body in a healthy manner. Following the logic of Rush’s system this increased excitement would have stimulated the lymphatics into action, circulating and disposing of excitement, but also of sperm, as needed. These pre-activated lymphatics (and in this particular case ovaries as well) were in an ideal position to efficiently circulate semen and deposit it in the correct location.

The idea that they lymphatics played a role in reproduction is an example, but not a lone example, of Rush’s firm belief that men and women possessed different physiologies suited to different social and biological tasks. Even in children, sex made its mark. In 1796 one student, surname Hare, noted that even in very small children who still dressed alike respiration could give away their sex to the careful on-looker. He wrote, “[r]espiration is performed differently in the male and female. A Girl moves her breast more and her abdomin [sic] less than a boy. This is wisely intended to favor gestation.”460 Based on this

459 Emphasis added, Ibid.

assumption, Rush claimed he could determine gender even in infants. The exact manner in which breathing favored gestation is not discussed, but likely this hints at a mechanical explanation. If women moved their abdomens while breathing it would either disturb a fetus or inhibit the breathing of a pregnant woman. By taking shallower breaths from the chest, Rush's reasoning went, the growth of a fetus would not take up space usually used by the lungs for respiration. Either way, this example, like that of the lymphatics or thyroid shows how healthy male and healthy female bodies possessed fundamentally different forms which hinted at their pre-ordained social and biological functions.

Appealing to health, Rush argued for the maintenance of a healthy level of sexual activity and for the biological correctness of traditional western marriage and sexual practices. Nature determined the correctness of marriage, not man. Of course, he very conveniently saw natural argument for the socially and culturally acceptable views of sex and marriage practiced by Protestant Anglo-American families. Following from the general idea that marriage was a physical as well as a social good he also prescribed ages ranges within which men and women should marry, suggesting that women marry between the ages of sixteen and twenty-four and men between twenty-one and thirty. Rush's own behavior only just met these parameters. He was thirty and his wife Julia Stockton sixteen-years-old when the couple married in 1776. Neither polyamory nor celibacy, much less any same-sex relationships, had a place in Rush’s worldview.

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That Rush gave special attention to specifically female conditions may not appear particularly unusual or surprising. His differential use of the female body, however, extended beyond the specific discussion of female physiology and fertility and contributed to the adoption of a two-sex model of human difference in the early United States. Rush’s ideas regarding the physical natures of women are found peppered throughout his discussion of pathology and therapeutics. In his 1805 edition of his Medical Inquiries and Observations, for example, he describes women as having different experiences with certain diseases. He believed their sedentary lifestyle rendered them more susceptible to consumption and their innate attachment to their families made them less likely to travel alone for a cure. Women’s dress and behavior limited the prevalence of gout but put them in more danger of thyroid conditions. Even epidemic diseases differed in their expression between men and women based on their physicality. In at least one occasion Rush uses his views on bodily difference to support his controversial stance on depleting remedies in malignant fevers, claiming:

All these depleting remedies, whether used separately or together, induce such an *artificial debility in the system*, as disposes it to *vibrate more readily under the impression of the miasma*. Thus the willow rises, after bowing before a blast of wind, while the unyielding oak falls to the ground by its side. It is from the similarity of the natural weakness in the systems of women, *in the West-Indies*, with that which has been induced by the *artificial means that have been mentioned*, that they *so generally escape the malignant endemic of the islands*.464


Rush followed the lead of colleagues in the Caribbean and East Indies who argued that the lax fibers of women allowed them to survive the dangerous seasoning process.\footnote{Harrison, “‘The Tender Frame of Man’: Disease, Climate, and Racial Difference in India and the West Indies, 1760-1860,.” 73; Schiebinger, “Medical Experimentation and Race in the Eighteenth-Century Atlantic World,” 380; Suman Seth, “Materialism, Slavery, and The History of Jamaica,” Isis 105 (2014): 767; Kupperman, “Fear of Hot Climates in the Anglo-American Colonial Experience.” 222.} By bleeding patients, especially male patients, Rush could loosen bodies and make them more feminine.

The same logic applied to an exclusively female "disease" pregnancy. Rush attributed illness during pregnancy and pain in childbirth to a build-up of tension in the body. Essentially the fetus acted as an extra source of excitement located in one part of the body and altering the function of the remainder. This fits Rush's definition of fever almost perfectly. Citing the use of purges in Turkey during pregnancy, which supposedly led to less pain, Rush made the case for blood-letting as a means of pain-relief and easier childbirth. Venesection could occur both prophylactically and during birthing process. The practice, he further argued, had been tried by several other doctors of his acquaintance to good effect.\footnote{Benjamin Rush, “Defence of blood-letting, as a remedy in certain diseases,” Medical Inquiries and Observations, vol. 4, 2\textsuperscript{nd} edition (Philadelphia: J. Conrad, 1805): 263-64} By making the event and space medical it simultaneously became an appropriate location for a doctor and an inappropriate location for lay (as many physicians would have thought of midwives) intervention.

The place of women in society was being questioned while at the same time an environmentalist view of health shaped physician understanding of illness. Women, as much as men, were making and remaking the world in an age of medical and political
revolution. Rush’s saw in women’s bodies evidence to suggest that women possessed minds fundamentally different from men. This conviction that female bodies and minds were different from their male counterparts allowed Rush to conclude that there was a biological foundation for a society in which different genders performed distinct roles. Rush’s use of women’s bodies to discuss the environment is discussed in more detail below, but here we see the rationale behind it: women’s bodies were constructed differently from those of men, experienced different physiological processes, possessed different minds, and therefore expressed illness differently.

5.3 Barometers of Civilization

Despite its obscurity, Rush’s essay on the liver, spleen, pancreas, and thyroid gland garnered a considerable amount of fan mail and professional praise and represented an aspect of femininity which crossed cultural and racial boundaries. This, along with his widely-known interest in mental disorders, led physicians from around the country to send examples of cases which supported Rush's theories. One account from South Carolina in 1811 is particularly noteworthy. Dr. J. Mactide recorded three cases in which the thyroids of psychologically distressed women suddenly swelled, i.e. *globus hystericus*. Each of Mactide’s cases represented a woman of a distinctively different social class and race than the others. Sex was the only thing that united them.

\[467\] In part, this may have been due to its late publication date, 1807, two years after Rush’s last revision of his anthologized *Inquiries and Observations*. 

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The first and most detailed case Mactide recorded was that of Elizabeth Hardcastle, “a mulatto woman” who “received a refined education in England & lived in affluent circumstances for many years in St Stephen’s parish So. Carolina.” Privilege aside, Hardcastle remained a woman of color in a world with strict racial hierarchy. Her education, wealth, and sensibility could not guarantee stability, as evidenced by the physician’s account of her illness:

About the 45th year of her age an event occurred which was calculated to rouse her feelings in an extraordinary degree. A man who had lived with her for several years as a husband, determined much against her will to separate from her, & for this purpose had packed up his effects in a chest & placed it in an open carriage before her door. Experiencing the strongest mental agitation [sic] she fixed her eyes on the chest & to her imagination it represented the coffin of her friend. Under this impression she swooned away but was immediately roused by a sense of suffocation or rather of being choked. She felt her throat & found an unusual, large tumour... She was accidentally found in this state by a physician a few hours after the event, and through much at a loss he endeavoured to relieve her. The tumour gradually subsided to a certain degree but ever after exhibited, plainly circumscribed, the thyroid gland, enlarged, & retaining its characteristic shape. She lived about 10 years after this occurrence, & she always experienced the sudden enlargement of the tumour, & sensation of choking when invaded by mental depression.

The man Hardcastle lived with “as a husband” left her. Without legal recourse (either because a marriage would not or could not be performed), she watched more or less helpless as her life changed at middle age. It is impossible to know exactly what she felt in that moment or if she truly made herself see the chest as a coffin. The physician, however, was clear in his assessment. In the physiological terms of the day, the mental anguish altered the motions of her brain and sent her blood surging through her body as it literally

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468 J. Mactide (1811), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XI.

469 Emphasis added, Ibid.
tighten. The thyroid subsequently enlarged to prevent further damage to her system. Once aggravated, Hardcastle’s thyroid frequently adjusted to alterations in her mood akin to her sensibility.

After the case of Elizabeth Hardcastle, Mactide added two shorter accounts. The second case was of an unnamed (and still living) white woman of 55 to 60 years and “a respectable lady of great sensibility.” This lady, consulted her physician two years prior for a swelled throat liable to choke her. She noted that for three to four years she suffered from the sensation and “readily confessed that it gave her uneasy sensations only when the subject of gloomy reflections.” In other words, mental agitation from depression triggered a physical response in the woman’s thyroid gland. Mactide’s third thyroid patient is the one we know the least about, a “negro woman about 35 years of age belonging to John Palmer jur.” The unnamed woman did not come to Mactide of her own will, but rather was “sent to [Mactide] about a fortnight since for relief from the enlargement of the thyroid gland.” The third woman, enslaved, and not in control of her own medical treatment was in a fundamentally different position from either Elizabeth Hardcastle or the “lady of great sensibility.” Nevertheless, Mactide observed the same physiological action, the chronically swelled thyroid, which grew at times of mental anguish. However, this third patient frustrated the doctor by withholding information. He described his third patient saying, “[s]he had experienced similar attacks in the course of 4 years & said that after the first enlargement, altho’ the tumour subsided, it had near disappeared but could always be distinctly felt. What the cause of the sudden growth of the tumor in this case was I could

\(^{470}\) Ibid.
not learn, but understand she is extremely irasable.\footnote{471} Given her position one can only imagine what kind of event she concealed. She may also have been providing a realistic account which the doctor did not want to hear: that swelled thyroids are not connected to mental distress.

The story of these three women could go in many directions. For the purpose of this chapter, however, it draws attention to the overwhelming sameness between women’s bodies. Three women, of different economic, social, and racial backgrounds all responded (physiologically) the same way when put under stressors. Their thyroids grew with their emotional trauma. Women, regardless of station in life, were more sensitive to their environments than men, and therefore could provide more information about the relationship between bodies, society, and geography. Despite its perceived ubiquity among women, no accounts of \textit{globus hystericus} in men appear in any of Rush's papers. Not only did the disorder point to the distinctness of female anatomy it also demonstrated that women's bodies exhibited pronounced physiological behaviors in situations which would not alter the state or function of male bodies.

If women differed fundamentally from men could their bodies reveal different information based in new mental and physical environments? Rush’s answer was an unequivocal “yes.” His observations of women lent support to the idea that they were physically determined to live sedentary lives, raise children, and govern morality. Republican wives and mothers would raise children in a moral population prepared for democratic governance which in turn would literally produce a healthier country. In the west life looked less certain. Rush, like many supporters of environmental “improvement”

\footnote{471} Ibid.
of his day, looked forward to a time in which the settled and agrarian lifestyle idealized in American culture expanded seamlessly beyond the Appalachian Mountains. Cultivation and a wide-spread population would limit disease and encourage the democratic ideals which filled Thomas Jefferson’s dreams. Reaching this goal, however, proved less straightforward. The experiences of colonization, epidemic disease, and western revolts showed Americans that optimistic improvement schemes were not as simple as they appeared.472

The structures of women’s bodies did not alter in Rush’s scheme; however, room for variation existed with respect to behavior and the age at which girls reached sexual maturity. The process of maturation acted as a key point of inquiry regarding the specific influences of the environment of human bodies, cultures, and practices. Physicians at the time thought that age at first and last menstrual period was closely connected to environment and culture. Some physicians claimed that non-white women matured faster than their European counterparts. In Jamaica, British physician and future president of the Royal Society, Hans Sloane (1660-1753) argued that after moving to the island English and Scottish women experienced shorter cycles in the heat (a century later Rush believed the opposite).473 Menstrual blood, both released excess excitement, plethora, and signified a healthy female body possessed of requisite excitement for procreation. The reduction of excitement came from the loss of blood pressure during menstruation akin to bloodletting.

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The fact that there was sufficient excitement to lose blood, meanwhile, indicated that excitement was cycling and could both deliver sperm to egg and support the needs of a growing fetus. The former aspect was typical and a hold-over from the seventeenth century, the latter a new adaptation for Rush’s all important two-sex view.

Among (presumably white) girls in the United States Rush claimed first menses arrived earlier in the hotter (more excited) south and much later in New England. He also hypothesized that work and station in life affected its onset, stating “[i]n women in high life it occurs sooner than in women who labour- more especially- if this labor be performed in the open air.” This followed up on a physiological notion that menstruation was yet another tactic for women to throw off excess excitement, a problem faced more acutely by the sedentary lady of “high life” than the laboring woman. Importantly, Rush made an analogous claim with respect to mental disorders, arguing that people of the poorer classes and less “civilized” cultures do not experience insanity due to the effects of labor and exposure to the elements which take off the excitement which might otherwise ail the brain.

Rush's interest in culture, maturity, and climate is related to early work in anthropology conducted by Scottish intellectuals. Like his general interest in stadial

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475 Rush, Medical Inquiries and Observations Upon the Diseases of the Mind, 60.

theory discussed above Rush largely fell into line with his contemporaries while bringing their ideas into a distinctly American context. In non-white cultures menstruation acted as a data point for understanding a different society. Prior to their famous expedition across the North American continent, Benjamin Rush, like Thomas Jefferson, sent Merriweather Lewis and William Clark a list of ethnographic questions to “ask the Indians.” He included several specifically related to female bodies, for example, the ages at which women start and cease menstruation, typical age at marriage, and length of breast-feeding. Presumably by comparing this information with that of white Americans and better-known American Indian cultures, Rush believed himself capable of assessing the cultures and climates of the Northwest.

It is unclear if Rush received answers to his questions or ever took up the specific issue of the Louisiana Purchase again. Nevertheless, he did continue to discuss the general effects of "civilization" on women's bodies in lectures and personal notes. In the case of labor and gender Rush formed strong opinions on the best balance to maintain female health. He chided both “civilized” and “uncivilized” nations for their gendered division of labor: in the case of the former only men worked and the latter only women bore the brunt.


of labor. He followed this information with the admonishment that “[b]oth are wrong. Men & Women were made to work together in different ways.”

Occupation was key for the health of any individual and thus any family, community, or nation in turn. By finding fault with both high European culture and Native work patterns (or rather Anglo-American interpretations of Native work patterns) Rush contributed to a growing idea that the United States would produce a better society than either, civilized but not decadent. He tacitly emphasized this republican view in his work on Pennsylvania Germans, whom he praised for their frugality, vegetable-rich diet, and industry among both sexes.

Rush believed cultural differences fundamentally altered women’s bodies in the cases of marriage, menstruation, and childbirth. He characterized Indian masculinity as centered around the vigorous activities of hunting, swimming, and war. The “tone” of the nerves which resulted from this activity led to general good health among Indian men.

Among both men and women Rush attributed additional rituals aimed at shaping and strengthening the body, notably “painting, and the use of the cold bath.” He describes the practices and reason for them in the following manner:

The Indians generally use bear’s grease mixed with a clay, which bears the greatest resemblance to the colour of their skins. This pigment serves to lessen the sensibility of the extremities of the nerves; it moreover fortifies the [body] against the action of those exhalations, which we shall mention hereafter, as a considerable source of their diseases. The COLD BATH likewise fortifies the body, and renders it less subject to those diseases which arise from the extremes and vicissitudes of heat and cold.

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478 Benjamin Rush, Commonplace Book 21 July 1792, APS.


480 Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 10–12.

481 Ibid., 13.
The use of grease, paint, and cold baths (often in sickness alternated with sweating) were common attributes Europeans and white colonists associated with Indian culture. Joyce Chaplin argues that by the late seventeenth century English colonists used such practices to demonstrate how Indians were unfit for the climate of North America compared with themselves. Such a sentiment does not appear in Rush’s work, however. He recognized that both societies relied on bodily manipulations and practices to survive in any climate. Nature for Rush was a constant (if well-meaning) enemy, something to be improved and overcome rather than used as a guide. If anything, he believed Indians did less to alter themselves and their surroundings than those of European descent, often to their detriment. This was especially the case with Native American women. Rush believed they created a false masculinity within themselves by strengthening their bodies and engaging in hard labor; the result of which was delayed maturity and low birth rates.

At other points, Rush reasoned that there were strong connections between the labor of Indian women, their physical appearance, and physiology. The hard work performed by these women supposedly hardened their bodies making them appear masculine. This masculine tendency seemed to impact their expression of that most feminine trait of childbirth. Rush claimed that Indian women, as a direct result of their labor, did not begin menstruation until the age or eighteen or twenty, and rarely married before twenty. Recall that he expected white women to marry by twenty-one at the very latest if they valued their health.

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However, Rush's negative comments regarding American Indian women are not uniform. In one situation, childbirth, their masculine bodies appeared ironically helpful. Rush believed this hardening of bodies resulted in lower menstrual flow and a reduction of pain during childbirth. Despite the disparaging of the masculinization of Indian women, Rush found much to praise in his assumptions about their childbirth practices which eliminated midwives and post-partum confinement, stating:

Nature is their only midwife. Their labours are short, and accompanied with little pain. Each woman is delivered in a private cabin, without so much as one of her own sex to attend her. After washing herself in cold water, she returns in a few days to her usual employments; so that she knows nothing of those accidents which proceed from the carelessness or ill management of midwives; or those weaknesses which arise from a month’s confinement in a warm room. It is remarkable that there is hardly a period in the interval between the eruption and ceasing of the menses, in which they are not pregnant, or giving suck. This is the most natural state of the constitution during that interval; and hence we often find it connected with the best state of health, in the women of civilized nations.483

This supposed absence of pain in childbirth and benefits of eliminating a lying-in period was not a new fascination for western physicians. A century before Rush, Sydenham's protégé Hans Sloane claimed a similar difference in the health and culture surrounding the practices of women, especially slave and Indian women, in Jamaica.484 Sloane, like Rush, did not attribute this lack of pain to any firm racial categories, but rather to differences in the practice of childbirth which resulted in a healthier experience.


Meanwhile, the excessive artifice associated with European women of fashion led directly to pain and disease. European women, especially of the upper classes, allowed fashion to damage their health. Rush complained at various times about tight laces, uncovered breasts, and heavy wigs and hats. In his “Natural History of Medicine Among the Indians” he wrote of the dangers of “civilized” life stating that it “rises in its demands upon the health of women. Their fashions; their dress and diet; their eager pursuits and ardent enjoyment of pleasure; their indolence and undue evacuations [sic]…their cordials, hot regiment…use of art, in child-birth, are all so many inlets to disease.”

Consistent with tradition and stereotype, Rush used the bodies of Indian women to make generalizations about Native American culture and American wilderness. In this reading, Native people had, for the most part, adjusted themselves to their environment based on their habits, the proof rested in the hard and gender-distorting bodies of their women. In contrast, Euro-Americans changed their environment to suit human bodies, a more difficult but ultimately (in Rush’s mind) more sustainable and healthy course of action. Like his contemporary, Thomas Jefferson, however, the positive accounts of childbirth and fertility hint at the possibility of both the improvement of Indian conditions and the healthy expansion of the United States as a society neither Indian nor European.

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485 Rush, “An Inquiry into the Natural History of Medicine among the Indians of North-America; and a Comparative View of Their Diseases and Remedies with Those of Civilized Nations,” 31.
5.4 Conclusion

In 1789-90 the historian and clergyman Jeremy Belknap wrote to Rush from Boston describing the present state of the Indians. Contrary to Rush’s perception, Belknap favorably reported that several Indian congregations existed in Massachusetts and that on the coast Native Americans proved to be excellent whalers and sailors. Nevertheless, negative descriptions of a mysteriously declining Indian population in the wake of war and rampant alcoholism foreshadowed the nineteenth century stereotypes of the “vanishing Indian” and alcoholism. He happily reported that Rush’s essay on ardent spirits (a blockbuster early temperance piece) would make its way to Martha’s Vineyard for a largely Wampanoag audience.\footnote{Jeremy Belknap (1789-90) LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. 30, Box 1.}

Rush’s perception of bodily difference ultimately reinforced and provided “scientific” support for distinct racial and gender-based roles in the American republic. While maintaining eighteenth-century ideas about the mutability of human forms and importance of climate in the shaping of bodies, he also provided a strong role for culture. Citizenship depended upon conformity to the republican world Rush envisioned in which race and gender indicated the appropriate roles for individuals. Some of his students, most notably Charles Caldwell, went much farther than Rush could have anticipated. Southern students who flocked to attend Rush's lectures in Philadelphia returned home and helped create a distinct regional medicine which helped foster nineteenth-century scientific and medical racism. Caldwell and his followers responded to the Enlightenment's claims of racial fluidity with arguments to support polygenism. As Christopher Willoughby
contends, Rush may have had abolition in mind, but his students found the racial language in his work to support a far more radical conclusion.\textsuperscript{487} Chapter six considers the means by which this medically-defined culture would be perpetuated.

\textsuperscript{487} Willoughby, “‘His Native, Hot Country’: Racial Science and Environment in Antebellum American Medical Thought.”
A 1796 medical student at the University of Pennsylvania wrote that good government and good health went hand in hand: “[f]reedom should establish an equilibrium of Irritability & Sensibility… You will scarcely ever hear of an eminent Physician who is not a Republican.” This sentence summarizes the ultimate conclusion of Benjamin Rush's medical system. Health required republicanism. Republics, however, also required health. He believed that if Americans came to understand their climate and culture they could cultivate good government and healthy citizens through republican institutions. Rush said this at a time – 1796 – when the medical republicanism of his British compatriots threatened their practices and even lives.

Brian Dolan demonstrates how republicanism associated with the French Revolution subjected progressive dissenting doctors to public attack, including Erasmus Darwin in 1797. In 1794, for largely political reasons, Joseph Priestley immigrated to Pennsylvania as did L.J. Jardine a physician from Bristol who followed Priestly to

488 Hare (1796), KCRBM, Ms. Coll 225, Box 5, Item 9, Vol. I.

Pennsylvania and published a travel narrative after his eventual return to England. Additionally, Rush received a series of letters relating to lesser known men of similar political leanings. E. Miller of Birmingham wrote a letter of introduction for a young man "Mr. Davy" who planned to leave England for the "free world." In Norwich, Edward Rigby wrote to Rush on behalf of a man named Richard Drimore in 1797 and again for Mr. John March, a bookseller suffering from the political situation in 1798. In addition to immigration, English colleagues like Liverpool physician and brother of Willian Currie, James Currie (1756-1805) wrote to Rush in 1796 praising French military victories and the future destruction of monarchy across Europe. When Rush spoke of the promise of republican medicine he did not do so in a theoretical vacuum or in ignorance of what those convictions cost his trans-Atlantic colleagues. Only in the United States, a republic ostensibly at peace, could the promise of his medicine be realized.

As discussed in chapter three, Rush was not alone in his hopes for a naturally healthy climate nor was he unusual for stressing the role of the environment in human health. Using his theories, Rush promoted a specific view of American culture and health. He stood out, however, in his commitment to merging medical and political theory to promote republicanism in the United States. His turn away from nosology, focus on

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491 E. Miller to Benjamin Rush (1794), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. X; Edward Rigby to Benjamin Rush (1797-1798), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XIV.

492 James Currie to Benjamin Rush (1796), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. III.
medical education, and neo-Hippocratic environmentalism all pointed to the variability of the American experience.

Environmental medicine formed the cornerstone of American practice precisely because the environment was variable, unpredictable, and in many locations “unimproved.” Rush believed a more stable climate and regular habits of mind and body would cultivate health and prosperity for the American people. Of the many aspects of Scottish and colonial practice Rush adapted for American purposes, the alteration of the climate was the ultimate goal. For the republic to succeed, Americans needed to hold themselves to higher community standards and actively “improve” their surroundings. This concept of "improvement" did not stop at the edge of forest or field. Schools, cities, and hospitals could all benefit from a scientific and republican overhaul. Both the people and the land cried out for improvement in Rush's mind.

A combination of scientific commitment and patriotism supported Rush’s progressive hopes for the nation. The growth of American intellectual institutions attests to the strength of the improving spirit. In addition to pre-revolutionary groups like the American Philosophical Society, the period after independence saw the expansion of learned societies, agricultural improvement organizations and charitable organizations. Publications geared toward technical, political, and scientific topics flourished. With the right knowledge and rational action, the United States had every chance of being the healthiest and most successful republic in the world.

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This chapter considers three ways in which Rush addressed both the social and medical concerns of the new republic. These examples are only a selection of those to which Rush applied his unique blend of science, politics, and patriotism. They are, however, issues on which Rush spoke most frequently. Section one discusses his views on education, especially public and medical education, in the United States. In addition to considering widespread education vital to the survival of the republic, he also applied ideas about the function of the human mind to the practice of teaching. Sections two and three address fields more closely allied with medicine. Section two addresses of Rush’s involvement with the Pennsylvania Hospital’s treatment of patients with “mental derangement.” The third and final section examines Philadelphia's attempts to prevent disease in the wake of the 1790s yellow fever epidemics. Rush and his close associates not only believed that epidemic diseases like yellow fever were locally-produced but also that they could be prevented by altering the state of the environment, a sentiment they shared with public officials. Once sources of contagion and putrefaction were identified physicians, politicians, and engineers could eliminate those sources of contamination. Together, these examples represent the full extent of Rush’s American and republican medicine.
6.1 American Education

Political wisdom of the late eighteenth century, heavily influenced by Montesquieu, argued that citizenship imposed greater moral responsibility on people than monarchy. The success of a republic depended upon the cultivation of civic morals and strong institutions. Men like Rush and his fellow physician David Ramsey articulated the promise and the anxiety of the revolutionary moment.494 As a child, Rush was taught to respect the British monarchy. As argued by Brendan McConville, American colonists of the mid-eighteenth century were Britons the same as their English counterparts, possibly more patriotic and committed to the crown than those on the other side of the Atlantic.495 Rush addressed this viewpoint specifically in his autobiography where he noted that as a child he was taught to respect and admire the British monarchy.496 Rush's own children (born between 1777 and 1801), however, grew up in a different world as American citizens not British subjects.497 The transition was difficult for parents, but it could be rendered natural for children through strict upbringing and a republican education to cultivate the moral faculty.

The "moral faculty" Rush spoke of operated like other innate faculties or abilities of the mind. In his Medical Inquiries and Observations Upon Diseases of the Mind Rush


495 McConville, The King’s Three Faces: The Rise and Fall of Royal America, 1688-1776.


enumerated nine faculties: understanding, memory, imagination, passions, principle of faith, will, moral faculty, conscience, and "sense of Deity." 498 The general concept grew in popularity during the eighteenth century especially in the Enlightenment Circles Rush emulated as a young man. 499 The exact nature and number of faculties varied between thinkers including Francis Hutcheson, Joseph Priestly, William Cullen and David Hartley. For example, some philosophers considered "common sense" a faculty where Rush did not and Lord Kames initiated the idea of a "moral faculty." 500

Rush's moral faculty represented a reflexive sense of right and wrong, distinct from but related to faith, conscience, and sense of the Deity. In a 1786 oration to the American Philosophical Society he defined the moral faculty as "a power in the human mind of distinguishing and chusing [sic] good and evil; or, in other words, virtue and vice. It is a native principle, and though it is capable of improvement by experience and reflection, it is not derived from either of them." 501 That improvement of the moral faculty on a national scale was required, in Rush's opinion, for the success of the republic. Universal education for American boys and near-universal education for girls was the ideal mechanism to shape the faculties from an early age. Schools would have the ability not only to promote the

498 Rush, Medical Inquiries and Observations Upon the Diseases of the Mind, 2.

499 Rush specifically cited Lord Kames as the originator of the concept of an innate sense of the Deity; Ibid., 355; McCosh, The Scottish Philosophy, Biographical, Expository, Critical, From Hutcheson to Hamilton, 175.


spread of factual information, but also to instill a sense of public duty and private morality in pupils.

At the beginning of his essay “A plan for establishing public schools in Pennsylvania, and for conducing education agreeably to a republican form of government” Rush explicitly stated that, “[f]reedom can exist only in the society of knowledge. Without learning, men are incapable of knowing their rights, and where learning is confined to a few people, liberty can be neither equal nor universal.” Rush believed that children raised with republican values would develop into moral and competent participants in republican society. Without proper education citizens might fall under the influence of demagogues and lose what freedoms they had without fully realizing their mistake. With education Rush believed citizens could become “republican machines,” healthy and naturally oriented to enjoy freedom and contribute to the improvement of their country. This argument, like most of Rush's medical prescriptions, broke down along gendered lines. As discussed in chapter five, Rush believed men and women were fundamentally different on a physical and mental level from birth. In the case of education and republican society, this led directly to Rush's advocacy for single-sex education and separate social roles for men and women. Education would cultivate the faculties in both boys and girls but to different degrees and with different aims. It would also introduce gendered forms of labor. Rush considered idleness dangerous to both moral and physical development and

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503 Ibid., 14.
appropriate work necessary to children's development, writing in 1786 that "[t]he effects of steady labour [sic] in early life, in creating virtuous habits is...remarkable."\textsuperscript{504}

An educated male population, Rush argued, would be less of a burden on the state’s resources. Moral and educated men would commit fewer crimes and contribute more to agricultural, industrial, and internal improvements. Educated women, meanwhile, would act as moral compasses for their fathers, brothers, and husbands and manage domestic life efficiently and safely. In addition to physical sensitivity, Rush frequently remarked on the natural morality of women and their greater sense of the Deity. Although these faculties could be corrupted (he also thought women could hold grudges and be petty), with proper education women would check men's ambitions and self-interestedness with examples of domestic morality. This balance at home would in turn keep the republic balanced and stable. Essentially Rush argued that education more than paid for itself.\textsuperscript{505}

As a theoretical structure, Rush’s ideas appear most clearly in the 1786 essay for the establishment of public schools in Pennsylvania where he set out his plan for all levels of male education. The plan claimed that all boys would be able to receive as much education as society required and their personal talents recommended. Each town of 100 families or more would provide a primary school. Students who excelled could continue with their education and take advantage of county-wide college preparatory academies, regional colleges (at Philadelphia, Pittsburgh, Lancaster, and Carlisle), and the University

\textsuperscript{504} Benjamin Rush, \textit{An Inquiry Into the Influence of Physical Causes Upon the Moral Faculty: Delivered Before a Meeting of the American Philosophical Society, Held at Philadelphia, on the Twenty-Seventh of February, 1786} (Philadelphia: Haswell, Barrington, and Haswell, 1786), 14.

of Pennsylvania for post-graduate professional training in law, medicine, politics, and the sciences. This public system would allow those of modest means but extraordinary talent to pursue higher education which in turn they (as good citizens) would use for the improvement of their whole country.

Despite their democratic flavor, the educational opportunities outlined above were nearly all designed for the benefit of boys, not girls. In the past historians have characterized Rush as a champion for improved education for girls based on his involvement with the Young Ladies’ Academy of Philadelphia and his educational writings. For example, he argued that girls should learn chemistry and other natural sciences as well as mathematics for bookkeeping. This was certainly a change from previous generations where American female literacy and writing ability lagged behind that of men. A closer look, however, reveals how educational differences between girls and boys stemmed from the ideas of essential physiological difference between men and women discussed in chapter five. Rush claimed that even as infants, boys and girls looked

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different, chiefly in their manner of breathing. Girls took shallower breaths higher in the chest, already making room for future pregnancy. The essential difference in bodies indicated a difference in minds between boys and girls and Rush therefore believed the sexes should be educated separately.

Rush’s essays on education also provide a unique opportunity to address his ideas about childhood and children’s mental development. Unlike the childless John Locke, it takes little in the way of investigative work to uncover the role children played in Rush's life.\textsuperscript{510} Rush wrote most frequently on education in the 1780s when he was in the process of building his own family. His writings are not completely abstract, but they draw on years of close association with small children and active attempts to turn his own offspring into the ideal "republican machines." Between 1777 and 1801 Julia Stockton Rush gave birth to thirteen children. Nine of the Rush children lived to adulthood; six boys and three girls.\textsuperscript{511} Benjamin and Julia Rush were strict parents and were certainly concerned with the moral, physical, and intellectual development of their children. This was all the more pressing in early years. Lecture notes show that Rush, following John Gregory and Scottish professor of midwifery George Young, believed that early childhood development was a pivotal period and that "we learn more in the 1st three years of our lives, than in any 30 afterwards" and that "the Treatment of Children during the first Month at least I trust

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\textsuperscript{510} For more on Locke and his observations of children see, Adriana Silvia Benzaquén, ‘‘Locke’s Children,’’ \textit{The Journal of the History of Childhood and Youth} 4, no. 3 (2011): 382–402.

\textsuperscript{511} The boys were: John (1777-1837), Richard (1780-1859), James (1786-1869), Benjamin (1791-1824), Samuel (1795-1859), and William (1801-1864) and the girls: Anne Emily (1779-1850), Mary (1784-1849), and Julia (1792-1860). Anne Emily and Mary married a Canadian and Englishman, respectively, and left the country.
deserves your particular attention." In a letter to Benjamin Rush during the 1793 yellow fever outbreak, Julia Rush wrote from Princeton regarding the health of their youngest child at the time, baby Julia. Despite a suffering from a bad cold and teething the baby continued satisfactory physical development. Her mother wrote that "she [baby Julia] does not go alone- but can walk all around the room by chairs- and can point out all her articles of dress- and all her features upon being asked." 

In addition to observation and education Rush looked to correct misdemeanors among his children in a manner that would correct the perceived malfunction of their minds. Unlike most eighteenth-century parents Rush believed corporal punishment only endangered a child's moral sense and taught them to be cruel. This did not mean, however, that punishment did not exist within the Rush household. Bad behavior was punished by isolating the child, an extreme version of "go to your room." In some instances, a child might be left alone without amusement or contact with siblings for a whole day. This approach mimicked tactics Rush used on "insane" patients at the Pennsylvania Hospital (see below) and recommended for convicts. When his eldest son John was caught playing cards on a Sunday while at Princeton Rush pulled him out of school permanently.


and educated him at home fearing that the boy was falling into moral corruption. At the end of a letter to Water Minto, a faculty member with whom John Rush boarded, the distressed father wrote "I conceive, after what has past, he [John] can never recover his character so as to appear to advantage either with his masters or among his fellow students" and "[w]e [Benjamin and Julia] shall always retain a grateful sense of your kindness to our poor deluded boy."^{516}

Even in the middle of the 1793 yellow fever outbreak both Benjamin and Julia Rush were concerned with the proper education of their children. Anne Emily and Mary (about 14 and nine at the time) went to boarding school in Trenton. The younger boys, meanwhile, were expected to maintain a strict routine of reading supervised by their mother, and James (age seven) attended a local school in Princeton. Their eldest, sixteen-year-old John, however, required a letter from his father to spur him to study.^{517} Formal education was not an artifact of being away from home during the epidemic for the boys or girls. Between 1798 and 1800 James Rush attended boarding school in Maryland.^{518} His sister Julia stayed closer to home and in 1808 graduated from Madame Rivardi's intellectually rigorous female seminary in Philadelphia, of which Benjamin Rush was a trustee.^{519}

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516 Benjamin Rush to Walter Minto (Philadelphia, September 19, 1792), Rush, *Letters of Benjamin Rush*, 622. Despite the initial expulsion John's fellow students were readmitted the next year Carlson and Wollock, “Benjamin Rush and His Insane Son,” 1320–21.


518 Letters to Benjamin Rush detail his son's progress and education. J. Hall to Benjamin Rush (1798-1800), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXII and XXIV.

Although Rush mainly published on the question of how children were best instructed he used similar techniques in the medical lecture hall to engage the minds and faculties of adult men. In the classroom, he demonstrated the importance of engaging multiple senses for the sake of memory. In 1848, two of Rush’s former student discussed the impressive nature of Rush’s lecture style in public. The first, Thomas D. Mitchell (1791-1865), opened his series of medical lectures for the year 1848 with a talk on Rush’s character as a physician, teacher, patriot, and friend. Under the heading of “teacher” Mitchell claimed that Rush possessed a unique manner of oratory.

Of Dr. Rush’s manner of lecturing, it is impossible to convey an adequate idea. His voice was one of sweetest euphony, adapting itself most easily to the variety of sentiment and presented, an eminently calculated to riven the attention of his class. Although he read almost every word, and occupied the sitting posture throughout his course, with only now and then an exception, he was unquestionably the most eloquent and instructive teacher I have ever heard. When he desired to give peculiar and unwonted emphasis and power to something he regarded as specially [sic] important, he rose from his chair, and with inexpressible dignity, pronounced the sentiment.520

Charles Megis (1792-1869) also wrote about his preceptor’s lecture style in his 1848 book, *Females and Their Diseases: A series of Letters to His Class*. Megis’s memory came from an 1813 lecture in which Rush “arose and stood up, and casting his eyes over the large hall, looking to the left, and then to the right, and then to those in front of him.” This movement and pause was followed by the Latin words “obsta principiis” which he wished them to remember.521 In this and Mitchell’s memory, Rush stood to engage the sense of sight,


521 Charles D Meigs, *Females and Their Diseases: A Series of Letters to His Class* (Philadelphia: Lea and Blanchard, 1848), 372–73. The phrase “obsta principiis” seems to be a quote from Ovid’s “Remedia Amoris” and indicate the association between emotion and health and the need to stave off disease from the very start. Ovid, “Remedia Amoris,” in *Love Poems, Letters, and Remedies of Ovid*, ed.
paused to break the standard pattern of the lecture, and spoke loudly and clearly to address the sense of hearing. A firm memory resulted. Simple reading, on the other hand, did not aid memory and was easily forgotten because it stimulated only one sense, that of sight. Rush even went so far as to claim that sight was not necessarily the strongest sense humans possessed recalling that Benjamin Franklin “could never recollect his old acquaintances untill they spoke.” Meigs may have applied the same logic to his own work. *Females and Their Diseases* is an epistolary textbook with short chapters written in an easy and memorable style. By mixing styles and writing clearly, Meigs captured the imagination, and memory of his readers.

The 1813 lecture described by Meigs took place at the very end of Rush’s life and career, by which time the elder physician was an experienced teacher. Numerous lecture notes (Rush’s and those of his students) include records of emphatic language, including repetition of key concepts, statements in “all caps,” underlining, and exclamation points. In addition to the empathic lecturing, Mitchell also hinted at Rush’s style of examination and questioning. He claimed that “[p]upils were compelled to meditate, reason and judge for themselves, and the habit thus formed by daily practice…may serve to explain the fact, that in no similar portion of our country’s history was so much useful and original matter

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522 Hare (1796), KCRBM, Ms. Coll. 225, Box 6, Item 9.

523 According to Rush’s records Meigs attended lectures in the winter of 1812-13, the last year Rush taught before his death in April 1813. LCP, Rush Family Papers, Benjamin Rush Papers, Vol. 106, Yi2 7270.
issued from the press, as during the last twenty years of the life of Dr. Rush."\textsuperscript{524} Rush encouraged students to continue their learning outside of the classroom. He told Henry Powell’s class to “[m]ake it a constant practice to think & talk over the Lectures which you have heard when you return home, this will serve as a test to discover whether you understand them.”\textsuperscript{525} As an instructor, Rush provided biological reasons for the improvement of understanding through discussion. Proper study would thereby invigorate the mind and better train it to analyze local situations and remember content introduced in medical school and hospital practice. In this manner Rush, medicalized a common practice.\textsuperscript{526}

For Rush, both the basic principles of childrearing and the techniques of active lecturing were designed to produce well-educated republicans. Healthy mental and physical development were prerequisites for healthy moral development. Above all, Rush despised the manner in which Greek and Latin dominated boys' early education. The texts, he argued, taxed their brains in unnatural ways. Stories and myths also exposed them to immoral concepts. Rush wrote in an essay on Greek and Latin that "[t]he study of some...classics is unfavourable [sic] to morals and religions. Indelicate amours, and shocking vices both of gods and men, fill many parts of them. Hence and early and

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\textsuperscript{524} Mitchell, \textit{The Character of Rush, an Introductory to the Course on the Theory and Practice of Medicine in the Philadelphia College of Medicine}, 17–18.

\textsuperscript{525} Powell, UPenn, Ms. Coll. 225, Box 3, Item 7, Vol. I, 1809.

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dangerous acquaintance with vice; and hence...a diminished respect for the unity and perfections of the true God."\(^{527}\)

At the time, classical education dominated elite education and continued to do so for a century more.\(^{528}\) Rather than study the classics, Rush argued that natural history and geography were subjects better suited to the minds of children. The active learning and inquisitive nature of science matched a young child’s inclination to acquire new ideas. Rush's thoughts on development build off of John Locke's *tabula rasa*.\(^{529}\) Children's minds were relatively empty of knowledge but acted like little sponges. They picked up new words, images, and simple ideas. In later childhood and early adulthood those simple ideas could compound and lead to an appreciation of philosophy, theology, and linguistics. Also, like Locke, he believed that introducing the concepts too soon would only frustrate children and provide ideas with no psychological foundation to stand on.

Rush feared that by stuffing the minds of young boys (four or five years old) with knowledge of Greek and Latin words rather than ideas about physical objects they would not develop a sufficient understanding of the world around them. This difficulty explained why boys disliked their lessons in Latin and only enjoyed them for stories (of dubious

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\(^{529}\) Benjamin Rush's copies of Locke (if they existed) do not survive, however he was certainly familiar with Locke's work and cited his ideas on education and psychology in 13 student notebooks. By the turn of the nineteenth century Rush would also have had access to the Pennsylvania Hospital's 1796 edition of *An Essay Concerning Human Understanding. A Catalogue of the Medical Library, Belonging to the Pennsylvania Hospital: Exhibiting the Names of Authors and Editors, in Alphabetical Order, and an Arrangement of Them Under Distinct Heads. Also, a List of Articles Contained in the Anatomical Museum; A.*
morality) or for the honor of competition with classmates. The true joy of language acquisition, Rush argued, belonged to a more mature brain.\textsuperscript{530} In extreme circumstances, he wrote, “sprightly boys of excellent capacities for useful knowledge, have been so disgusted with the dead languages, as to retreat from the drudgery of schools, to low company, whereby they have become bad members of society.”\textsuperscript{531} For a county whose future relied upon an upright citizenry and innovation in the fields of “useful knowledge” even the theoretical possibility of a “Latin to crime” pipeline was viewed by Rush as an existential threat. Nor was it necessarily hyperbolic. Michael Meranze argues that Rush strongly argued that merely witnessing corporal punishment of criminals could fundamentally damage society by engendering sympathy or cultivating a callous atmosphere with respect to pain. Moreover, the dangers of low company and alcohol were readily recognized by eighteenth-century Philadelphians as gateways to criminality.\textsuperscript{532}

Keeping the sciences cloaked in dead languages, meanwhile, kept the pool of potential American men of science too small for a new republic. Rush claimed that “[w]hile Greek and Latin are the only avenues of science, education will always be confined to a few people. It is only by rendering knowledge universal, that a republican form of

\textsuperscript{530} Rush, “Observations upon the Study of the Latin and Greek Languages, as a Branch of Liberal Education, with Hints of a Plan of Liberal Instruction, without Them, Accommodated to the Present State of Society, Manners, and Government in the United States,” 22–23. Rush worried that the content of the classics were largely amoral or too violent for children and would provide bad lessons for life and public service, Ibid., 24.


government can be preserved in our country.”

To thrive as a republic, or simply as an independent nation, the United States needed to produce knowledge, agricultural products, and manufactures in the most efficient manner possible. Similarly, for individuals, the assumption that intelligence could only be measured by competence in dead languages ignored other types of brilliance Rush wanted to cultivate. This belief remained controversial. Thomas Jefferson felt the classics were vital to the study of science while some of Rush’s British correspondents complained that unless Americans wrote in Latin no one on the continent would be able to read their work.

Nevertheless, Rush remained firm in his criticism. He thought boys could begin lessons in modern languages, mainly French and German, by their early teen years. German in particular loomed large in Pennsylvania, which Rush thought of as a potentially bilingual state. In his plan for an educational system, he suggested that public schools be conducted in either English or German depending on the local population. He also became deeply involved with the establishment of Franklin College (now Franklin and Marshall College) in Lancaster as an ecumenical and bilingual institution. The college, he argued, would benefit the whole German-speaking population by facilitating a path to the learned professions for German-Americans.

Despite Rush's intentions, reform of American language education remained in the future. Even his sons largely conformed to expected educational practice. Letters from J.

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Hall (a schoolmaster and cousin of Rush on his mother’s side) between 1798 and 1800 detail the academy education of James Rush (1786-1869). Hall wrote about James’s language study claiming, “[w]ithout your knowledge, no doubt, he [James] has been studying a foreign language [Latin], before he learned ye Rudiments of his own.”\textsuperscript{535} A year later he wrote that James was making good progress in both Latin and French.\textsuperscript{536} However, Hall agreed with Rush with respect to the importance of science education. In the same letter in which his discussed James’s progress in language he noted the arrival from London of “Terrestrial & Celestial Globes; ...a Medical Electrical Machine, a Theodolite for surveying Land with an apparatus for levelling water courses, taking angles of Elevation &ct...Besides the use of these Instruments...pupils will have the benefit of seeing ye practice of extensively carried on.”\textsuperscript{537} Practical skills, especially geography and surveying, certainly appealed to those Americans focused on the physical improvement and western expansion of their republic. As an adult James studied medicine at the University of Pennsylvania and University of Edinburgh but was not an active practitioner. He spent a substantial amount of time working on a philosophy of the human voice which, like his education embraced both the theoretical (vocal aesthetics and physiology) and practical (persuasive rhetoric) and an unpublished theory of medicine.\textsuperscript{538}

\textsuperscript{535} J. Hall (1798), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XXII.

\textsuperscript{536} J. Hall (1799), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XXIV.

\textsuperscript{537} J. Hall (1798), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XXII.

By stressing the practical as well as the social and moral advantages of education Rush hoped that the country would contribute more than its fair share to commerce, manufacture, and especially agriculture. Of the last, he wrote: “[a]griculture is as much as science as hydraulics, or optics, and has been equally indebted to the experiments and researches of learned men.”\textsuperscript{539} The learned men Rush alluded to included his own professor and mentor, William Cullen and Cullen’s patron Lord Kames in Scotland.\textsuperscript{540} Similarly, Rush claimed “[m]anufactures, of all kinds owe their perfection chiefly to learning- hence the nations of Europe advance in manufactures, knowledge, and commerce, only in proportion as they cultivate the arts and sciences.”\textsuperscript{541} The "useful knowledge" gained from science, therefore could serve to uplift the nation as a whole.

This rhetoric of improvement applied to girls as well as boys, albeit in a different manner. In 1797, Rush addressed visitors to the Young Ladies’ Academy in Philadelphia on the proper education for girls “accommodated to the present state of society, manners, and government, in the United States of America.”\textsuperscript{542} Like boys, American girls needed a new educational system suited to a republic, however that did not mean they would study


\textsuperscript{541} Rush, “A Plan for Establishing Public Schools in Pennsylvania, and for Conducting Education Agreeably to a Republican Form of Government. Addressed to the Legislature and Citizens of Pennsylvania, in the Year 1786,” 2.

the same curriculum as their brothers. Donald Fraser, a writer from New York, praised Rush in a letter stating, “[y]our very laudable & able exertions to promote the best interest of the Female-Sex, in particular, induces me to think that you will be inclined to view in a favorable light, every attempt, however feeble, to promote the mental improvement of same Daughters of Columbia.”

What did men like Rush and Fraser expect out of the “Daughters of Columbia?” For girls, education centered around what it could do for the family just as boys were educated with regard to their economic and social utility to the republic. The literature on republican motherhood and womanhood is too extensive to fully treat here. The most important facet for the current discussion of education is the concept that women were supposed to act as partners in their marriages, stemming from their physiological distinctness. For someone like Rush, the innate differences between men and women made them complementary parts of a whole. He considered women naturally more sensitive to their surroundings, more religious, and a moral center for the household (and by extension the nation). Education, therefore, would enhance important feminine qualities while also directing girls away from “natural” foibles. For example, Rush promoted the study of geography, history, and chemistry as a means of combatting superstition, especially

543 Donald Fraser (1800), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. V.

religious superstition. Samuel Stanhope Smith, president of the College of New Jersey (Princeton), wrote to Rush congratulating him on his work on female education in 1787 stating, “[h]appy in a sensible & amiable woman yourself, you will desire well of your country men if you can contribute to make such wives common…I do not know whether you can do a greater service to mankind than by assisting & directing female education.”

Women like Julia Stockton Rush were educated for the benefit of their husbands and families, not for themselves.

Despite acquaintance with numerous exceptional women including Catherine Macaulay, Elizabeth Graeme Ferguson, Abigail Adams, and his mother-in-law, the poet Annis Boudinot Stockton, Rush considered his own wife as the exemplar for female behavior and education. Unfortunately, most of Julia's words are lost to history; only a few letters remain. Most impressions of her come from her husband and are typically full of admiration. In his autobiography he wrote of her:

She fulfilled every duty as a wife, mother and mistress with fidelity and integrity. To me she was always a sincere and honest friend. Had I yielded to her advice upon many occasions, I should have known less distress from various causes in my journey through life...May God reward and bless her with an easy and peaceful old age if she should survive me, and after death confer upon her immediate and eternal happiness!

The above passage denotes characteristics of the partnership model of marriage promoted at the end of the eighteenth century. In this view, married couples were expected to provide

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546 Samuel Stanhope Smith (1787) LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXII.

547 Rush and Biddle, A Memorial Containing Travels Through Life Or Sundry Incidents in the Life of Dr. Benjamin Rush, Born Dec. 24, 1745 (Old Style) Died April 19, 1813, 127.
mutual support, friendship, and advice. This differed from the more hierarchical form of marriage common in the early eighteenth century.\textsuperscript{548} This new view was especially appealing in a republic where relationships based on absolute power were unacceptable. This did not mean women had an equal share in social or private life, but the expectations and purpose of marriage were changing. Writers like Rush in the United States and Gregory and Macaulay in Britain actively promoted the idea of women as being the moral core of families.\textsuperscript{549}

Some of what Rush admired about his wife is demonstrated in her wedding portrait painted by Charles Wilson Peale, figure 5-1 below. The painting emphasizes the traits of refined and educated femininity. For example, she is holding an instrument which points to musical accomplishment. In letters Benjamin Rush wrote about his new wife to Lady Jane Wishard Belsches in Scotland he noted how he was struck by the quality of Julia's singing voice.\textsuperscript{550} In later years Rush largely approved of singing as a healthy a practical accomplishment for American women.\textsuperscript{551} To her left, however, we see books and paper,

\begin{itemize}
\item \textsuperscript{549} Wendy Gunther-Canada, “Cultivating Virtue: Catherine Macaulay and Mary Wollstonecraft on Civic Education,” \textit{Women & Politics} 25, no. 3 (2003): 47–70; Gregory, \textit{A Father’s Legacy to His Daughters}.
\item \textsuperscript{550} Benjamin Rush to Lady Jane Wishard Belsches (Philadelphia, July 4, 1785), Rush, \textit{Letters of Benjamin Rush}, 357.
\item \textsuperscript{551} Rush, “Thoughts upon Female Education, Accomodated to the Present State of Society, Manners, and Government, in the United States of America. Addressed to the Visitors of the Young Ladies’ Academy in Philadelphia, 28th July, 1787, at the Close of the Quarterly E,” 80.
\end{itemize}
one book which looks like it has its place marked by being left open on the table. These items point to Julia Stockton Rush's education in literature and religion. In a more sedate retelling of their first encounter Benjamin Rush noted in his autobiography how it was Julia's articulate admiration for a sermon by John Witherspoon which drew his attention to her.\textsuperscript{552} Both versions of their meeting, the one shared with friends and the one shared with their children, demonstrate the way Rush saw his wife as an ideal republican woman, an educated and pious partner, and an attractive young woman. The exact extent of Julia Stockton Rush's education is unclear, however her reading-knowledge, journal-keeping (now lost or in a private collection), and musicality suggest that she was taught at home to a fairly high degree. Her mother, Annis Boudinot Stockton, was certainly well-educated for her time and was one of the country's first published poets. She also publicly critiqued the poor education of girls so it is unlikely that she would have neglected her own daughter.\textsuperscript{553} A generation later, Julia's daughters received a formal education at school which included serious academic study. In 1804 while visiting family in Princeton, she wrote in a letter that she had visited their daughter Julia along the way who was at boarding school in Burlington, New Jersey. The younger Julia was learning French, increasingly common accomplishment for girls at the turn of the nineteenth century.\textsuperscript{554}

\textsuperscript{552} Rush and Biddle, A Memorial Containing Travels Through Life Or Sundry Incidents in the Life of Dr. Benjamin Rush, Born Dec. 24, 1745 (Old Style) Died April 19, 1813, 86.

\textsuperscript{553} Branson, These Fiery Frenchified Dames: Women and Political Culture in Early National Philadelphia, 44.

Despite the enduring image of the painting which keeps Julia Stockton Rush as an eternal teenager, most mentions of her come from later in her marriage as a self-confident woman raising a large family and looking after a home which included an average of four private medical students at a time. Charles Caldwell described an encounter with Julia Rush in his autobiography. Their conversation demonstrates her general sociability and knowledge of Philadelphia's medical world. Caldwell wrote:

I discovered, to my surprise...that she knew more of my history than I had believed to be known by all the inhabitants of Philadelphia. She even spoke of events connected with me which I myself had almost forgotten...I begged her to inform me through what channel she had become possessed of it. "For, certainly," said I, "Dr. Rush cannot have informed you of all this."
"Oh! no," she said; "though the doctors has often spoken of you he did not
tell me that; I learned if from Mr. N____w____n, who knew you in Salisbury.
He has called here several times since the commencement of the
lectures...he always speaks of you in the highest terms. 555

The version of Julia Rush presented by Caldwell is that of a woman acutely aware of her
surroundings and likely keeping track of the myriad of personal and professional
relationships which surrounded her family. Letters to Benjamin Rush from Samuel
Stanhope Smith present a similar image of a woman valued in heterosocial circles in
Princeton for her conversational skills. He wrote that he

must join with all Mrs. Rush's acquaintance in Princeton. To thank you, for
your consent that she should stay so long to enliven our society here. If you
will allow another gentleman to say it, she charms wherever she goes. And
I cannot refrain from congratulating you, that at your time of life & hers,
you have so much elegance, & beauty & good sense, visited in the mother
of an amiable group of children, & the wife of a man who has taste &
sentiment enough to relish them. 556

Like Rush, Stanhope Smith, emphasized both sociability as feminine and the traditional
roles of wife and mother Julia Stockton Rush carried out. Her power was her private
influence over family and friends. This matched the republican worldview Rush imagined
as well as the virtuous society proposed by Catherine Macaulay in which women and men
were partners one in the public eye and one acting as the critic away from the spotlight. 557

Nevertheless, as evidenced by her own hand, Julia Stockton Rush could navigate
even the "masculine" world of medicine. Not only did she hold her own in conversation,

555 Caldwell, Autobiography of Charles Caldwell, M.D. with a Preface, Notes, and Appendix, by

556 Samuel Stanhope Smith to Benjamin Rush (1790), LCP, Rush Family Papers, Benjamin Rush
Correspondence, Vol. XXII.

557 Gunther-Canada, “Cultivating Virtue: Catherine Macaulay and Mary Wollstonecraft on Civic
Education,” 56.
but also had some theoretical knowledge. In a letter to her husband during the yellow fever epidemic she noted that his treatment seemed akin to that of British physician Dr. Benjamin Moseley.\footnote{Julia Stockton Rush to Benjamin Rush (October 1, 1793), APS, Julia Stockton Rush Collection of 20 Letters, Mss.B.R894.} After Rush's death in 1813, Abigail Adams requested information on the doctor's last days which Julia Rush responded to in detail. The winter before his death, she noted, Rush suffered from a cough when damp (which was in accordance with his constitution). She went on to explain his treatment for it, water with warm molasses occasionally with the addition of brandy, lime, or laudanum and the total abstinence from wine. Here, apparently, they disagreed, Julia wrote:

I remonstrated against this plan and said that I thought his labours and his advancing years required more generous living – He said it agreed with him, that altho he drank nothing but water has his meals, that he took meat every day (I thought but sparingly) drank a good portion of tea and coffee, and ate plentifully of buttered toast and the cakes that are in use with us during the winter, he added that he got up from his dinner and sat down to his studies with as much alacrity as he did when he was thirty years of age owing he thought to his light meals – I reminded him but a few days before he was sick, that his dieting plan was more likely to injure him now than when he was thirty years of age, and I urged him to try a little wine again...I though he looked pale and reduced...I cannot but believe that this reduced state of his body previous to his illness, had no small effect in the sinking of his system so soon under so little apparent disease.\footnote{“From Julia Stockton Rush to Abigail Smith Adams, 23 June 1813,” Founders Online, National Archives, last modified February 1, 2018, http://founders.archives.gov/documents/Adams/99-03-02-2314.}

Despite her evident ability and keen eye for observation, gender prevented Julia Rush from being anything beyond a doctor's wife.

Rush certainly thought that gender roles were firm and founded in nature. In his medical lectures, he specifically challenged Mary Wollstonecraft’s idea that difference in education accounted for observed gender differences and claimed, "[t]here is no girl fond
of riding a stick; nor boy of playing with a doll. Their minds & bodies are originally different the celebrated [Wollstonecraft] is hypothetically absurd...Tis necessary to social as well as to domestic happiness that this inferiority should exist. My opinion is supported not only by reason & observation but by divine revelation.” He used the presumed independence of play to show innateness of gendered behaviors. Boys anticipated becoming men and girls anticipated becoming women based on their play. There is no evidence that Rush considered the possibility that these forms of play were a form of mimicry in which children told by their parents, siblings, and peers which group they belonged to and copied that behavior. This contrasts with Wollstonecraft’s descriptions of early childhood in another work, Thoughts on the Education of Daughters, in which she argues that children of both sexes copied the behavior of those around them. Like the faculties, gender was for Rush an innate state of being which acted as a lens though which bodies perceived and interacted with their world.

Rush's view that women required an improved and expanded education than was common in the years prior to the revolution has led some historians to champion him as progressive. Nevertheless, that education had limits. Women might learn chemistry, for example and even publish on it in exceptional cases like Marie-Genevieve-Charlotte Thiroux d'Arconville (1720-1805), but they were not supposed to use their skills in public or for profit. Susan Branson notes, however, that despite the intentions of men like Rush,

560 Hare (1796), KCRBM, Ms.Coll. 225, Box 5, Item 9, Vol I.
562 Rush owned a copy of Thiroux d'Arconville's treatise on putrefaction and cited it in his description of Pennsylvania mineral waters. Thiroux d’Arconville, Essai Pour Servier a l’histoire de La
Philadelphia's educated women had their own ideas about their abilities. Women participated in political activities including parades, girls at the Young Ladies Academy argued that they should have a public role, and Mary Wollstonecraft's books were popular reading for young women and men in American cities.\(^\text{563}\)

In the end, for Rush, the education of both boys and girls was aimed at producing future republican men and women. That is, civic minded and industrious voting men and moral, rational, and sensible women. Schools would help the country get off on the right foot with respect to health. When health failed, however, other intuitions were required to restore republican order.

### 6.2 The Pennsylvania Hospital

Benjamin Franklin (1706-1790) and Philadelphia physician Thomas Bond (1712-1784) worked together to establish the Pennsylvania Hospital in 1752. By 1769 Bond not only served as a hospital physician but also gave clinical lectures on the premises for medical students.\(^\text{564}\) At the time it was the only such institution in British North America, a voluntary hospital aimed at the treatment of non-contagious illness and with some pedagogical purpose. The hospital provided medical care for those without resources to

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procure a physician, who belonged to the "worthy poor," and who did not suffer from an incurable or contagious disease. In other words, the hospital operated along the same premise as analogous European institutions of the period and early nineteenth-century American hospitals described by Charles Rosenberg. Hospitals served as a place of last resort and no one who could afford to be cared for at home entered the wards.\(^{565}\) By the end of the century, however, a major exception arose to counter this narrative: treatment of patients suffering from "diseases of the mind."

Rush became a leading figure in early American psychiatry and used his research and association with the institution as a means of promoting national mental health. Rush believed human bodies and minds were inextricably linked so it stood to reason that political events, like the American Revolution, altered mental and physical health. He was not alone in this. Associations between mental and physical health featured prominently in early modern medicine. Enlarged spleens, for example were associated with hypochondriasis and depressive symptoms by the French anatomist Pierre Antoine Prost (d. 1832) and British physicians Thomas Willis (1621-1675) and Robert James (1703-1776).\(^{566}\) Rush closely associated glands, including the thyroid gland and spleen with the

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In more recent scholarship, Andrew Scull has recounted the long-term discussions surrounding insanity and the American social order and David J. Rothman discusses the role of the asylum in creating order in a seemingly chaotic world in the early nineteenth century. Richard Bell cites social anxiety, especially generational anxiety between the founding and inheriting generations, as a leading contributor to concern about suicide. Returning to Rush, Manfred J. Waserman has drawn attention to the physician's argument that minds functioned like governments, indicating a close reciprocal connection between the two.571

In a letter addressed to the Managers of the Hospital in 1810, Rush laid out plans to better address the growing number of patients treated for mental illness. Those patients came from across the country and from every walk of life. He noted that:

As great improvements have taken place in the treatment of persons in that melancholy situation within the last thirty years, I beg leave to lay an account of them before you as far as I have been able to obtain them from the histories of asylums for mad people in foreign countries, as well as from my own experience during five and twenty years' attendance upon that class of patients at the Pennsylvania Hospital.572

The organization Rush proposed both borrowed from innovations of European asylums and described features soon to become characteristic of nineteenth-century institutions. As an example of the former, he suggested providing cells with close-stools half-filled with


water to prevent additional infection from the feces. Rush attributed this innovation to Dr. Clark of Newcastle, England. The modified close-stools prevented effluvia from feces to spread through the air and cause illness. Before the adjustment, Rush claimed that human waste was responsible for the death of hospital attendant George Campbell. More generally, he suggested separating patients based on their degree of madness and gender as well as isolating patients from visitors. All of these ideas had counterparts in the large hospitals of France and private British madhouses.

In the United States however, political revolution and perceived social instability made the threat of madness feel immediate. Rush worried that instability in society would lead directly in the instability of minds. Increased reports of suicide, political demonstrations, and rebellions against the government in the 1780s and 1790s fueled such fears. In his 1786 oration on the moral faculty Rush went so far as to suggest that dangerous behaviors be kept secret so as to prevent mimicry. With respect to suicide he

573 Ibid., 1065.


wrote "I believe [suicide] is often propagated by means of newspapers. For this reason, I should be glad to see the proceedings of our courts kept from the public eye, when they expose or punish monstrous vices."\textsuperscript{576}

In an essay on the influence of the war and political change on American bodies and mind reprinted in 1805 in his \textit{Medical Inquiries and Observations} Rush wrote, “[t]he scenes of war and government which it introduced, were new to the greatest part of the inhabitants of the United States, and operated with all force of \textit{novelty} upon the human mind.”\textsuperscript{577} Among soldiers and officers, he reported that passions of excitement, fear and love of country lead to “patience, firmness, and magnanimity with which the officers and soldiers of the American army endured the complicated evils of hunger, cold, and nakedness.”\textsuperscript{578} In Philadelphia during the winter of 1774-75 Rush recorded greater cases of apoplexy than usual which he attributed to anxiety and cited Baglivi’s similar observations in Rome on rage and war in the winter of 1694-95.\textsuperscript{579} He also pointed to an increase in admissions of Bethlehem Hospital in London after the South Sea Bubble burst in 1720.\textsuperscript{580}

At the end of the American war, Rush claimed those who favored revolution experienced joy and cure from hysterical distempers (and one case of death from

\textsuperscript{576} Benjamin Rush, \textit{An Inquiry into the Influence of Physical Causes upon the Moral Faculty: Delivered before a Meeting of the American Philosophical Society, Held at Philadelphia, on the Twenty-Seventh of February, 1786}, ed. George Combe (Philadelphia: Haswell, Barrington, and Haswell, 1839), 22.


\textsuperscript{578} Ibid., 286.

\textsuperscript{579} Ibid., 287.

\textsuperscript{580} Rush, \textit{Medical Inquiries and Observations Upon the Diseases of the Mind}, 64.
happiness) whereas loyalists suffered hypochondriasis or other depressive disorders. Rush's military experience clearly contributed to his work on mental derangement. War, for soldiers and civilians, was a source of excitement which had pathological consequences. Some of those ailments persisted long after the war ended. In 1812 Stephen W. Williams a physician in Deerfield, Massachusetts wrote to Rush about the case of Joshua and Caleb Clapp, twin brothers who served as captains in the Continental Army. Both brothers suffered from melancholia after the war ended and eventually committed suicide within ten days of each other despite living nearly 200 miles apart. Williams wondered if it was their constitutions or experiences which led to their tragic end and he could not find any precise trigger.

The hospital, in Rush's mind, would go even further in isolating the insane from damaging content and the healthy from the example of the mad than merely censoring publications. It would also provide a safe space where tragedy, like that of the Clapp twins, might be prevented. His ideas for the Philadelphia Hospital, especially his assumption that modern life caused madness, laid the foundation for nineteenth-century asylum care. In his own lifetime, Rush became known as a doctor of the insane with patients and physicians seeking in-home care and at least one case of a prospective asylum keeper requesting advice in 1811.

Between 1797 and 1812 Rush received requests from at least 35 families

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582 Stephen W. Williams to Benjamin Rush (1812), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XX.

583 Frederick A. Vandyke of New Brunswick, New Jersey appealed to Rush and Philip Syng Physick for advice on constructing and running a private mad-house. "Frederick A. Vandyke to Benjamin Rush (1811),” LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXXI.
and four physicians in ten states and the District of Columbia to admit patients to the hospital for psychiatric disorders. The case of a Mr. Dunbar of New Haven, Connecticut reported by physician Eli Ives demonstrates the manner in which heredity and circumstance were thought to lead to madness. According to Ives, Dunbar:

Became deranged last Febr [sic] the disease came upon him gradually he had been six or eight years since affected in the same way...The family is predisposed to mania, his father has been deranged before him. Mr. Dunbar was educated at our college [Yale] studied law which he has practiced for 7 years past. Within two years past he has distracted his attention between the practice of the law, farming, speculating & a few months before he became quite deranged his mind was occupied on religion.584

Mr. Dunbar suffered from both a trait passed down in his family. He also perhaps reacted pathologically to the stress of his profession, suffered from poor investments, and engaged in religious activity deemed abnormal by his family and physician. Isolation, in Rush's view, would help restore Dunbar's mental health away from the stimuli which caused his illness. Although Philadelphia's psychiatric patients remained on the same hospital grounds as somatic patients, their care and housing differed. By 1796 "lunatics" were separated from somatic patients and resided in the west wing of the "H"-shaped building.585 Nancy Tomes suggests that Rush and the managers of the Pennsylvania Hospital arrived at the tenets of "moral management" independently from similar projects in England.586

584 Eli Ives to Benjamin Rush (1811), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. VIII.

585 Carlson and Wollock, “Benjamin Rush and His Insane Son,” 1323.

Figure 6-2 An early nineteenth-century etching of the Pennsylvania Hospital viewed from the corner of Pine and 8\textsuperscript{th} Streets. "Insane" patients were housed in the wing on the left side of the image after 1796. National Library of Medicine, Public Domain, http://collections.nlm.nih.gov/catalog/nlm:nimuld-101394075-img.

As shown in figure 6-2 the Pennsylvania Hospital in the early nineteenth century remained a single building situated in a wooded block formed by 8\textsuperscript{th}, 9\textsuperscript{th}, Spruce, and Pine Streets. At this time of its construction in 1752 the block was far from the core of Philadelphia. Time progressed and the city moved west eventually surrounding the previously pastoral hospital which made the walls and artificial nature within them all the more important for maintaining ventilation and isolation. Rush's 1810 letter recommended even greater separation in designated buildings. He suggested that amusements be provided for psychiatric patients (adjusted to their social status and gender) as well as mental
stimulation from book-reading and conversation with "an intelligent man [or] woman." Isolation from the world and a blend of physical and mental therapeutic activity characterized early nineteenth-century care for the "insane." Techniques suggested by Rush and proponents of "moral treatment" in Britain and the United States addressed the mind as a site of medical practice. Although Rush is well-known for his physical remedies for mental illness (including blood-letting, swings, and the "tranquilizing chair") his recommendation of conversation, reading, and writing were directed at the mind. In his letter to the hospital managers he wrote, "[w]hile we admit madness to be seated in the mind, by a strange obliquity of conduct we attempt to cure it only by corporeal remedies. The disease affects both the body and mind, and can be cured only by remedies applied to each of them."  

According to information Rush collected on the Pennsylvania Hospital, between 1780 and 1787, 106 men and women entered the hospital with diagnosed mental disorders. Numerous changes could account for the increase, from population gains to the growing reputation of the hospital for treating "mental derangement" to poor or incomplete record-keeping in the 1760s and 1770s. Nevertheless, using these numbers Rush saw a correlation between mental illness and social upheaval that fit neatly into his

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587 Rush, “To the Managers of the Pennsylvania Hospital (September 24, 1810),” 1064.


589 Rush, “To the Managers of the Pennsylvania Hospital (September 24, 1810),” 1064.

590 "List of Lunatics in the Pennsylvania Hospital (1787),” LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXXI.
view of physiology. Political revolution, economic instability, and general uncertainty contributed to the assumption by many Americans of the period that mental derangement, especially suicide, was on the rise.⁵⁹¹

As noted by Bell, no accurate counts of death by suicide existed in the early nineteenth century, at least not on a consistent basis. Bills of mortality, for example, only existed in cities and in most were erratically kept. However, newspapers frequently printed and reprinted individual instances of suicides and suicide attempts. This publicity produced a public fear of an epidemic.⁵⁹² For Rush, the conviction may have been all the stronger based on his proximity to mental illness. As a physician associated with the Pennsylvania Hospital, he had the ability to witness, and direct the treatment of, some of the earliest institutionalized cases of “mental derangement.” Attempted suicide was a guaranteed way to be labeled "insane" at the turn of the nineteenth century. It may have contributed to Rush's decision to incarcerate his eldest son John Rush (1777-1837) in 1809. John, according to his father, suffered from melancholy, derangement, and at least two attempts to end his own life.⁵⁹³

In a disturbing scene which might have been repeated on John Rush years later, Benjamin Rush attempted to "cure" a suicidal patient with the terror of death. By seeming

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to give into a "maniac's" desires Rush claimed the ill person could be brought back to health. In his *Medical Inquiries and Observations Upon Diseases of the Mind* Rush wrote,

A maniac in the Pennsylvania Hospital some years ago, expressed a strong desire to drown himself. Mr. Higgins, the present steward of the hospital, seemed to favour this wish, and prepared water for the purpose. The distressed man stripped himself and eagerly jumped into it. Mr. Higgins endeavoured to plunge his head under the water, in order, he said, to hasten his death. The mania resisted, and declared he would prefer being burnt to death. "You shall be gratified," said Mr. Higgins, and instantly applied a lighted candle to his flesh. "Stop, stop," said he, "I will not die now;" and never afterwards attempted to destroy himself, or even expressed a wish for death.594

Inside the hospital, Rush gathered anecdotes and observations that like of the suicidal man and Mr. Higgins to support his ideas about isolation and a combination of psychological and physical treatment. In the case of the hospital, he had the opportunity to collect quantitative and qualitative data on a comparatively large group of patients.

In 1787 Rush collected information on patients admitted to the hospital between 1784 and 1787 with notes of their gender, disease, cause of disease, and manner of its termination. According to the document, just under 40 women and nearly 80 men had been admitted to the Pennsylvania hospital. The vast majority, 90% were diagnosed with mania. Mania, like fever, could be traced to numerous exciting causes, from suppressed menses to "disappointment in love."595 In *Medical Inquiries and Observations Upon Diseases of the Mind*, Rush noted that at his request Nicholas Waters (1764-1796) had made an inquiry into the cause of madness for hospital patients. Rush probably found the document useful because he requested additional information in subsequent years. In 1810 and 1812 Rush


595 "List of Lunatics in the Pennsylvania Hospital (1787)," LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol XXXI.
requested another hospital physician, Dr. Vandyke to collect information on patients' hair and eye color. The results linked dark hair and light eyes to mental derangement, but suggested no mechanism.\textsuperscript{596}

6.3 Fixing the "Laboratories of Poison"

Charles Caldwell (1772-1853), a former student of Rush and never one to pull his punches, described all cities and towns as “laboratories of poison” responsible for the poor health of their citizens.\textsuperscript{597} Writing in 1801, he wrote in the wake of numerous epidemics in Philadelphia and had experienced the abundant and general filth of early nineteenth-century cities. Although yellow fever was his main target, the Philadelphia of Caldwell's and Rush's time generated epidemics of various types including measles, smallpox, influenza, and typhus/typhoid fevers which left their mark on the city and its inhabitants. Caldwell claimed that children who grew up in cities were sicker and smaller than their country counterparts. He stressed the danger of unnaturalness of the urban environment when he described the “artificial torrid zone” generated by cities in the summer. The heat and humidity trapped by buildings and pavement led to violent tropical fevers in temperate Pennsylvania and New York.\textsuperscript{598}


\textsuperscript{597} Caldwell, \textit{Medical & Physical Memoirs, Containing Among Other Subjects a Particular Enquiry into the Origin and Nature of the Late Pestilential Epidemics of the United States}, 41.

\textsuperscript{598} Ibid., 9, 40.
None of this should sound surprising. Chapters three and four discussed the omnipresent worry about the American climate in the minds of eighteenth and early nineteenth-century observers. The source of illness appeared obvious, putrid substances and warm weather. Its management, however presented a different challenge. If the urban torrid zones of the United States were artificial, then they could in theory be mitigated. City design, or lack thereof, perpetuated disease; new means of organization, construction, and behavior could fix them. The United States was not alone in its worry about health and urban landscapes. France, Britain, Russia, and Italian city-states all contended with filth and urban spaces and what that meant for their own countries. Sanitary policy, medical police, and restricted movement of goods and people through quarantines and lazarettos had a long history in most European states by the time Rush faced similar challenges in the United States. While some of these methods were adopted in Philadelphia, this section focuses on the role of professionals and professional organizations as advisory bodies in the young republic.

When it came to epidemics, Rush, like Caldwell, blamed them on the management of urban areas. As discussed in chapter three, general filth combined with an epidemic

atmospheric constitution triggered the disease effluvia which in turn invaded and disrupted the healthy physiological action of human bodies. Those who believed in the local production of fever often emphasized the noxious nature of the cities and towns where it took hold. Even physicians who believed that epidemics were imported from tropical climates blamed the same root cause: the policing of urban areas. The two groups, "localists" (or "anticontagionists") and "importationists" (or "contagionists") agreed that American cities were poorly protected from disease and that something needed to change. Filth, all agreed, harmed community health and needed to be mitigated by increased medical involvement in public life. This meant, as Jamse C. Mohr, has pointed out, a new and robust relationship between the medical profession and legal institutions in the early American republic.

Four years after the devastating 1793 experience, yellow fever dominated medical discourse and had become characteristic of American diseases. Physicians from around the country contributed to the conversation. In Philadelphia Rush banded together with some of his closest professional allies as the Philadelphia Academy of Medicine to formulate a plan of action. The academy existed as a rival organization to the College of Physicians of Philadelphia, from which Rush had resigned in 1793, as discussed in the

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600 The usual historical distinction between anticontagionists and contagionists dates to Erwin H. Ackerknecht's work and has been applied to early nineteenth-century fever debates in Europe as well as the United States. Thomas Apel, however, uses the terms "localist" and "importationist" to describe the parties in the American yellow fever debate. His terminology correctly moves the crux of the debate from one of disease spread to one of origin in the case of American physicians. Erwin H. Ackerknecht, "Anticontagionism Between 1821 and 1867," *Bulletin of the History of Medicine* 22 (1948): 562–95; Apel, *Feverish Bodies, Enlightened Minds: Science and the Yellow Fever Controversy in the Early American Republic.*


602 Arner, “Making Yellow Fever American: The Early American Republic, the British Empire and the Geopolitics of Disease in the Atlantic World.”
introduction, in protest against their refusal to endorse his advice on fever treatment and prevention. The Academy also tried to establish itself as an advisory body for government officials. This network strategy is again something common in Rush’s appeals to correctness and authority. Where one’s own experience ended those of a trustworthy source could reasonably pick up the slack. By the time these suggestions reached the governor writers on both sides of the Atlantic knew of and commented on Rushian views of yellow fever. In subsequent publications Rush cited fever literature in general to support his views of a unified concept of disease.603

The organization's first public statement was a formal letter to Pennsylvania governor Thomas Mifflin (1744-1800) in December 1797. Mifflin had requested information on the nature of the disease and ideas for how to prevent its annual return. The document forms a concise overview of Rush's theories regrading epidemic prevention, his association with political elites, and the manner in which he guided the thoughts and inquires of the next generation of doctors. Most of the suggestions focused on the city and how to medically police it. If the city had followed through with the recommendations it would have granted medical professionals legal power over the movement of citizens and management of personal property. They planned to identify and eliminate possible sources of putrefying filth in both public and private spaces. The recommendations would have required home-owners to white-wash basements, the city to wash streets, and remove noxious matter left by animal and vegetable waste.604 Each idea targeted organic sources

603 DeLacy, “Nosology, Mortality, and Disease Theory in the Eighteenth Century.”

of putrefaction which triggered disease. The authors complained that Philadelphia’s water came from contaminated wells, that ships entered the harbor frequently uninspected by physicians, that general organic “filth” accumulated in streets, and that perishable cargo was left on the dockside. This last remark echoes Rush's 1794 argument that rotting coffee and paper triggered epidemics in Philadelphia and New York City, respectively. Laws existed to combat these problems, but according to the physicians, they had been poorly enforced.\footnote{Health and safety laws for the province and after independence commonwealth of Pennsylvania made provisions for ship inspections, set standards for immigrant ship construction, and coordinated medical surveillance between Philadelphia, Southwark, and the Northern Liberties. Their efficacy, however, did not impress the legislature any more than the doctors and they were often revised in the 1780s and 90s. See James T. Mitchell and Henry Flancer eds. \textit{The Statues at Large of Pennsylvania, 1680-1809}, \url{www.palrb.us/stlarge/index.php}}

In the Academy's founding document additional previsions are made for basic epidemiological research. Caldwell recalled in his autobiography that the organization sent him on a fact-finding mission to inquire into the causes of sporadic cases of yellow fever in New Jersey. He concluded that he was "unable to trace them [the fever's causes] to any source having the slightest connection with a foreign country. Their origin was as clearly domestic as that of intermitting fever or common catarrh."\footnote{Caldwell, \textit{Autobiography of Charles Caldwell, M.D. with a Preface, Notes, and Appendix, by Harriot W. Warner}, 283.} In addition to individual missions the Academy's constitution included several committees including one to compile bills of mortality from American cities and another charged with analyzing the chemical composition of the atmosphere.\footnote{Assessment of the atmosphere in Philadelphia seems to have followed John Huxham's work in England. Academy of Medicine of Philadelphia, \textit{Academy of Medicine of Philadelphia Constitution} (Philadelphia, 1798).} The latter group applied concepts of eudiometry first popularized in Europe and promoted by Rush's international colleagues. Priestly was
working with eudiometers by the 1770s and Italian scientist Alessandro Volta (1745-1827) made improvements on the device to detect inflammable air by 1778. In terms of public policy Eric Weidenhammer argues that both Priestly and Pringle supported atmospheric monitoring to better correlate health and environment. Rush's interest in the quality of the atmosphere was not unique, but the Academy was the first to propose regular measurements in the Philadelphia. In the academy constitution members were charged with measuring the state of the atmosphere including temperature, barometric pressure, and purity with a eudiometer.608

The Academy's recommendations in the 1797 letter fall into three sections: an introduction, a description of sources of the fever, and means of preventing the fever. In the first and second sections the authors provided a summary of Rush's beliefs with respect to yellow fever's origin and means of propagation. They stated that it stemmed from putrefaction and tended to exert the most damage on the liver, hence the fever's “bilious” nature. To elaborate in section two, several of the authors appealed to their own observations and those of colleagues from other cities and states.

The third and final section of the document follows the above logic and formed a kind of sanitation wish-list on behalf of the organization. Based on their resolution that the fever was not imported, but the product of putrefaction and an unfortunate atmospheric constitution, their suggestions for sanitation and surveillance indicate a desire for a new


284
type of urban space. Beyond keeping dangerous matter out of the city, the report recommended the appointment of physicians to inspect the city, Northern Liberties, and Southwark for matter which could trigger an outbreak. Imported goods like coffee appeared more susceptible to the type of putrefaction that led to yellow fever, but local organic substances could also be to blame. Physicians could report cases of putrefaction, or likely putrefaction, and stop an epidemic before it began.

Such inspections would have ideally taken place in the area’s “streets, gutters, cellars, gardens, yards, stores, vaults, ponds. &c.” They also recommended “washing” the city in key areas with pump water, better ventilation in ships, and the unloading of cargo away from the city between June and October. By following strict rules of cleanliness, the authors hoped to make Philadelphia as safe as model cities in Europe, especially in the Netherlands. As Simon Finger has pointed out, as early as the 1770s, the healthy park-like port of William Penn’s design was a long-lost dream. By the 1790s physicians and city officials were faced with a serious problem in need of a significant structural overhaul. For the doctors the answer differed little from that of their seventeenth-century colleagues who had advised Penn to build as clean, orderly, and park-like a city as possible to avoid disease, criminality, and fire. Add to this the widely-accepted view that

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610 Rush et al, 1797 December- Report to the Governor

611 Ibid.

America’s virtue and future lay in pastoral rather than urban landscapes and a patriotic as well as medical reading of the recommendations takes shape.

The letter failed to radically change state laws governing waste in the short term or make Philadelphia a disease-free city. In 1798 and 1799 yellow fever returned and nearly matched the mortality of 1793. In 1803, Caldwell reviewed municipal-level policies and publically called for sanitary reform with physician oversight.613 He hoped that the pamphlet would help change statues up for revision that year. After 1799 doctors did not gain authority over lay civic leaders and Caldwell felt the city remained dangerously dirty. In many respects he restated the suggestions of the 1797 letter – of which he was a co-author -- in more detail, more demanding terms, and for a wider audience. He wrote “it is literally impossible that yellow fever should ever overrun our city unless it be aided by internal agents. For, whatever be the source from which this disease springs, whether septic exhalation, or secreted contagion, it is known to be an evil that thrives only in a contaminated atmosphere.”614

Despite continued resistance, the medical profession's policing impulse left a lasting mark on Philadelphians' attitudes to unattended organic substances. Throughout most of the nineteenth century imported goods- especially hides, coffee, and rags- remained a target for inspection at the lazaretto.615 Rotting goods and dank ships' holds could brew the required putrefaction for disease spread. Nor did their concern begin and

613 Charles Caldwell, Thoughts on the Subject of a Health-Establishment for The City of Philadelphia (Philadelphia, 1803), 5.

614 Ibid., 3.

615 Barnes, “Cargo, ‘Infection,’ and the Logic of Quarantine in the Nineteenth Century.”
end with yellow fever. Any epidemic could point to the dangers of urban spaces. The very names of some common ailments -- ship fever, jail fever, and camp fever -- all indicated that poor management of space could have deadly consequences. Cities like Philadelphia, crammed at the edge of the Delaware river, fostered some of the same environments as other crowded situations.

Controlling disease during the yellow fever years became a matter of national security. In 1796, the federal government showed support for epidemic prevention by empowering the president to aid in the enforcement of state and local laws. The statute, passed on May 27th specifically stated “[t]hat the President of the United State be, and is hereby authorized [by Congress], to direct the revenue officers and the officers commanding forts and revenue cutters, to aid in the execution of quarantine, and also in the execution of the health laws of the states, respectively, in such manner as may to him appear necessary.” The statement does not specifically address yellow fever, however, at the time of its passage the tropical epidemic constituted the major cause of quarantine. It also hints at the complexity of bringing federal power to bear on matters not directly addressed in the constitution. The statute did not empower the Executive to order or primarily manage a quarantine, only to direct federal agents to aid states. What constituted a quarantine, how it would be enforced, and which bodies or goods were prioritized for extra scrutiny were questions left unanswered by the proposed legislation.

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616 This association was clearly and influentially made by military doctors and surgeons, most famously John Pringle. Pringle and Rush, *Observations on the Diseases of the Army*.

617 “Chapter XXXI: An Act relative to Quarantine, May 27, 1796,” Fourth Congress, Session 1, 476.
Additional attempts at congressional legislation from the same period would have added the setting up of quarantine to the president's executive powers. Its failure to pass cites both political resistance to increasing the power of the executive and the practical worry about communicating reliable and timely information about disease to a president who might be hundreds of miles away. The question of quarantine came before congress again in 1803 to the consternation of physician and Senator Samuel Latham Mitchell (1764-1831) of New York. He wrote in a letter to Rush regarding an enclosed report and hoped Rush would "read it and promulgate it. I have endeavoured to bring the mischief home to the Vessel and Cargo; and to exonerate the ports and their inhabitants between whom the Vessel and Cargo pass. -I made a speech on the subject of Quarantines in the House." Presumably Mitchell, a localist, spoke against quarantine as a gold-standard line of defense. He also was a rare example of a physician who literally took his Rushian theories into the political arena and consulted with Rush on matters in which medicine and the law crossed paths.

Somewhere between large-scale intervention and small-scale changes to personal habit a nation’s health, morality, and prosperity could be found. As if to mark the importance of such a move with an unforgettable symbol the main hub of the water system, the second pump house located where Philadelphia stands now, was also a piece of

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neoclassical art situated in a designated green space. Although the Latrobe system would only last a decade, Philadelphians’ pride in their water endured. The larger Fairmount waterworks replaced Latrobe’s original system in 1812 and continued to supply the city for most of the nineteenth century after an upgrade in 1821. By the 1850s they sat in their own enormous park stretching along both sides of the Schuylkill as a symbol of both health and a civic pride.

6.4 Conclusion

At the turn of the nineteenth century, an unnamed student recorded Rush claiming, “I am not so sanguine as to suppose that it is possible for man to acquire so much perfection, from science, religion, liberty, & good government as to cease to be mortal; but I am fully persuaded…it is possible to produce such a change in his moral character, as shall rise him to a resemblance of angles [sic], nay, more to the likeness of God himself.”620 Such comments certainly fit Rush’s style. His optimism about the United States was grounded in his approach to medicine, climate, and culture. The healthy and republican vision he had for his country rested on scientifically-grounded institutions. Most of his dreams proved too big for implementation. Pennsylvania did not adopt his education policy. Rush's plans for the hospital went forward in a haphazard manner and the city never fully adopted his yellow fever prevention scheme.

Nevertheless, by 1801 Philadelphia boasted the most advanced water works in the country with the Schuylkill River rather than shallow ground water as its source. Pumps

620 Unknown, KCRBM, Mss. Coll 225, Item 17.
and fountains not only provided increased access to clean drinking water, but also water for “washing” the streets. Ships attempting to enter the port during the dangerous summer months first stopped at the new lazaretto several miles downstream for inspection, disinfection, and quarantine of goods (and people if they appeared ill). By the early nineteenth century, the board of health possessed increased health surveillance powers and additional funding, including a temporary property tax hike to cover the operating costs of the Marine and City Hospitals. In education, even without a state-funded system, Dickinson College in Carlisle and Franklin College in Lancaster, Pennsylvania were teaching students by the late 1780s. The latter, situated in the heart of German-speaking Pennsylvania, came close to the bilingual ideal of Rush's plan and existed as an ecumenical institution with input from both the Lutheran and Reformed communities. Finally, the publication of Diseases of the Mind in 1812 solidified Rush's legacy as the "Father of American Psychiatry." Even as his earlier works on mental derangement and personal practice with the "insane" faded from memory, his late in life textbook remained a staple of the American medical establishment for much of the nineteenth century.

Republican institutions like the Pennsylvania Hospital, schools, and sanitary infrastructure form the tangible results of Rush's theoretical discussions of vibrations and


622 Chapter 2007, An Act to Alter and Amend the Health Laws of this Commonwealth, and to Incorporate a Board of Managers of a Marine and City Hospitals of the Port of Philadelphia, and for Other Purposes Therein Mentioned, The Statutes at Large of Pennsylvania (1798).

excitement. In these spaces theory and technology intersected with political and social willpower to encourage a particularly American view of "improvement." John Duffy notes the remarkable manner in which Americans responded to yellow fever with public works projects, stating that "[m]uch of what was done probably reflects the paternalism of the eighteenth century, but it also shows the beginnings of social consciousness among middle and upper classes."\footnote{Duffy, The Sanitarians: A History of American Public Health, 50.} Benjamin Rush exemplifies this transition to social consciousness. His improvement schemes and attempts to understand the social and physical spheres of human existence through a scientific lens were marshalled to craft a new American society. The new republican country could work, as if by machine, for its own improvement, a sentiment which outlasted its chief architects.
CHAPTER SEVEN:
CONCLUSION

In this frontier of the Republic of Letters, in the 'ultima Thule' of Literature your writings have brought with them some of the purest rays of truth that have yet enlightened our horizon. Remote from the authority of Colleges & unawed by any unbounded admiration for old systems, it is not impossible that Kentucky may, before many years, make considerable additions to our stock of Medical knowledge.\(^\text{625}\)

Writing from Lexington, Kentucky on behalf of their newly-formed medical society Dr. Samuel Brown turned his eyes eastward for a moment to congratulate Benjamin Rush on his inclusion to their number as an honorary member. His address was exaggerated. Lexington in 1799 was a western settlement, but not beyond the known world, no \textit{ultima Thule}. Beyond the hyperbole, however, Brown’s letter hints at the future of Rush’s American medicine and his value to the profession at the dawn of the nineteenth century. To men like Brown Rush showed them that American medicine could be truly American. He helped Britons living in the American colonies see themselves as a biologically distinct nation with its own character, institutions, and diseases. Together these parameters made up the American constitution a concept which remained in flux as the country grew both demographically and geographically. He argued that the country required an independent in order for the profession and the nation to. The challenges faced by American bodies, minds, and institutions were unique and required a clear and concise approach to medicine.

\(^{625}\) Samuel Brown to Benjamin Rush (1799), LCP, Rush Family Papers, Benjamin Rush Correspondence, Vol. XXI.

292
Rush's system which focused on general terms of excitement and excitably could readily move from one region to another and explain the medical, physical, and social environment.

From the heady optimism of enlightenment and a world turned upside down to the despair of epidemics and political infighting Benjamin Rush clutched ever more tightly to the dream of explaining the human condition and reshaping the world in God’s image -- revelation not in theology, but in physiology. The human body and mind, if properly managed could bring men close to angels and the American republic closer to the kingdom of heaven. In hindsight, his quest appears quixotic and hopelessly utopian. The end of Rush’s road produced no DNA, penicillin, or germ theory. The nineteenth-century prizes for great insight and understanding have been bestowed upon French pathologists, British sanitarians, and German biochemists. From one perspective Rush looks like the last gasp of an eighteenth-century tradition of medical systems. Meanwhile, latter-day system-builders cast as irregulars and quacks looked down their noses at the thoroughly "regular" Rush. Nevertheless, Benjamin Rush stubbornly remains a fixture of the American medical landscape. As John Duffy puts it "[n]ineteenth-century medicine took its unique character in America from the dialectic between professionalism and the nation's democratic culture." This dissertation has argued that Benjamin Rush set up the parameters of that dialectic. He both relied upon insights and theories from Europe and

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rejected them in the name of a more republican version of theory and practice designed to promote and heal republican bodies.

The American system Rush built relied on a strong tradition of practice interested in the social applications of medicine borrowed from Scotland. At the same time questions of the physical and political health of the republic fundamentally shaped the manner in which American medicine developed. Independence became a lasting rallying cry for the profession well into the nineteenth century. At the University of Pennsylvania in 1848 medical professor Thomas D. Mitchell chose Rush as the subject of his introductory essay for the year. He praised Rush's memory as a man committed to the improvement of his country stating that Rush "more than any who had preceded him, felt and acted under the inspiration of the spirit of improvement. He was not one of your in statu quo men, but in the phraseology of the West, he believed in going ahead."628

That Rush believed in improvement is evident in each chapter of this dissertation. His quest for perfection of bodies, minds, and society drove what might be called his research project. However, this dissertation also argues that Rush's social and political agendas are not sufficient to explain the system he arrived at or his professional appeal. Like many of his generation Rush mixed areas of inquiry which are now separate disciplines. Chapter two demonstrated where some of Rush's foundational ideas came from, how he blended knowledge, and the fundamentals of his system of medicine. The mixed nature of knowledge continued as a theme in chapter three which showed how Rush came to think of the United States as a unique physical space and how to leverage local

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628 Mitchell, The Character of Rush, an Introductory to the Course on the Theory and Practice of Medicine in the Philadelphia College of Medicine, 15.
and foreign information to better describe it. This included descriptions by patients, naturalists, and trained physicians. In further research I plan to continue building out the knowledge networks Rush belonged to through additional correspondence collections and literary citations. In the long term this should provide a much clearer understanding of physician knowledge-making networks and professional communication in the early United States.

Chapter four introduced the need for improvement through the lens of two geographically-determined diseases: yellow fever and endemic goiter. The unpredictable climate of eastern North America appeared responsible for the two diseases which, although different in terms of location and mortality, threatened the success of the nation as a healthy and moral republic. The diseases became American when they struck frequently and in a manner that did not conform to tropical or European experiences with the ailments. Chapter five showed how Rush found physical explanations for racial and gender differences in the United States which reinforced a vision of a white middle-class republic led by white men quietly guided at home by virtuous and rational white women. Race was a malleable concept created by a combination of climate and culture. The latter could be altered and planned to promote healthy and civilized living. Whiteness was the ideal, but in Rush's view other races could in time be literally whitened by living under the correct conditions. Gender, on the other hand, was a fixed expression of strict sexual difference between male and female bodies. Each body type had its ideal: the sedentary female and the energetic male. Sensitive women, moreover, could serve as "barometers of civilization" with their appearances, menstrual habits, and experiences in childbirth bearing witness to various degrees of civility or savagery.
Finally, chapter six focused on the ultimate purpose of Rush's many-faceted projects, the development of institutions to ensure healthy republican living. His work on education drew heavily from concepts of early childhood development grounded in eighteenth-century medicine and psychology. By establishing schools to shape American boys and girls into "republican machines" Rush was essentially practicing preventative medicine in encouraging healthy and moral lifestyles. In some cases, however, the machines could "break" and required medical attention at institutions like the Pennsylvania Hospital. At the hospital Rush conducted the work which made him known as the "Father of American Psychiatry" and pioneered a somatic explanation for mental disorder and the assumption that institutional isolation was the best course of action. Finally, the chapter looks at Rush's short-lived professional organization the Academy of Medicine of Philadelphia, an organization designed to study Philadelphia as a disease-causing landscape and provide expert knowledge to city and state officials. In this instance Rush was the clearest about the strong and visible role he wanted to promote for physicians in a republic. Not only could they be doctors to the body but also healers to the body politic as the representatives of science for the nation.

The pattern Rush set in motion for an independent and exceptionalist American medical profession had lasting consequences. But they also had important meaning in their own time. Rush declared independence in medicine and gathered a collection of ambitious young men around him with the promise that they could build the greatest version of a republic the world had known. In doing so Rush represented his time and place. The scientific minds of the American republic wanted to prove their worth and their unique insights to an intellectual world dominated – from their perspective -- by Britain and
France. Rush showed that medicine was one way to achieve that independence and recognition. In this sense he truly did make American medicine, American bodies, and American minds.
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303


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