TEMPERATENESS, TEMPERANCE, AND THE TROPICS: CLIMATE AND MORALITY IN THE ENGLISH ATLANTIC WORLD, 1555-1705

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By

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This dissertation investigates the origins and elaboration of the fear of hot climates that attended England’s overseas expansion into the Atlantic world during the sixteenth and seventeenth centuries. From the middle of the sixteenth century, the English understood the climates of West Africa, the West Indies, and Virginia through interrelated concepts of seasonality and morality. They believed the cycles of summer and winter, wet and dry seasons, and days and nights cooled hot climates and made them habitable. As networks of trade and migration linked these regions during the seventeenth century, the English came to regard the climate of each region differently. By the eighteenth century, many regarded the African climate as hostile to European presence; in the West Indies they believed a process of bodily change adapted the bodies of newcomers to the climate; and a rising population of colonists born in Virginia characterized the climate of their native land as healthy and its heat merely a nuisance.

Grounded in sources ranging from travel narratives to medical texts, government records to natural histories, the dissertation’s five chapters demonstrate how contemporaries deployed concepts of seasonality to define the torrid zone as “temperate” and habitable from the middle of the sixteenth century. While the English considered tropical West Africa to be temperate and habitable in the sixteenth century, they reassessed this view over the course of the seventeenth century, explaining disease mortality as a combination of seasonal phenomena and immoral behavior. In the West Indies the English understood the tropical climate through the lens of
drunkenness, attributing the heavy disease mortality of English colonists in Barbados and
Jamaica to their supposedly immoderate alcohol consumption. In temperate Virginia observers
decried the colonists’ busy production of tobacco as a form of idleness, calling on them to heed
the dictates of a warm climate to produce a diverse array of commodities not available in the
northerly climate England. In the early eighteenth century the experiences of three writers on
West Africa, the West Indies, and Virginia, respectively, demonstrate how English perceptions
of the climate of each region had diverged during the preceding century.
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INTRODUCTION

In 1555 a reader who perused Richard Eden’s recently published *The decades of the newe worlde* could read an excerpt from the Spanish chronicler, Gonzalo Fernández de Oviedo y Valdés, which described the climate of the torrid zone, the belt of latitude that encompassed the surface of the earth between the Tropics of Cancer and Capricorn. Regions in the torrid zone, Oviedo explained, were “naturally hotte, although they bee otherwise temperate by the divine providence.”¹ Decades later, a merchant contemplating investment in a trading venture to West Africa could turn for advice to *The Golden Trade* (1623), a prospectus for English trade to the Gambia written by Richard Jobson. Having survived a trading venture deep within the torrid zone, Jobson cautioned future travelers against drinking distilled liquors during the heat of the day. It was much better to drink one’s aqua vitae in “the coole of the morning, and again in the evening,” he wrote, “[when] wee receive it with much more temperance, and a little giveth satisfaction.”² Across the Atlantic in Virginia, a planter who read Samuel Hartlib’s *The Reformed Virginian Silk-Worm* (1652) would find himself urged to produce silk because “no part of the World is more proper for Silk then Al-sufficient-Virginia: In regard of the excellency of the temper of the Climate,” which boasted native silkworms of great size and the mulberry trees on which the worms fed.³ And near the end of the seventeenth century, a London barrister who consulted a collection of *The Laws of Jamaica* (1683) might be surprised to find that tropical island’s statutes prefaced with a defense of its climate. “Tho usually reputed very hot,” its author

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wrote, Jamaica was “as healthful a place as any part of England, for sober temperate persons … but on the other side I think it as pernicious a place to debauch in, as any in the world.”

This dissertation investigates how the English understood the hot climates of West Africa, the West Indies, and Virginia, lands linked by slavery and plantation agriculture in the emerging English Atlantic world during the seventeenth century. Central to English ideas about these environments was the multifaceted concept of temperateness. What did it mean for a climate to be temperate, and what did it mean for people to be temperate? How were they related? I argue that the English understood the hot climates of the seventeenth-century Atlantic world through interrelated concepts of seasonality and morality. Between 1555 and 1625, promotional writers such as Richard Eden (1555), Richard Hakluyt (1589; 1598-1600), and Samuel Purchas (1625) created compilations of travel writings encouraging and celebrating English overseas expansion. They included in their books texts written by Spanish travelers challenging classical cosmographical theories that held the torrid zone to be incapable of supporting life because of its great heat. They argued instead that the existence of regularly occurring seasonal floods and rains, along with phenomena of shorter duration, such as the cycle of hot days and cool nights, cooled the temperature and facilitated agriculture, thus making the torrid zone habitable. These ideas of seasonality shaped English conceptions of hot climates from the 1550s into the early eighteenth century as they traded to West Africa and settled in Virginia and the West Indies.

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During the seventeenth century the English joined together England, Africa, the West Indies, and North America into an English Atlantic world linked by the circulation of people, goods, and ideas. The economic engine of the English Atlantic was the plantation complex, in which African slaves produced agricultural commodities such as sugar and tobacco on plantations in the Caribbean and North America. As they purchased slaves and non-human commodities in Africa, the English encountered tropical diseases such as malaria and yellow fever. Shipping the slaves across the Atlantic to labor on plantations in the West Indies, they inadvertently imported the microbes that cause malaria and yellow fever in the bodies of the slaves and the crews of slave ships. Like West Africa, the West Indian islands of Barbados and Jamaica thus became host to endemic malaria and epidemics of yellow fever, so that both regions were known in the seventeenth century for their deadliness.

I argue that as the seventeenth century progressed, the English understood the climates of Africa and the West Indies in intertwined seasonal and moral terms. The seasonal conception of hot climates resonated strongly with early modern medical and moral ideas. Steeped in Hippocratic medical doctrine, the English they attributed the illnesses they suffered in the tropics to a combination of environmental phenomena and personal behavior. Since the classical era, Europeans had believed changing climatic and weather conditions induced disease in healthy bodies. Likewise personal behavior in the form of temperance - adherence to a moderate regimen in the “non-naturals” of food and drink, exercise and rest, sex and evacuation - was a crucial determinant of health or sickness. Sickness and health thus derived from individual moral

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8 Throughout the dissertation I use temperateness to refer to a quality of the climate or physical world. I use temperance and intemperance to refer to the moderate or immoderate behavior of people, respectively. On the relationship between temperance and health, see (among many others) Owsei Temkin, Galenism: The Rise and
choice, so that a person who failed to adhere to a moderate regimen was ultimately responsible for whether he lived or died. In the Atlantic world, contemporaries identified overconsumption of alcohol as particularly dangerous. As English travelers and settlers succumbed to disease in the hot climates of the Atlantic world, drunkenness and other forms of intemperance, compounded by the hot daily temperatures, cool nights, rains, and other phenomena, garnered a significant share of blame for sickness.

Over the course of the seventeenth century, the conceptual relationship between seasonality, health, and morality contributed to diverging conceptions among the English of the environments and habitability of West Africa, the West Indies, and Virginia. West Africa’s disease environment made it the most deadly region in the Atlantic world. Here the English interpreted their grievous disease mortality largely as the effect of seasonal change. Intemperance hastened death, they believed, but by the early eighteenth century what they interpreted as increasingly irregular seasonal changes had rendered Africa a “white man’s grave” largely inhospitable to European habitation. Meanwhile in the English West Indies, the introduction of the plantation complex beginning in the 1640s made the islands both deadly and profitable. Shackled to slavery and the wealth produced by sugar, physicians and colonists argued that immoderate alcohol consumption in the hot climate was the root of illness. The colonists were at fault for their own illnesses and could adapt to the islands by adhering to a moderate regimen. While Virginia’s population grew by immigration for most of the seventeenth century, by the 1690s the number of births to English colonists exceeded deaths. By the early eighteenth century, a rising generation of elite creole planters defended the climate of their native

land as temperate and ridiculed what they considered the foibles of English visitors who complained of Virginia’s heat and sickliness.

**Historiography**

This dissertation is informed by the intertwined historiographies of early America, the Atlantic world, the environment, and the tropics. Environmental conditions have long fascinated historians of early America and now the Atlantic world. In the case of the Virginia colony, for example, historians have investigated the early travails of the Jamestown settlement, pondering the first colonists’ notorious mortality and their failure to produce food for themselves. With their interests in demography, historians of the Chesapeake School of early American social history gravitated to questions about mortality in the early colonies. Their work paralleled emerging environmental approaches as they investigated the disease environment of early Virginia and identified connections between the environment, morality, and colonial perceptions of the natural world. In 1976 Darrett B. Rutman and Anita H. Rutman brought insight from medical literature to bear on the question of European mortality in the early Chesapeake, focusing on environmental conditions in the tidewater and the dynamics of malaria transmission by mosquito vectors to argue convincingly that malaria brought via European agency in the early seventeenth century was the source of the “agues and fevers” that plagued the English in early Virginia.  

If malaria did not become endemic in Virginia until the 1680s, as the Rutmans believed, then the work of historical geographer Carville V. Earle (1979) helped explain the mortality of early Jamestown. Earle argued the location of Jamestown near the oligohaline zone

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of the James River – the region of the James River estuary where heavier salt water from the
Chesapeake Bay met lighter river water - trapped polluted water near the settlement each
summer. Drinking from river water despoiled with concentrated trash and ordure, the colonists
were stricken with a complex of typhoid, dysentery, salt poisoning, and edema that killed many
and rendered survivors unable to work.\footnote{Carville V. Earle, “Environment, Disease, and Morality in Early Virginia,” in \textit{The Chesapeake in the Seventeenth Century}, ed. Thad W. Tate and David L. Ammerman (Chapel Hill: University of North Carolina Press, 1979), 96-125.}

These students of mortality in the colonies necessarily touched upon the ways the English
characterized the environment. Crucial in this work has been Karen Ordahl Kupperman, whose
trio of publications on English conceptions of the American climate remains frequently cited in a
American Climate in the Early Colonial Period,” Kupperman surveyed the English encounter
with American climates from the West Indies to Newfoundland into the late seventeenth century,
describing how the English arrived in the Americas with a preformed set of ideas about the
climates they would encounter. Reasoning that places that shared the same latitude shared
climatic characteristics throughout the world, the English expected to grow crops from a wide
range of climates that English agriculture could not support. Unaware of variations in the
climatic systems of Europe and North America, they found that the American climate did not
support the warm weather crops they had hoped. A key observation for my work has been
Kupperman’s finding that the English adjusted their agriculture to the new environment of
America while continuing to believe in the possibility of growing crops as dictated by latitude,
falling into the “well-worn theoretical groove” of classical latitudinal reasoning. In 1984 she turned her attention specifically to hot climates in the southern part of British North America and the West Indies. Kupperman introduced the concept of a “fear of hot climates,” a “profound anxiety” suffered by the early modern English when they contemplated settlement in the sickly hot climates of the Atlantic. She brought attention to bodily theory in the form of seasoning, as the English interpreted the illnesses they suffered as a process of adaptation by bodies born in temperate England to the hotter climates of America and the Caribbean. By the eighteenth century, many English colonists had adjusted to these conditions, changing their clothing styles and altering the landscape to suit them, but newcomers from England continued to stick to unsuitable heavier clothing styles, evidence of the continuing power of habit, tradition, and older ideas.

I approach this study of the English experience of hot climates in an Atlantic context. I examine similarities and differences in ways the English conceived of the climates of West Africa, the West Indies, and Virginia as they yoked these regions together into an Atlantic economic and cultural system characterized by plantation economies and African slave labor during the seventeenth century. West Indian islands such as Barbados and Jamaica occupied the

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13 Kupperman, “Puzzle of the American Climate,” 1277.
15 Kupperman’s attention to cultural history built upon that of Richard S. Dunn, whose classic social history of the seventeenth-century English West Indies featured two chapters of cultural analysis on “life in the tropics” and “death in the tropics” that inform our views of the West Indian planter class to this day. Richard S. Dunn, Sugar and Slaves: The Rise of the Planter Class in the English West Indies, 1624-1713 (University of North Carolina Press, 1972), chs. 9 and 10. For an appreciation of Dunn’s influence on later scholarship of the West Indies, see Carla Gardina Pestana, “West Indian Variations: New Histories of the Early Caribbean,” The William and Mary Quarterly, 3rd Ser., vol. 69 (2012), 843-852.
hub of England’s emerging Atlantic empire during the seventeenth century.\textsuperscript{17} England’s richest overseas possessions, their plantation economies were sustained only by the continuous importation of African slave laborers after the English colonists made the transition to sugar production beginning in the 1640s.\textsuperscript{18} Sugar production worked vast environmental change in Barbados and Jamaica. Over the course of the century, some 266,000 Africans were disembarked in the two islands.\textsuperscript{19} The slaves and the European sailors who ferried them across the ocean carried in their bodies the microorganisms that cause malaria and yellow fever, and the slave ships on which they traveled also hosted the mosquito vectors of these diseases. The establishment of the plantation complex thus transformed the disease ecologies of the West Indies: the sugar plantations built and powered by the slaves proved ideal for the flourishing of malaria and yellow fever, concentrating disease causing microorganisms, their mosquito vectors, and human hosts in a hot, humid, and hospitable tropical climate.\textsuperscript{20} As tens of thousands of slaves died from poor conditions, disease, and overwork over the course of the century, so too did thousands of English colonists, so that by the late seventeenth century the islands were known throughout the English Atlantic as charnel houses. I thus examine English characterizations of the climates of both the West Indies and West Africa, constituent parts of a single economic system with shared tropical climates and shared disease environments. In the


\textsuperscript{19} \url{http://slavevoyages.org/tast/assessment/estimates.faces?yearFrom=1601&yearTo=1700&flag=3&disembarkation=301.302}

process I work to integrate Africa more fully into Atlantic history by focusing on English conceptions of the West African climate.\textsuperscript{21}

Like the West Indies, seventeenth-century Virginia developed a slave-based plantation economy that produced tobacco (instead of sugar) for export to Europe.\textsuperscript{22} Virginians purchased their slaves from Africa via the West Indies, providing the Caribbean colonies with the agricultural produce of the Southside and the eastern shore in exchange for the enslaved laborers that produced tobacco.\textsuperscript{23} Like the West Indies and West Africa, the colony experienced hot summers and hosted mosquito vectors for malaria, resulting in heavy disease mortality that precluded natural increase of the English population until 1690s.\textsuperscript{24} Yet Virginia differed from the West Indies and West Africa in that it is situated within the temperate zone rather than in the tropics. In many ways the distinction between tropical and temperate climates was and is culturally constructed; the designation of the tropics as a region bounded by imaginary lines of latitude at 23.5° north (the tropic of Cancer) and 23.5° south (the tropic of Capricorn) is an arbitrary one, and characteristics of the climate change more or less continuously with changes in latitude. I thus use Virginia as a control to investigate whether the English in the seventeenth century treated the hot and humid summers of the tidewater, a place located in the temperate zone, differently from the hot and humid climates of the tropical Caribbean and West Africa. Did

\textsuperscript{21} Games, “Atlantic History,” 754.
\textsuperscript{24} John Duffy claimed Virginia hosted malaria throughout the seventeenth century. John Duffy, \textit{Epidemics in Colonial America} (Baton Rouge: Louisiana State University Press, 1953), 207-213. The Rutmans dated the arrival of vivax malaria to the first half of the seventeenth century and the more dangerous falciparum malaria at least as early as the 1680s. Rutman and Rutman, “Of Agues and Fevers,” 42. The disease environment of Virginia differed somewhat from that of the Caribbean plantation colonies, in part because it experience a cold winter that killed off mosquito populations each year and because tobacco plantations did not require the numerous clay jars and molds for sugar production that provided breeding grounds for the insects.
characterizations of similar climates - similar in that the English who lived in them and who observed them from elsewhere in the Atlantic came to refer to them as “hot climates” characterized by high mortality and immoral inhabitants - change based upon their location within or without the culturally-constructed torrid zone?

Two related themes in environmental history have shaped this dissertation. The notion that nature is culturally constructed has proven useful in conceptualizing the response of individual English people to the experience of hot climates. Historian Richard White mused in 1992 that new environments are never truly unknown; people bring to them expectations shaped by historical processes.25 White wrote that “no new land, no new place is ever terra incognita. It always arrives to the eye fully stocked with expectations, fears, rumors, desires, and meanings.”26 And as he noted of French and Spanish explorers in the seventeenth-century Americas, “the discoverer who mediated between Europeans and what lay beyond their sight remained dominant [in setting metropolitan conceptions of American nature]. But what the discoverers saw often could not be seen by those who followed.”27 In the context of England’s encounter with hot climates in the seventeenth century Atlantic world, White’s observations

26 Ibid., 874.
suggest that older ideas about tropical climates had the potential to hang about unchanged despite the personal experiences of thousands English travelers. Evidence of the extent to which ancient ideas of an uninhabitable tropics survived into the early modern era is readily available in the myriad descriptions by European travelers of tropical climates not as hellishly hot, but rather as surprisingly temperate.

White’s observations dovetail with a second important theme of environmental history: in theory and in practice, environmental historians have often approached the history of the interaction between humans and non-human nature as a dialectical process. Yet if nature is culturally constructed, the historian Donald Worster warned that “it is a completely arbitrary act to put culture and nature into separate categories, requiring rigidly separate methods of analysis.”\(^28\) Thus scholars such as the historian William Cronon (1983) and the geographer David Watts (1987) have treated their ecological approaches to environmental history as dialectical processes.\(^29\) For both scholars, Europeans altered new lands according to European custom. In the process they altered the ecological processes of those lands, which in turn forced changes in European culture. In 2010 J. R. McNeill demonstrated the disease environment of the Greater Caribbean that resulted from the production of sugar and other crops by African slaves had an outsized influence on the outcomes of imperial wars beginning in the late seventeenth century, helping creole societies to fight off attackers from Europe.\(^30\) Likewise a medicine of hot


\(^{30}\) McNeill, *Mosquito Empires*. 
climates began to emerge in the Atlantic world during the second half of the seventeenth century as a result of this ongoing ecological change.\footnote{Mark Harrison, *Medicine in an Age of Commerce and Empire: Britain and its Tropical Colonies, 1660-1830* (Oxford: Oxford University Press, 2010), 50-51.}

Finally, the dissertation contributes to the cultural history of European overseas expansion in the tropics and the resulting cultural phenomenon of tropicality.\footnote{David Arnold, *The Problem of Nature: Environment, Culture and European Expansion* (Oxford: Blackwell Publishers, 1996), ch. 8.} Derived from the work of Edward Said (1978), scholars of tropicality extend Said’s concept of “otherness” not only to peoples and cultures, but also to environments.\footnote{Edward Said, *Orientalism* (New York: Vintage Books, 1978).} The term *tropicality* thus refers to Europe’s cultural construction of the tropics - an ongoing process dating to the fifteenth century - as drastically different in physical and moral terms from the mid-latitude region in which Europe is located.\footnote{Tropicality is not a European concept alone. Historians have studied the concept as it relates to regions of the United States and U. S. imperial expansion. Stephen Frenkel, “Jungle Stories: North American Representations of Tropical Panama,” *Geographical Review* 86 (1996), 317-333; Natalie J. Ring, “Inventing the Tropical South: Race, Region, and the Colonial Model,” *Mississippi Quarterly* 56, no.4 (2003), 619-631.} As David Arnold, a leading scholar of tropicality, notes, “calling a part of the globe 'the tropics' … became, over the centuries, a Western way of defining something culturally alien, as well as environmentally distinctive, from Europe (especially northern Europe) and other parts of the temperate zone. The tropics existed only in mental juxtaposition to something else - the perceived normality of the temperate lands.”\footnote{Arnold, *Problem of Nature*, 142-143.} Tropicality manifested itself in ambivalent characterizations of tropical environments and their inhabitants, as Europeans simultaneously cast them as edenic and hellish, healthy and deadly, fertile and sterile, moral and immoral.

In temporal terms, Arnold argues these more positive notions (fertility, healthiness, etc.) of the tropics emerged before the more negative ones (hellishness, deadliness, etc.). It was not until the mid-eighteenth century that they fused into a mature conception of tropicality. Arnold relates the maturation of tropicality to the expansion of *northern* European nations such as
England into the tropical Atlantic. According to Arnold it was only in the mid-eighteenth century, after the people of northern Europe had accrued experience in the tropics, that the two strains became fused. “Tropicality was the experience of northern whites moving into an alien world - alien in climate, vegetation, people and disease. And this sense of the physical and cultural consequences of moving from one zone to another was more acutely felt in the Atlantic world, where the transition from temperate to ‘torrid’ was relatively rapid and where it was closely bound up with the Atlantic slave trade, than it was in the Indian Ocean or the Pacific.”

Arnold and the medical historian Mark Harrison argue that notions of tropicality were thus formed in the Atlantic world in the mid-eighteenth century and carried to Asia in the nineteenth century. I disagree with their periodization. I argue that the English experience of disease and death in West Africa and the West Indies suggests that the weaving together of “positive” and “negative” strands of tropicality was accomplished by the end of the seventeenth century.

The experience of tropical disease was central to the European experience of the tropics and the conception of the region as a space distinct from the temperate zones. The English were quick to notice that various “fevers” – the manifestations of yellow fever and malaria – struck people of European extraction with a virulence that had no parallel among African populations. Historians have noted that the effect of differential immunity to disease among Europeans and Africans contributed to the characterization of the tropics as an environmental space distinct from Europe. According to historians such as David Livingstone and Mark Harrison, the effect of differential immunity on European conceptions of the tropics was such that by the 1780s, the British in the Caribbean had come to doubt the ability of Europeans to become acclimatized – to

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36 Ibid., 143.
37 Ibid., 143, 150-152; Mark Harrison, *Climates and Constitutions: Health, Race, Environment and British Imperialism in India, 1600-1800* (New York: Oxford University Press, 1999), 60.
become physically adjusted to the tropical climate so as to be able to live permanently - in the tropics.\textsuperscript{39} It is my contention in this dissertation that the debate over acclimatization in fact characterized the whole of the history of Europeans in the tropics. For the English the question of acclimatizing themselves was a pressing one from their earliest exposure to the region in the mid-sixteenth century through the late nineteenth century, when the advent of germ theory, the widespread use of antimalarial drugs, and effective mosquito control ushered in the age of modern tropical medicine.

If European overseas expansion wrought vast changes in physical environments in the Americas, it was often characterized by persistence in the ways Europeans understood those environments. One of my foci in this dissertation is on the ways environmental ideas espoused by the English remained the same in the context of England’s dramatic overseas expansion during the seventeenth century. Of central importance for this study is the work of Nicholas Wey-Gómez (2008), who has explained how the environmental ideas of classical authorities persisted with such vigor into the early modern era despite conclusive proof that they were incorrect. Wey-Gómez demonstrates that belief in an uninhabitable torrid zone proved as forbidding an obstacle to Christopher Columbus’s bid for Spanish royal support in his venture to the “Indies” as was his underestimation of the circumference of the globe.\textsuperscript{40} By studying the Admiral’s books and marginalia, Wey-Gómez illuminates how Columbus combined personal experience with close reading of ancient texts to argue for a habitable torrid zone. In the sixteenth century, John Headley (1997) has shown, Venetian geographers assimilated


\textsuperscript{40} Nicholas Wey Gómez, The Tropics of Empire: Why Columbus Sailed South to the Indies (Cambridge: MIT Press, 2008).
Columbus’s findings and launched an effort to spread the notion that the entire world was habitable by issuing publications such as Giovanni Battista Ramusio’s *Navigazioni e viaggi* (1550-1559).⁴¹ My contention here is that English overseas expansion faced similar resistance from potential colonists who feared not simply a dangerous but an uninhabitable torrid zone throughout the seventeenth century, long after English colonies had been established in the tropical West Indies.

Other scholars have described the notion of an uninhabitable torrid zone as essentially a structure of early modern European thought, a climatic mentalité with roots in classical antiquity sustained by textual, cartographic, and rhetorical practices into the early modern era. Anthony Grafton, April Shelford, and Nancy Siraisi (1992) have explained how scholastic and then humanist textual practices from the fifteenth through the seventeenth centuries perpetuated classical ideas into the early modern period. Both the Scholastics’ practice of extrapolating new knowledge from a canon of ancient texts and the humanists’ advocacy of studying classical texts in their original languages to understand them unmediated by later distortions were efforts that kept ancient knowledge alive at a time of new discoveries. The flood of humanist translations of classical knowledge overlapped with the time when Europeans were expanding into the Atlantic, so that the knowledge of the ancients coexisted with newer findings that contradicted it.⁴² Their work helps explain how some people could have certain knowledge of the habitability of the tropics while others in the metropole could continue to believe the torrid zone was incapable of supporting life.

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European geographical discoveries of the fifteenth century both confirmed ancient knowledge and altered it. In the realm of cartography, Alfred W. Hiatt (2008) described how the Greek cosmographic theory of a symmetrical earth in which antipodes balanced the landmass of the world island in both the southern hemisphere and on the opposite side of the globe was complemented by a cartographic tradition that continued to depict the antipodes, labeled terra incognita or “unknown lands,” on world maps into the seventeenth century. The Portuguese expansion down the African coast confirmed Ptolemy’s contention that the world island extended deep into the southern hemisphere with no intervening ocean, and recognition that the Americas were not part of Asia confirmed the notion of antipodes balancing the Old World. In the context of overseas expansion that made such discoveries possible, there was no reason for cartographers to abandon the ancient notion of terra incognita; rather they pushed it to the margins of world maps in expectation that more discoveries were imminent. In early modern cartographic practice, then, new knowledge coexisted rather comfortably alongside ancient knowledge. For Hiatt the continuing depiction of the antipodes was an example of early modern knowledge making, a “dynamic” tradition subject not to radical revision but merely to “supplementation” as Europeans gained new information about overseas lands.

For we who live in a world in which the production of scientific knowledge by definition makes older knowledge obsolete, and for whom the news is truly new, buzzing in our pockets seconds after it happens, the works of Wey Gómez, Grafton, Shelford, Siraisi, and Hiatt help us understand how the English could continue to debate the habitability of the torrid zone in the seventeenth century, some two centuries after it had been confirmed. Because the notion of an uninhabitable torrid zone coexisted comfortably alongside the discovery that the tropics were

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indeed habitable, many among the early modern English were understandably quick to attribute high mortality among the English in the West Indies, West Africa, and Virginia to the climate. In response, promoters defended the climate and attributed problems instead to human behavior.

**Methodology and sources**

In order to understand English attitudes toward hot climates in as broad a sense as possible, I have consulted a wide variety of both manuscript and published primary sources. These include manuscript government records in the Colonial Office series, medical treatises, scientific texts, travel writings, and private correspondence. This variety of sources can be read together profitably because contemporaries read them together. For example, when fellows and correspondents of the Royal Society traveled to various parts of the world, the society sometimes asked them to verify claims made in published books. From the early 1670s it sought confirmation of scientific matters contained in books by Richard Ligon, Samuel Purchas, Jan Huygen van Linschoten, Pierre Pelleprat, Jacobus Bontius, and Willem Piso. Colonial officials

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44 I have conducted a great deal of research in manuscript sources at the Library of Congress in Washington, D. C.; the British Library, the Royal Society Centre for the History of Science, and the UK National Archives in the greater London area; the Bodleian Library at Oxford; and the Somerset Heritage Center in Taunton, England. In my effort to gain an understanding of what might be termed “widespread” or “common” climatic ideas in the seventeenth century, I hoped research in prosaic correspondence and other manuscript materials would bear fruit. As it turns out, published primary sources have proven far richer on climatic matters and have been consulted for the dissertation more often than manuscripts.

45 The Royal Society sometimes created inquiries for specific individual travelers and sometimes published general scientific questions for all travelers in the *Philosophical Transactions*. For an example of the latter, see “General Heads for a Natural History of a Countrey, Great or Small, Imparted Likewise by Mr. Boyle,” *Philosophical Transactions* 1 (1665-1666), 186-189.

46 Royal Society Centre for the History of Science, London [hereafter Roy. Soc.] MSS CP.XIX.64, “Inquiries for ye Antiles: out of ye French Naturall History of ye[sic] those iles and Ligons hist. of ye Barbados,” n.d.; Roy. Soc. MSS CP.XIX.83, “Inquiries to be made in ye East- and West indies concerning severall relations of Linschotanus, Bontius and others,” n.d.; Roy. Soc. MSS CP.XIX.84, “A short Survey of Linschotanus his East-Indian Relations, in order of hauing ym by further inquiries either corrected or confirmed,” n.d. ; Roy. Soc. MSS CP.XIX.85, “Observations Made in both ye indies and in Africa, as they are related by Linschotanus, Piso, Bontius, and others; further to be inquired into,” n.d.; Roy. Soc. MSS CP.XIX.86, “A Summary of ye more remarkable observations, made by Linschotanus, and set downe by himself in his Book of voyages into ye East-indies,” n.d. These inquiries are interleaved with similar documents in a single bound volume. Although the sources I cite here are not dated, many other documents in the volume are marked with dates and are arranged in rough chronological order. I
read many of these sources; the British Library’s Egerton Manuscript 2395 contains “A List of all Books (in the Plantation Office) Treating New England,” among them works by Purchas and John Ogilby, as well as a gloss of Richard Blome’s 1672 book, *A Description of the Island of Jamaica*. Such sources can also be read together because they were written in similar styles accessible to what can be seen as a general readership in the seventeenth century. Unlike the present day, in which the average reader of *Condé Nast Traveler* probably would not understand the technical language of the *Journal of the American Medical Association*, a seventeenth-century reader of Richard Hakluyt’s travel compilation, *Principal Navigations* (1589, 1598-1600), would have little trouble understanding Thomas Trapham’s medical treatise, *A Discourse of the State of Health in the Island of Jamaica* (1679). Reading and comparing such disparate sources helps me gain a more comprehensive picture of English ideas of hot climates.

*Chapter organization*

In Chapter 1 I demonstrate that, for the earliest promoters of English overseas expansion, a “temperate” climate was not a climate characterized by moderate physical temperatures, but rather was habitable. Early modern writers explained that the climate of the torrid zone was tempered and thus made habitable by seasonal phenomena, by the oscillation of wet and dry seasons and hot days and cool nights. English travel writers and the compilers of the great English travel compilations - Richard Eden (1555), Richard Hakluyt (1589, 1598-1600), and Samuel Purchas (1625) – explained how the torrid zone was habitable to encourage overseas ventures there.

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estimate a date of the early 1670s for the first cited document, Roy. Soc. MSS CP.XIX.64, based on that document’s proximity to nearby dated inquiries in the volume.

In Chapter 2 I argue that tropical West Africa was central to English conceptions of habitable tropical climates. Travel writings and other sources employed examples from Africa to argue for the temperateness of the torrid zone as a whole. Early English visitors to West Africa described its climate as tempered by seasonal phenomena. As the English gained experience in Africa and fell prey to its diseases, however, they prescribed modifications to their behavior to help them adapt to the climate. But by the 1660s, pessimism about their ability to adapt to the African environment had set in. The English now attributed disease mortality to the same seasonal environmental phenomena that they believed made the climate habitable.

A similar phenomenon took place in the West Indies, the subject of Chapter 3. While the earliest English colonists in the West Indies understood the climate to be temperate and thus habitable by virtue of its seasonal phenomena, the transition to sugar production and slavery beginning in the middle of the seventeenth century altered the disease environment and made it increasingly deadly for English settlers. In an attempt to protect the reputations of increasingly valuable islands, the English interpreted their rising mortality as an effect of intemperance in alcohol consumption exacerbated by the heat of the climate, effectively arguing that it was the colonists’ own immoral behavior that was responsible for the high mortality.

In Chapter 4 I turn to Virginia, a colony situated within the temperate zone but whose southerly latitude in comparison to England invited criticism of its climate. As in the West Indies, the English explained the mortality of colonists by blaming it on their own poor behavior, but defended the climate against detractors. Immorality in this temperate climate extended to the colonists’ failure to developed a diversified portfolio of export Commodities suitable to the climate, instead focusing on tobacco monoculture.
Chapter 5 details how commentators in the early eighteenth century voiced distinctly different conceptions of the climates of West Africa, the West Indies, and Virginia that reflected both changing conceptions of the body in hot climates and the different economic and social development the regions had undergone over the course of the seventeenth century. English readers of Willem Bosman’s 1705 book, *A new and accurate description of the coast of Guinea*, would learn from a man with fourteen years of experience in the deadly African climate that seasonal phenomena that usually tempered the climate had become so irregular as to effectively render the region uninhabitable to Europeans. Bosman believed his long tenure in Africa had changed his body so that it had adapted to the climate, but few Europeans would survive long enough to become similarly acclimatized. In the West Indies physicians were beginning to advance a nascent medicine of hot climates, arguing that diseases in the tropical arose from unavoidable changes that the hot climate worked on European bodies. Sir Hans Sloane broke with this emerging consensus with his book, *A voyage to the islands*, published in 1707 and 1725. Sloane can be seen as the exception that proved the rule, standing out from contemporary writers on the West Indies in that he treated the region as having a temperate climate in which personal temperance alone guaranteed health. Meanwhile in Virginia, the planter Robert Beverley voiced the concerns of a rising creole elite in his 1705 work, *The History and Present State of Virginia*. Beverley’s defense of the colony’s climate in the book reflected both the creole elite’s conception of Virginia as temperate and habitable and its sensitivity to metropolitan criticism in a wider empire.

49 Harrison, *Medicine*, 41, 46, 51
50 Sir Hans Sloane, *A voyage to the islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the natural history ... of the last of those islands; to which is prefix’d an introduction, wherein is an account of the inhabitants, air, waters, diseases, trade, &c. ..., 2 vols. (London, 1707-1725).
This dissertation finds that the English understood the hot climates of the seventeenth-century Atlantic world in related terms of seasonality and morality. At the outset of English overseas expansion in the second half of the sixteenth century, promoters of overseas ventures published texts that explained how recurring phenomena such as wet and dry seasons and the cycle of days and nights facilitated human habitation in the torrid zone. As the English ventured into the hot climates of the Atlantic world, they understood them in the same seasonal terms laid out in the travel compilations. Climatic and moral ideas were intertwined as the English imported slaves from Africa to work plantations in the West Indies and Virginia in the seventeenth century. The deadly disease environments they encountered in West Africa and helped create in the West Indies killed thousands of colonists, sailors, and others. The English interpreted their sicknesses in large part as the combination of seasonal phenomena and overconsumption of alcohol in the hot of the climate. In Virginia the relationship between the climate and morality turned not on alcohol but on the idleness of the planters and their failure to heed the dictates of a warm climate capable of producing goods of China, the Middle East, and the Mediterranean like silk. By 1700 conceptions of the climates of these regions had begun to diverge. The English questioned the ability of Europeans to survive in West Africa and the West Indies. With its population growing by natural increase in the late seventeenth century, Virginia’s habitability was unquestioned. Its new “natives,” creole planters, bristling at metropolitan critiques of the colony’s environment, defended their climate and, by extension, themselves.
CHAPTER 1

Seasonality and Temperateness in English Travel Compilations, 1553-1625

In this chapter I explore the concept of temperateness as an environmental category in English promotional texts of the sixteenth and seventeenth centuries. I examine strategies used by the three principal English promoters of overseas ventures - Richard Eden, Richard Hakluyt, and Samuel Purchas - to encourage English readers to undertake voyages into the tropics. In order to gain support for overseas ventures, the promoters worked to counter ancient assumptions that the torrid zone was uninhabitable to humans because of its great heat. While a growing body of English merchants, scholars, sailors, and courtiers understood that humans dwelt successfully in the tropics, or the “torrid zone,” I argue the fear of hot climates in fact constituted a real barrier to English overseas expansion. The persistence with which promoters proclaimed the habitability of the torrid zone in the second half of the sixteenth century and the first quarter of the seventeenth century strongly suggests the fear of hot climates inhibited participation in ventures. Eden, Hakluyt, Purchas, and others thus wrote in part to convince their readers that the Torrid Zone and its environs were habitable.

I use these classic travel compilations for three reasons. First, they were published almost entirely in English, allowing for the widest possible readership. Second, they were promotional materials. Whether written to support a specific venture or the larger national project of expansion, the compilations of Eden, Hakluyt, and Purchas were created to spur English readers to participate in overseas expansion, either through investment, immigration, or both. Third, as the historian Joyce Chaplin has pointed out, recruiting participants in trade and colonization

required natural history knowledge as a matter of course. Material published by the travel compilers satisfied these three conditions. When Samuel Purchas translated José de Acosta, for example, he brought to English readers the crucial natural history knowledge of an intellectual with firsthand experience of the new lands. As Chaplin notes, Acosta, Oviedo, and others forwarded the designs of overseas promoters in England because they were “expert witnesses” who could best vouch for the productive potential of foreign lands. Not only did they confirm the natural productions of regions overseas, but they also confirmed that lands within the torrid zone supported human life.

At the most basic level, early modern cosmographers, travelers, and others classified the climates of the world as either “temperate” or “intemperate.” What made a climate temperate was not its moderate physical temperature, but rather its ability to sustain human life, whatever its prevailing physical temperature. The promoters of English overseas expansion into the torrid zone thus advanced a variety of environmental phenomena, often derived from classical precedents, that they believed mitigated the extreme heat of the torrid zone. Characteristics such as the relative length of days and nights, the presence of winds, the falling of rains, and the turn of the seasons rendered a given region of the globe habitable and thus temperate. Environmental phenomena such as these were important not simply because they moderated physical temperatures, but because they did so over time. In the words of the Spanish chronicler, Gonzalo Fernández de Oviedo y Valdés, whose description of the American tropics was published in English by Richard Eden, these phenomena occurred at dependable intervals or “certeyne ordinarie seasons of the yeare.” A temperate climate was thus characterized by environmental

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3 Ibid., 19.
conditions that oscillated in a predictable fashion between extremes of heat and cold, dryness and moisture. It was this dependable oscillation, and not a moderate physical temperature, that facilitated human life in the torrid zone. According to Oviedo, regions within the torrid zone were “naturally hotte, althowgh they bee otherwise temperate by the divine providence.”

From the fifteenth century Europeans began to discover the torrid zone was both habitable and inhabited, and over time they came to think of the entire planet as temperate. Cosmographers and travel writers extended to the entire globe a climatic category – temperateness, or habitability - that had once characterized only one of five bands of latitude girdling the earth. Yet although the entire planet was considered habitable, contemporaries understood that it was not climatically uniform. The tropical and polar regions remained subject to extremes of physical temperature, precipitation, and other conditions. In this sense, Oviedo’s contention that the torrid zone was “hotte, althowgh … otherwise temperate” provided a kind of working definition of the tropics that explained to a European audience steeped in classical cosmographical knowledge exactly how the tropics supported human life. This hot-but-temperate conception of the tropics had the added benefit of accurately reflecting both the material reality of tropical climates and their effect on humans. By the logic of this formulation, the temperateness or habitability of the torrid zone obtained only in spite of its latitude. The seasons and other “certeyne ordinarie” changes did indeed temper the torrid zone, but they could not dispel the heat for which it had long been known. Although habitable, the region’s heat continued to pose a threat to life, health, and morality. Oviedo’s concept of the hot-but-temperate tropics eliminated the problem of an uninhabitable torrid zone, but could not dispel Europeans’ other fears of extreme climates.

5 Ibid., f.184.
In this chapter I demonstrate the centrality of temperateness as a category of environmental thought among the English during the sixteenth- and early-seventeenth-centuries. I argue that the three great travel compilations of Richard Eden (1555), Richard Hakluyt (1589; 1598-1600), and Samuel Purchas (1625) were created not only to stimulate English overseas ventures, but also to convince English readers that it was possible for humans to survive in the torrid zone. Finally, I consider the concept of temperateness as a function of seasonality and examine its use in the rhetoric of expansion, as writers deployed concepts of seasons, rains, and other regularly recurring natural phenomena as symbols of temperateness.

*Temperateness as an Environmental Category*

The concept of temperateness suffused early modern European conceptions of the natural world. It appeared in a variety of texts treating cosmography, medicine, travel, and other topics. In some contexts temperateness referred to a balanced mixture of the four elements (fire, air, water, and earth) and their associated qualities (heat, cold, moisture, dryness). In others it connoted a condition of moderation, as in the weather (“temperate weather”), physical temperature (“a temperate heat”), or a quality of a foodstuff. In the realm of geography,
temperateness was a binary category that denoted the quality of an environment. In its most basic form it meant that a region supported human life; a temperate environment was habitable to humans, whereas an intemperate environment was uninhabitable. Since the classical era Europeans had conceived of the surface of the earth as divided into five parallel bands of latitude, or “zones,” whose environmental characteristics were determined by their proximity to the sun. Furthest from the sun, the northern and southern polar regions were known as the “cold” or “frigid” zones. The “torrid” zone was the region of the earth closest to the sun. It lay directly under the sun’s daily path across the sky and was bounded by the sun’s northern and southernmost excursions at the Tropics of Cancer and Capricorn. Sandwiched between the torrid zone and the frigid zones were two “temperate” zones, one in the northern and one in the southern hemisphere.

In general, the ancient and medieval philosophers who were studied so assiduously by European humanists during the early modern era considered the frigid and torrid zones to be uninhabitable to humans because of their extremes of cold and heat, respectively. By contrast the temperate zones, neither too hot nor too cold by virtue of their latitude, supported human life. For example, Aristotle (4th century BCE) posited that “it is not difference of longitude but of latitude that brings great variations of temperature,” and identified the temperate zones as the only “habitable sectors” on the earth. In the northern temperate zone consisting of Europe and the northerly regions of Africa and Asia, he wrote, people were capable of living in “the whole breadth of the habitable world up to the uninhabitable regions which bound it, where habitation ceases on the one side because of cold, on the other because of the heat.”

advocie [sic] to the gentelmen-planters of the East and West Indies / by Philotheos Physiologus [pseud.], ([London?], 1684).
10 Ibid., 183.
Natural History (77CE), Pliny the Elder likewise described the world in terms of the five zones, dividing it into habitable and uninhabitable regions. According to Pliny, the frigid zone surrounding the poles was “all crushed under cruel frost and everlasting cold.” Situated directly beneath the orbit of the sun, the torrid zone was “scorched by its flames and burnt up by the proximity its heat.” The torrid zone separated the two temperate zones, which had “no communication with each other because of the fiery heat of the heavenly body.”11 In the thirteenth century the English cleric Johannes de Sacrobosco referred to the temperate zones as “habitable and tempered from the heate of the torrid zone between the tropics and from the cold of the extreme zones which lie about the poles.”12 In this formulation the fitness of each zone for human habitation was its most salient characteristic.

Cosmographers produced maps that depicted the world in terms of the theory of the five zones well into the sixteenth century (Figure 1). In creating “zonal maps,” the primary goal of cosmographers was to lay out the conceptual boundaries of the zones and to place locations within the known world in relation to them. They depicted the earth as a blank circle with few geographical features. Countries and cities (when they were represented at all) appeared merely as names sited in approximate geographical relation to each other. The climatic zones dominated the maps. Rendered as parallel bands running horizontally across the otherwise blank surface of the earth, each zone was identified by a prominent label: “perusta” (burned up)13, “adusta” (burnt, scorched, charred, scorched by the sun)14, or “torrida” (dried with heat)15 for the torrid

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13 Hiatt, Terra Incognita, 5.
zone; “temperata” or “habitabilis” for the temperate zones; “frigida” or “inhabitabilis” for the frigid zones. Dominating the representations of their respective zones, the labels demonstrated the importance of these climatic categories in European thought into the early modern era.

Preserved in the recovered works of classical scholars and pored over by students in European universities, zonal theory flourished into the early modern era. It was not without challengers, however. Geographers and cosmographers had contemplated the possibility of a habitable torrid zone since the classical era. Their speculations gained new impetus beginning in the twelfth century CE, when Arabic translations of Avicenna and Ptolemy appeared in Europe. In the thirteenth century the German scholar Albertus Magnus posited a torrid zone in which some places were fit for “inhabitation and passage,” while others were uninhabitable because of

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16 For examples of zonal maps, see: John Rennie Short, Making Space: Revisioning the World, 1475-1600 (Syracuse: Syracuse University Press, 2004), 44; Hiatt, Terra Incognita, 5, 49, 71, 75, 77, 111, 119; Quinn, NAW, vol.1, plates 1, 3.
local features. Sacrobo’s *De Sphaera* (c.1230) encouraged disputations on the existence of a habitable southern antipode. Used as a university textbook into the seventeenth century, it suggested the possibility of a passable and thus habitable torrid zone. By the early modern era the centuries of comment and elaboration upon ancient texts had yielded a “heterogeneous and inconsistent” cosmological tradition for readers, facilitating the perpetuation of ancient ideas of both a habitable and an uninhabitable torrid zone into the seventeenth century.

Of course the English understood the land in which they had been born was temperate. Ancient and early modern sources alike placed England within the temperate zone. The sixteenth-century chorographer William Camden related the temperate climate of Britain precisely to its latitude. Camden located the isles within the eighth climate, between 50 and 59 degrees north latitude, “so that, according to this site, Britaine is seated as well for aire as soile, in a right fruitfull and most milde place. The aire so kinde and temperate, that not only the Summers be not excessive hote … but the Winters also are passing milde.” In 1617 the traveler Fynes Moryson followed Camden in his own description of England, noting “the ayre of England is temperate … and howsoever Snow may often fall in the Winter time, yet in the Southerne parts (especially) it seldome lies long on the ground. Also the coole blasts of Sea

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18 Hiatt, *Terra Incognita*, 100.
20 Wey Gómez, *The Tropics of Empire*, 93.
21 Some ancient sources technically placed it within the supposedly uninhabitable frigid zone. A map in a 1483 version of Macrobius and one in the astrologer Johannes Eschuidus’s *Summa Anglicana* (1489) place Britain in the frigid zone. Quinn, NAW, vol.1, plate 3. In his *Imago Mundi* (1483), Pierre d’Ailly (Petrus Alliacus) also located Britain outside the temperate zone. Yet for d’Ailly the writings of Pliny and the experience of others proved that “regarding the line which bounds the climates on the north, there is many a habitation beyond it, as Anglia, Scotia, Dacia, Norwegia, and many other countries.” He described Britain as habitable and “quite favorable in temperature.” Petrus Alliacus, *Imago Mundi*, 15, 29.
winds, mitigate the heat of Summer.”

Celebrating the climate in which they lived, these writers took the habitability of their native land for granted and instead related England’s temperateness to its moderate climate. The same would not apply for texts about the torrid and frigid zones.

Persistent doubts about the habitability of the torrid zone held back the earliest European ventures to the tropics. As the historian Nicholas Wey-Gómez relates, Henry the Navigator “literally wasted years attempting to persuade the sailors in his service on the coast of Morocco to cross the threshold of the Canaries and Cape Bojador into what even the learned in Portugal expected to be a hellish wasteland from which no one would return alive.” And while advisors to the Spanish crown had their doubts about Christopher Columbus’s intent to sail to Asia via a western crossing through the Atlantic, they were just as skeptical that he could survive his proposed route through the heat of the torrid zone.

English merchants seeking trade in both the torrid and frigid zones during the sixteenth century confronted similar skepticism. Merchants and projectors intent on gaining access to distant markets knew full well that the torrid zone was habitable as early as the 1520s. They also understood their plans to trade in the tropics might be opposed by people who continue to doubt the habitability of the extreme zones. As early as the 1520s, the merchant Robert Thorne anticipated just such resistance to his own ventures as he sought to expand his trade beyond the Azores, the Canaries, and the Levant. Thorne was based in Seville, Spain’s gateway to the Atlantic, through which Spain’s Atlantic trade was channeled by official policy. A bustling trade entrepôt, Seville was also a market for knowledge, home to institutions such as the Casa de Contratación (established in 1503) and the Council of the Indies (established in 1524), where

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25 Ibid., 51, 107-158.
natural knowledge of the Americas was collected and analyzed by officials of the Spanish crown. The Spanish had gained direct experience of the tropics at least since Christopher Columbus’s first voyage of 1492. By the early 1520s the letters of Hernán Cortés had arrived in Spain, describing the lands and peoples he had subjugated in Mexico. Spanish ships trading to the Americas left via Seville and the Canaries, where Thorne maintained trading connections. Integrated into the bustling mercantile and institutional setting of 1520s Seville and dealing frequently with mariners, Thorne likely understood that the torrid zone supported human life. By 1526 he knew it for a fact, for he traded to the West Indies via Thomas Tison, an Englishman resident in Santo Domingo.

In 1527 Spanish ships first reached the Moluccas (the Spice Islands) in the East Indies. According to the historian E. G. R. Taylor, a Spanish agent offered to sell the trading rights to the islands to Dr. Edward Lee, Henry VIII’s special ambassador to the Spanish court. Lee turned to Thorne for advice as he considered the sale. At the precise moment that Lee consulted him, Thorne awaited the return of two Englishmen he had dispatched as members of a 1526 Spanish voyage to discover a passage through Central America to the Pacific and on to the Spice Islands. They were his business partner, Roger Barlow, and the pilot Henry Latimer. Commanded by Sebastian Cabot, the voyage would offer Barlow the opportunity to do business

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and Latimer the chance to obtain the geographic and navigational information necessary to carry an English expedition to the islands.  

Thorne planned to use the knowledge collected by Latimer to launch his own voyage to the Spice Islands. He advocated traveling northward, passing directly through the frigid zone into the Pacific and southward to the islands. As he described his plan to Lee, Thorne took for granted that the both the frigid zone, through which the ships would pass to the Pacific, and the torrid zone, where they would buy spices, were habitable. He reckoned the passage over the north pole was risky but not impossible. Because the earth was a sphere, he reasoned, ships sailing in the highest latitudes would benefit from “perpetuall cleerenesse of the day without any darkenesse of the night,” facilitating their navigation along unfamiliar shores. Having cleared the pole into the Pacific, he predicted, “from thence foorth the seas and landes are as temperate as in these partes, and that then it may be at the will and pleasure of the mariners, to choose whether they will saile by the coastes, that be colde, temperate or hot. For they being past the Pole, it is plaine, they may decline to what part they list.” Once in the Pacific he advocated the English ships plot a course due south, “right toward the Pole Antarctike” until they reached “the lands and Islands situated betwenee the Tropikes, and under the Equinoctiall” (equator). Here they would find the islands stocked with precious metals, gems, spices, “and other thinges that we heere esteeme most: which come out of strange countreyes.” Thorne clearly believed the sailors and traders would be able to survive in all three climates and would have freedom to maneuver in the Pacific as well as they did in the Atlantic.

Thorne envisioned this project in terms of zonal theory, in which lines of latitude delineated the boundaries between climatic zones and their respective characteristics. He

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30 “Robert Thorne proposes a route along the American coast over the Pole to Asia,” in Quinn, NAW, vol.1, 181.
envisioned the band of earth between the tropics as a mine of valuable metals and commodities. It was precisely the location of the Spice Islands within the Torrid Zone - “betweene the Tropikes, and under the Equinoctiall” – that made them so valuable, and he predicted they would be “no lesse riche of golde and Spicerie, as all other landes are under the saide line Equinoctiall.”31 Indeed, he argued, “if it be well considered, how the quantitie of the earth under the Equinoctiall to both the Tropicail lines [my emphasis], (in which space is found the sayd Golde, spices and precious stones) is as much in quantity, as almost all the earth from the Tropikes to both the Poles,” there must be vast abundance of rich commodities awaiting collection throughout the tropics.32

While Thorne was certain the torrid zone was habitable, he anticipated resistance to his plan to reach the region via the polar seas. He warned Lee not to divulge his ideas to anyone at the Spanish court, “for to moove it amongst wise men, it should bee had in derision.”33 This was especially true of cosmographers: “It is a general opinion of all Cosmographers, that passing the seventh clime, the sea is all Ice, and the colde so much that none can suffer it.”34 Yet if it were true that Europeans could survive tropical heat, Thorne reasoned, the frigid zone must be equally habitable:

And hitherto they had all the like opinion, that under the line the Equinoctiall for much heat the land was uninhabitable. Yet since (by experience is proved) no land so much habitable nor more temperate. And to conclude, I thinke the same shoulde be found under the North, if it were experimented. For as all judge, Nihil fit vacuum in rerum natura: So I judge, there is no lande uninhabitable, nor Sea innavigable.35

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31 “Robert Thorne’s ‘Book presented to Dr. [Edward] Lee’,” in Quinn, NAW, vol.1, 188.
32 “Robert Thorne proposes a route along the American coast over the Pole to Asia,” in Quinn, NAW, vol.1, 182.
33 Ibid., 189.
34 “Robert Thorne’s ‘Book presented to Dr. [Edward] Lee’,” in Quinn, NAW, vol.1, 188.
35 Ibid.
Not only did Thorne fear the reaction of Spanish cosmographers to his plan, but apparently he needed to prove it to Lee as well. He offered to meet again with Lee in England, where he would prove the theory by “some conjectures of reason, though against the generall opinion of Cosmographers.” In the meantime he awaited the return of his two associates from the Moluccas with navigational information.

Publicizing a Habitable Torrid Zone

Thorne died in Bristol in 1532, his plan unfulfilled and his climatic ideas as yet not widespread. Yet English ships did venture into the tropics in the first half of the sixteenth century. In 1527 one John Rut was reported to have visited the West Indies, and William Hawkins completed three slaving voyages to Brazil in 1530-1532. Beginning in the 1550s the English intensified their efforts at overseas trade in both the lower and higher latitudes. Backers arranged for promotional tracts to attract patronage and investment in these ventures. Doing so required promoters to address the habitability of the torrid and frigid zones.

Among the most important of these overseas promoters were the great English travel compilers, Richard Eden (1555), Richard Hakluyt (1582, 1589, 1598-1600), and Samuel Purchas (1625). These men collected the travels of the English and other Europeans throughout the world, compiling and publishing them in large volumes for the consideration of English readers. Unabashedly promotional, their compilations were composed of texts chosen for their value in advancing and celebrating English overseas expansion. All three of the compilers included texts that proclaimed the torrid zone habitable and explained in detail how the tropical climate supported life. I argue that Eden, Hakluyt, Purchas, and others published such climatological information in the process of promoting overseas ventures not merely as a matter of course or

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36 Ibid., 189.
convention, and not merely because it was necessary for the planning of sea voyages, but because some potential participants were skittish about ventures to the torrid zone. If effect, promoters of overseas ventures had to convince their countrymen that the torrid zone was habitable. Finally, these works demonstrate ways in which early modern Europeans marshaled the topic of the climate for rhetorical purposes, emphasizing and changing ideas about the climate to suit changing geopolitical circumstances.

Richard Eden was a key promoter at a time when the English West Country gentry, London merchants, and courtiers were first contemplating expansion beyond their normal ambit of the Baltic and the trade with their neighbors across the channel. His education and later government service brought him into contact with intellectuals and elite courtiers who sought to promote English overseas trade. During his education at Cambridge in the 1530s and 1540s, Eden studied under Sir Thomas Smith, a mathematician, natural scientist, and committed humanist. His studies included cosmography, math, and chemistry. He and Smith shared an interest in distillation, and in 1547 Eden was offered the post of distiller to Henry VIII, although the offer was rescinded after the king’s death later that year. By 1552 he was secretary to Sir William Cecil, who may have seen in him “a scholar with a scientific training to publicize the voyages that were then being planned for China and the far east” at the urging of the duke of Northumberland. During the 1550s England suffered a shortage of specie, and Northumberland looked for ways to secure precious metals to stabilize an English economy buffeted first by the effects of currency debasement and then by inflation. He believed direct trade to China via a northeast passage would remedy England’s silver shortfall. He organized an exploratory venture.


38 Gwyn, “Richard Eden,” 20. Gwyn writes that Eden was “alleged” to have been Cecil’s secretary. Idem, 20.
and raised £6,000 from London merchants including Eden’s own father and brother. Meanwhile Northumberland had collected a stable of academics with mathematical and geographical leanings to help plan the voyage. Among them were mathematicians Robert Recorde and William Buckley; the cartographer, Clement Adams; the surveyors Leonard and Thomas Digges; and the reknowned polymath, John Dee. ³⁹

In 1553 Eden published a “small boke” called *A treatyse of the newe India*, a translation of the *Cosmographia* (1544) of the German cartographer Sebastian Münst.⁴⁰ Dedicated to Northumberland, *A treatyse* was “almost certainly a piece of sponsored publicity” for the duke’s trading ambitions.⁴¹ The first book in English to substantially describe America, *A treatyse* exemplified the importance of climatic considerations in England’s early efforts at overseas expansion.⁴²

Eden made a strong effort to spur readers on to perform overseas ventures, and he was particularly concerned to stiffen their resolve to do so. Rather than abandon the attempt at the first “foyle or fal, so to be dismayd as with shame and dishonor to leaue with losse,” he urged them “to the death to persist in a godly, honeste, and lawful purpose” to the benefit of their country.⁴³ In particular he wrote to direct English adventurers into the tropics, steeing their nerves to travel to regions only recently considered uninhabitable because of their heat. He employed a rhetorical strategy that forced his readers to confront the fact that only by heading southward into the dangerous tropics could they gain riches. In his epistle to the reader he

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³⁹ Ibid., 22-24.
⁴² Although written to promote the Muscovy voyages in the works in 1553, *A treatyse of the newe India* promoted both Asian and American ventures, perhaps suggesting a larger interest of Northumberland and his associates at English overseas trade throughout the world. Discussions of Asia and the Americas received equal space in the book, and among the places the book discussed were “Calicut,” “Zaylon” (Ceylon), and “the newe India.”
worked methodically to eliminate consideration of ventures to alternative sources of gold located outside the tropics. His rhetoric indicates both the importance of the tropics as a site of early English overseas ventures and demonstrates an English fear of the region. Eden wrote that he had translated Münster’s book to help his countrymen to “direct theyr viage to their most commoditie.” Those who sought gold must travel to the best source of gold. He offered “a general rule” to guide them: “that nearest vnto the south partes of the world betwene the two Tropikes vnder ye Equinoctial or burning lyne, where the sunne is of greatest forse, is the chiefest place where gold is engendred.” While he recognized other sources of gold in “colde regions” like Scotland and Hungary, these could not match the quality or quantity of the metal found in the tropics. The English must understand, Eden wrote, that some commodities could be found only in particular places on earth: “For lyke as pepper wyll not growe in Spayne, no more wyll the Orange tree bringe fourthe fruite in Englande.”

Eden reassured his readers that the torrid zone was habitable by explicitly linking the discovery of a habitable torrid zone to realizing the potential of humanism. Like many of his contemporaries educated in humanist principles, Eden argued against blind allegiance to received wisdom and praised those who had corrected errors of ancient authorities in geographical matters. He praised the Spanish and Portuguese for having proven the earth a sphere. Vessels of the two countries had reached the Moluccas by sailing in opposite directions, he reminded them, revealing “how the hole globe of the world … hath been sayled about.” The Spanish “sayled Westward to the Ilandes of Molucca being in the East sea, farre beyond ye furthest partes of East India.” The Portuguese had gone in the opposite direction and “came to the same Ilandes from

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44 Ibid.
46 Ibid.
47 Ibid., 8.
48 Ibid., 9.
Spayne sayling Eastward by the coastes of Aphrica, Arabia, and the vuttermost India.**49** Hot climates played key roles in Eden’s reasoning; it would not have been lost on his readers that both the Moluccas and the coasts along which the Portuguese had passed were in the tropics. So while the Iberian powers had also passed the cold Straits of Magellan and the Cape of Good Hope on their way to the East Indies, they had clinched the overthrow of ancient dogma by also passing successfully through the tropics.

Eden believed the English must recognize from Iberian experience that the torrid zone was habitable; such a development, “surely most wonderful, and in maner incredible … [was] proued most certayne by experience.” For Eden the humanist, knowledge was derived from a combination of book learning and crucial personal experience. Knowledge could come from books or from conversations with knowledgeable people, as long as it was ultimately founded in experience. In this sense knowledge was “nought els … but ye gathering of many mens wittes into one man’s head, and the experience of many yeres, and many mens liues, to the lyfe of one.”**50** Thus the Spanish had proven the twelfth-century scholar Albertus Magnus correct when he had predicted “habitable or temperate Regions myghte be vnder the Equinoctial or burninge lyne … contrarye to the opinion of other wryters, whyche were before hys tyme, and yet now is proued by experience to bee most true.”**51** Here was Eden in humanist fashion, proclaiming the production of knowledge through the union of reason and experience. In this case he asked the English to learn from this Iberian experience that directly involved the habitability of the torrid zone.

Just as he had begun, Eden closed the book with a selection arguing for a habitable torrid zone. Originally penned by “Pius Secundus (otherwise called Eneas Siluius,)” the final paragraph

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49 Ibid.
50 Ibid.
51 Ibid., 10
of the book challenged conventional explanations for why the Torrid Zone was uninhabitable, leaving readers with an affirmation that Europeans could indeed survive in the hottest and potentially richest regions of the earth. According to Pius Secundus, the sun’s proximity to the earth in the lower latitudes did indeed make the torrid zone very hot, but the heat did not preclude human habitation in the torrid zone. A host of other environmental characteristics tempered the heat so that - at least in certain localities – it was habitable. Considering “the heate vnder the Equinoctial lyne,” the proximity of the sun, and the angle of incidence of sunlight upon the ground, he could find “no sufficiencete causes why vnnder that line should be no habitable regions, if we consider how those places are otherwyse shadowed, and tempered with the moystenes and dewes of the nightes, which are all the yeare throughge of equal length with the dayes.” Here in the first English printed book about the Americas was an explanation of a habitable torrid zone that would be repeated for decades. This was not to say, however, that the entire torrid zone was suitable for human habitation: “Yet wyl no man denye, but that vnnder the Equinoctial throughoute all the burninge lyne there are manye wildernesses and desolate places, lacking water, and incommodious for the lyfe of man.”

According to Eden scholar David Gwyn, that the torrid zone was not habitable “had long been disproved by the Spanish and Portuguese navigations south of the equator, and the fact that Eden should have included it indicates how far his countrymen lagged behind the continent in geographical knowledge.”

By both opening and closing A Treatyse of the newe India with arguments for a habitable torrid zone, Eden forced his readers to consider this idea seriously. In the introduction to the book he argued that the greatest riches in the world were found in the torrid zone, and he

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52 Ibid., 41.
53 Ibid.
reminded readers that the Iberians had collected great wealth in gold from the region. At the end of the book he specifically addressed the habitability of the Torrid Zone.

Likewise navigational manuals stressed the habitability of the torrid zone. To capitalize on the growing interest in overseas voyages, the English needed a body of skilled seamen, trained in the latest navigational methods developed by the Spanish and Portuguese. In 1561 Eden published *The Arte of Navigation*, translated from a Spanish original written by the pilot Martin Cortes. The book had been retrieved from Seville in 1558 by Stephen Borough, a pilot in the service of the Muscovy Company who had been invited to the Casa de la Contratación as part of “covert diplomatic arrangements” between Spain and England. Borough was the foremost expert on navigation in the polar seas above Russia, and the Spanish offered him a glimpse of their pilot training program in exchange for his knowledge of northern navigation. He returned to England with a copy of Cortes’s book. Translated by Eden and printed by Richard Jugge, printer to Mary I, *The Arte of Navigation* benefitted from the support of well-connected individuals. Eden’s translation was the first navigational manual to be published in English, and it went through nine editions by 1630. Over the course of seven decades, then, each successive edition of the book explained that the torrid zone was habitable, suggesting the continuing need to convey this basic knowledge to English readers.

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Cortes explained how the “auncient Astronomers” had divided the surface of the globe into five zones. The ancients had “certayne knowledge” that the regions around the poles were “vnhabitabe for extreme colde.” Likewise the Torrid Zone, “whereby the sun passeth by the myddest of them, shoulde be vnhabitabe for extreme heate.” While “our zone,” the northern temperate zone containing Europe, was “inhabyte or habitable,” the ancients had deemed the southern temperate zone a “deserte, because they knewe not that it was inhabited.”\(^{60}\) For Cortes, then, the definition of “temperate” was “habitable.” The temperate zone where Europeans lived differed from the rest of the world precisely because it was inhabited.

But Cortes reminded his readers that recent experience of the Spanish and Portuguese had proven the habitability of the torrid zone against the testimony of “all manner” of ancient writers. He cited a stanza from the poet Virgil that demonstrated the ancient cosmographical commonplace: “In zones fiue the heauens conteined be, / Wherof the one with burning sunne is red, / Scorching so the earth subiect to his degree, / That for the heate therof it is vnhabited.”\(^{61}\) Yet as Cortes noted, Europeans had now discovered the torrid zone was “inhabited and well replenished with people that liue there.” The people of Guinea, Calicut, Gatigara, and Malaca “liue all vnder the burnt zone: and many of thē liue very long.”\(^{62}\) The same applied to the southern antipode, he added, which was “replenished with people,” and the cold north, where Islande [Iceland], with part of Gothlande [Sweden], Norwaye, Russia, and diuers other landes are inhabited and well peopled.”\(^{63}\) It was direct experience that proved these lands supported human populations: “we knowe so certenly by the nomber of them [i.e., Spanish subjects] that daily passe to and from the

\(^{60}\) Cortes, f.xvib.
\(^{61}\) Ibid., f.xvii.
\(^{62}\) Ibid.
\(^{63}\) Ibid., f.xviib.
Indies … that to say anything to the contrary it should be a manifest error," Cortes opined. The same applied to the southern temperate zone, where “the experience of such as go and come daylye from those partes” proved that it was habitable and inhabited.

That this material appeared unchanged in subsequent editions of *The Arte of Navigation* for some seventy years suggests that informing English readers that the torrid zone was habitable remained as important an education goal as instructing them in the use of the quadrant. Throughout the run of nine editions of *The Arte of Navigation*, there is no substantive change in the book’s discussion of the workings of the climate from edition to edition. There was, however, a change in political content related to the climate. When he translated the second Spanish edition of 1556, Richard Eden retained Cortes’s dedication to the Spanish emperor, Charles V. Charles’s forty-year reign had begun in 1517, just prior to the conquest of Mexico, and ended in 1556 when he abdicated in favor of his son, Philip II. In the first English edition of 1561, Eden retained a passage in which Cortes related the Iberian discovery of a habitable torrid zone to the personal rule of Charles V. The ancients had believed the tropics uninhabitable, Cortes wrote, “yet that the burnt zone is inhabited and well replenished with people that live there, we know so certainly by the number of them that daily passe to and fro the Indies of your majesty discovered in your most happy daies that to say anything to the contrary it should be a manifest error [my emphasis].” In this passage Cortes credited Charles V with the experience gained by Spanish mariners, whose many voyages between Europe and the tropical regions of America had confirmed a habitable and inhabited torrid zone. At the same time he memorialized the retired emperor, during whose “most happy daies” the Spanish had conquered Mexico and gained that experience.

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64 Ibid.
65 Ibid., f.xvib.
66 Ibid., f.xvii.
Both the dedication to Charles V and the passage relating the confirmation of a habitable torrid zone to his personal rule appeared in the first five English editions of the *Arte of Navigation*. Extant editions of the book can be considered in two groups (Table 1). The editions of 1561, 1572, 1579, 1584, and 1589 are largely identical in content, with minor variations in spelling from year to year. Each translation was dedicated to the London merchants Sir William Gerrard and Master Thomas Lodge, and each contained Cortes’s original dedication to Charles V. Richard Eden was listed as the translator for the five editions to 1589, although he died in 1576. The printing of the first four editions was associated with Richard Jugge, and the fifth was ordered by Richard Watkins and printed by Abell Jeffes. Although these first five editions were printed over a twenty-nine year period by two printers, and although Eden himself died in 1576 (between the appearance of the second and third editions), I see no change in the content of the *Arte of Navigation.*
<table>
<thead>
<tr>
<th>Translator/Editor</th>
<th>Year of Publication</th>
<th>Printer</th>
<th>Dedication</th>
<th>Passage</th>
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<tr>
<td>Richard Eden</td>
<td>1561</td>
<td>Richard Jugge</td>
<td>Sir William Gerrard, Thomas Lodge; Charles V</td>
<td>“of your maiestie discovered in your most happy daies”</td>
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<tr>
<td>Richard Eden</td>
<td>1572</td>
<td>Richard Jugge</td>
<td>Sir William Gerrard, Thomas Lodge; Charles V</td>
<td>“of your maiestie discovered in your most happy daies”</td>
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<tr>
<td>Richard Eden</td>
<td>1579</td>
<td>Richard Jugge</td>
<td>Sir William Gerrard, Thomas Lodge; Charles V</td>
<td>“of your maiestie discovered in your most happy daies”</td>
</tr>
<tr>
<td>Richard Eden</td>
<td>1584</td>
<td>“the widowe of Richard Jugge, late printer to the Queenes Maiestie”</td>
<td>Sir William Gerrard, Thomas Lodge; Charles V</td>
<td>“of your maiestie discovered in your most happy daies”</td>
</tr>
<tr>
<td>Richard Eden</td>
<td>1589</td>
<td>[By Abell Jeffes] “at the charges of Richard Watkins”</td>
<td>Sir William Gerrard, Thomas Lodge; Charles V</td>
<td>“of your maiestie discovered in your most happy daies”</td>
</tr>
<tr>
<td>John Tapp</td>
<td>1596</td>
<td>“By Edw. Allde for Hugh Astley, by the assignes of Richard Watkins”</td>
<td>“the industrious Seamen and mariners of England” and “the Reader”</td>
<td>N/A</td>
</tr>
<tr>
<td>(John Tapp?)</td>
<td>1609</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>John Tapp</td>
<td>1615</td>
<td>“By William Stansby, for John Tapp”</td>
<td>Sir William Wade[Waad] / the Reader</td>
<td>N/A</td>
</tr>
<tr>
<td>John Tapp</td>
<td>1630</td>
<td>“by B. A[lsop], and T. Fawcet. [sic] for J. Tap”</td>
<td>Charles I of England</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 1: Production details of English translations of Martin Cortes’s *The Arte of Navigation*, 1561-1631. All editions are available via Early English Books Online (EEBO) except for the 1609 edition.

From 1596 the *Arte of Navigation* was shepherded through the press for four more editions by the navigational writer John Tapp. Tapp altered the book by adding additional tables, dedicating it to the “seamen and mariners” of England, and changing the spelling

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throughout. Most importantly, the dedication to Charles V and Cortés’s original phrase linking the Spanish experience of a habitable torrid zone to the “happy daies” of the emperor were removed, thereby erasing any connection in the text between the Americas and the emperor.68 By 1596 England had taken concrete steps at settlement in areas of the Americas claimed by Spain. The Roanoke colony had come and gone, England had fended off the Spanish Armada, and Sir Walter Ralegh advocated loudly for an English attempt at settlement in Guiana.69 In an England more hostile to Spain that it had been in the days of Richard Eden, John Tapp had good reason to strike the offending passage. But if Tapp’s excision of the passage about Charles V reflected recent changes in England’s stance vis-à-vis Spain, he retained the passage’s emphasis on proving the habitability of the torrid zone, so that it read merely, “yet that the burnt Zone is inhabited, and wel replenished with people that liue there, we know so certainely from the number of thē that dayly passe to & fro the Indies, that to say anything to the contrary, it should be a manifest errour.”70 That Tapp removed references to the Habsburg emperor but did not alter the content of the book itself suggests he saw a continuing need to educate English on the habitability of the torrid zone into the mid-seventeenth century.71

English promoters continued to highlight a habitable torrid zone into the late sixteenth century. In 1597 Abraham Hartwell published A Report of the Kingdome of Kongo, an English translation of Duarte Lopes’s Relatione del reame di Congo (1591).72 Hartwell was an associate of Richard Hakluyt who undertook the translation at Hakluyt’s urging, so that he could “help our English Nation, that they might knowe and vnderstand many things, which are common in other

69 Sir Walter Ralegh, The discouerie of the large, rich, and bevvitiful empire of Guiana (London: 1596).
70 Cortes (1596), f.13v.
71 Subsequent publications of Tapp’s edition of the book were dedicated to Sir William Wade (Waad) and Charles I of England; all were printed by different printers.
language, but utterly concealed from this poore Island.” Instructing his readers that the torrid zone was habitable was among Hartwell’s chief motives. He clearly advertised this point on the cover the English translation (Figure 2). Appearing prominently on the title page was the first of four subtitles, “Wherein is also shewed that the two Zones, Torrida & Frigida, are not only habitable, but inhabited, and very temperate, contrary to the opinion of the olde Philosophers.”

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Figure 2: Title page, Duarte Lopes, A Reporte of the Kingdome of Congo, trans. Abraham Hartwell (London: 1597).

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73 Ibid., n. p. (image 6); Peter Mancall, Hakluyt’s Promise: An Elizabethan’s Obsession for an English America (New Haven: Yale University Press, 2007), 219.
74 Lopes, A Reporte, title page.
In his dedication to the Archbishop of Canterbury, Hartwell reported he had translated the work to encourage his countrymen to embark on the “conquest of rude and barbarous Nations” so that they could be brought to Christianity. Inspiring such “benevolent conquest” required he correct received opinion about the nature of the torrid zone. Hartwell thus argued that both the hot and cold regions of the earth were habitable. He directed readers skeptical of such a “Paradox” to the Spanish Jesuit José de Acosta’s recently published *de Natura Novi Orbis* (1596), which supported his own contention. “And therefore I protest unto you,” he continued, “it was one of the chief Motives, which moved me to translate this Report, that it might be more publickly knowen, that it was not the single fancie of one man, touching the temperature of these two Zones, but also of divers other that by their owne travell have tried the certayntie thereof.” Among them was Duarte Lopes, and Hartwell predicted that “within few yeares you shall have it confirmed by many others that are and have been travellers, who have not as yet published their knowledge and trials in this behalfe.”

Clearly Hartwell sought to teach his English readers that they could survive in the torrid zone. The English continued to need reassurance that the region was habitable as late as 1597, after English ventures to tropical regions such as Guinea, Brazil, and Guiana; after Drake’s circumnavigation, the Hawkins voyages, and in the midst of the war with Spain of 1585-1603 in which English privateers raided Spanish settlements and ships in the West Indies and on the coast of Africa.

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75 Ibid., 3.
“naturally hotte, althowgh they bee other wise temperate”

I have argued that temperateness was a binary category of early modern environmental thought. In contrast to the torrid and frigid zones, both said to be uninhabitable because of their extremes of physical temperature, the temperate zone could support human life. During the sixteenth century English promoters drew on the experience of European competitors and the growing English experience of the extreme latitudes to advocate overseas trade, plunder, and settlement into both the torrid and frigid zones. By the criterion of habitability and hard won experience, they understood the torrid and frigid zones were themselves habitable and thus temperate. Indeed, in this setting the entire world had become temperate.

But mere habitability was not the sole criterion of temperateness. Early modern writers elaborated upon the concept, providing more detailed criteria that characterized those climates they considered temperate. Sixteenth- and seventeenth-century promotional writings on overseas lands abounded in claims of temperateness, often embedding the word “temperate” in long strings of descriptors that evinced its multiple connotations, accrued over time, as moderate, healthy, and the like. When Sir Francis Drake’s ships stopped at the River Plate in 1578 during their circumnavigation of the globe, one member of the expedition noted, “here wee found a good Temperature, and sweet Ayre, a very faire and pleasant Countrey, with an exceeding fruitfull Soyle.”[^79] Richard Hakluyt the elder advised potential adventurers to establish their settlements “in a temperate Climat, in sweete ayre, where you may possesse alwayes sweete water, wood, seacoles, or turfe, with fish, flesh, grayne, fruits, herbes, and rootes, or so many of

[^79]: Samuel Purchas, *Haklaytus Posthumus, or Purchas His Pilgrimes, Contayning a History of the World in Sea Voyages and Lande Travells by Englishmen and others*, vol.2 (Glasgow: James MacLehose and Sons, 1905) [hereafter HP], 125.
those, as may suffice [e]very necessitie for the life of such as shall plant there.”

A member of the Roanoke colony wrote around 1585 that the Chesapeake was “for pleasantness of seate, for temperature of Climate, for fertilitie of soyle, and for the commoditie of the Sea … is not to be excelled by any other whatsoever.” It is no surprise to find promoters of overseas expansion describing foreign lands in as inviting a manner as possible. But how exactly did temperateness relate to sweet air, a pleasant seat, or fruitful soil? Close attention to writers’ choices of words and the textual practices they employed in describing natural environments in the Atlantic world demonstrates temperateness was not merely associated with these characteristics, but in some ways made them possible.

Etymology reveals clues that help answer this question. Consider three words used by early modern Europeans to refer to qualities of the environment and the human body: the adjective, “temperate”; the verb, “to temper”; and the noun, “temperament”. I contend that when writing about physical environments, early modern authors used the adjective, “temperate,” to signify those environments that were habitable to humans. The English adjective “temperate” clearly derived from Latin; as I noted above (p.21), the temperate zone was labelled on zonal maps as “temperata.” Early modern English-Latin and Latin-English dictionaries translated the English adjectives, “temperate” or “tempered” as the Latin, temperatus. “To temper” was translated into the Latin, tempero. The English “temperament” was defined by early modern English translators as the Latin, temperamentum. The modern Oxford English Dictionary (OED) indicates that “temperate” is derived from the Latin temperāre, meaning “tempered,

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80 Richard Hakluyt, Divers Voyages touching the discovery of America and the islands adjacent, ed. John Winter Jones (London: Hakluyt Society, 1850), 132.
81 Hakluyt, PN 1598-1600, vol. 8, 321.

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regulated, restrained.” Now consider the verb “to temper,” of which “temperate” is a form. “To temper” is also derived from the Latin root, *temperāre*. Yet as the root of “to temper,” *temperāre* means “to divide or proportion duly, to mingle in due proportion, to combine properly; to qualify, temper; to arrange or keep in due measure or proportion, to keep within limits, to regulate, rule.” Likewise the noun, “temperament,” referring to the usual humoral composition of a given human body, derives from “to temper’ and shares its root, *temperāre*. All three words – “temperate”, “to temper”, and “temperament” – are thus derived from the same Latin root word, *temperāre*, yet the Latin word *temperāre* is defined differently when it used as the root of “temperate” on one hand and “to temper” and “temperament” on the other. How can this be explained? What is the etymology of *temperāre* itself? *Temperāre* derives from the Latin *tempus* and *tempor-* , meaning “a time or season, the proper time or season.” Taken as a whole, then, how were these meanings related? How did concepts of regulation and proportion relate to concepts of time and proper seasons?

If “temperate,” “to temper,” and “temperament” are words that connote regulation and proportion, they are orthographically similar to other words that connote time: the adjectives, “temporary” and “temporal”, and the noun, “tempo”. Early modern dictionaries translated the English, “temporary” as the Latin, *temporaneus*. The English “temporal” translated to the Latin, *temporalis*. According to OED, “temporary” pertains to phenomena lasting for or existing only during a limited or particular time, and has the Latin roots *tempus* and *tempor-* , meaning “time.” “Temporal” describes something that exists for a time or has to do with the material

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86 “Latin temperāre is generally held to be a derivative of tempus, tempor- a time or season, the proper time or season; but the sense history of both words is prehistoric and obscure”; “temper, v.”. OED Online. March 2012.
earth as opposed to the heavens, and has the Latin roots *tempus* and *tempor-*, in this case meaning “a space or point of time”. Finally, “tempo”, the rate of an activity or the speed of a piece of music, has the Latin root *tempus*, meaning “time”.

Ultimately, then, all six words - “temperate”, “to temper”, “temperament”, “temporary”, “temporal”, and “tempo” - are derived from *tempus, tempor-*., meaning “time.” Considered together these six words associate concepts of regulation (“temperate”, “to temper”, “temperament”) on one hand with limited periods of time and phenomena that occur during “proper” times or seasons (“temporary”, “temporal”, “tempo) on the other hand. Based on this linguistic evidence, I argue that the associations between these six words reflected early modern conceptions of temperate climates in the Atlantic world. For early modern Europeans, a temperate climate was not necessarily moderate in physical temperature, but rather one that underwent seasons of winter and summer. A temperate climate changed over time. Early modern Europeans understood temperateness as an effect of changing conditions over time. It was not mildness of physical temperature that made a place temperate; it was the fact that its conditions changed, and did so in a regular, dependable fashion. Such a conception of temperateness had important implications for overseas ventures. It suggested that environmental conditions which were untenable at a given moment would eventually change, and the alternation between, say, heat and cold, makes a place temperate. Thus the mere heat of a place was no obstacle to its being inhabited. This conception of temperateness allowed contemporaries to argue that the torrid and frigid zones alike were temperate, because they experienced changing seasons and

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89 “temporal, adj.1 and n.1”. OED Online. March 2012. Oxford University Press. Of course, Christianity treats the material earth as existing for a limited time, while the heavens are eternal.

were fundamentally changing and changeable.\textsuperscript{91} Such a conception places Oviedo’s phrase, “naturally hotte, althowgh they bee otherwise temperate,” in a new light.\textsuperscript{92}

This concept of time appears prominently in Eden’s 1555 book, \textit{The decades of the newe worlde}. \textit{The decades} joined Eden’s earlier \textit{A Treatyse of the newe india}, published in 1553, as one of only two printed books in English describing the Iberian discoveries in the Indies.\textsuperscript{93} In \textit{The decades} Eden continued to promote English overseas expansion by presenting the Iberian accomplishments as examples worthy of emulation. As literary scholar Andrew Hadfield notes, the book contained “elaborate prefatory material extravagantly praising Spanish heroism in the Americas and urging the English to unite with and copy their European imperial forebears.”\textsuperscript{94} It covered much of the known world in the middle of the sixteenth century; in addition to the translation of the first three decades of Peter Martyr, Eden chose selections from Gonzalo Fernández de Oviedo y Valdés and Francisco López de Gómara on the Americas, assorted writers on navigation, several descriptions of Muscovy and Cathay, and relations of two English voyages to Guinea in 1553 and 1554. The book treated the climate in several passages in its 361 folio pages.

In \textit{The decades}, Eden chose to include a selection from Gonzalo Fernández de Oviedo y Valdés’s \textit{La Natural hystoria de las Indias} (1526) that explained the workings of the equatorial climate.\textsuperscript{95} Entitled, “Of the temperature of the regions under or neare to the burnt lyne cauled

\begin{itemize}
\item \textsuperscript{91} In modern Romance languages the words for “weather” and “time” are the same. In Spanish the word for “weather” (tiempo) is the same as the word for “time” (tiempo). Likewise in French the word for “weather” (temps) is the same as the word for “time” (temps).
\item \textsuperscript{92} Eden, \textit{decades}, f.183v.
\item \textsuperscript{93} Arber, xii.
\item \textsuperscript{95} Oviedo’s original work was \textit{Historia general y natural de las Indias} (Madrid, 1535). The two English translations were made from the summary version, an entirely different work. They were Eden and Arber’s reprint; and Sterling A. Stoudemire, ed., \textit{A Summary of the natural and general history of the West Indies}, written by Gonzalo Fernández de Oviedo, alias de Valdés (Chapel Hill: University of North Carolina Press, 1959).
\end{itemize}
Torrida zone or the Equinoctiall: and of dyvers seasons of the yeare,” the selection argued that the torrid zone was temperate and habitable.\textsuperscript{96} Reflecting its importance for contemporary readers, Eden provided the selection its own heading in the book’s table of contents. The passage demonstrates three phenomena at work in early modern conceptions of hot climates: 1) it linked the temperateness of the torrid zone to its seasons; 2) it introduced the notion that a temperate climate need not be moderate in physical temperature, but could be both hot \textit{and} temperate at the same time; and 3) Eden made a dramatic textual intervention in Oviedo’s passage, inserting text of his own that further emphasized and explained how the torrid zone was temperate and habitable.

Oviedo began the section by declaring:

the landes and regions that are neare about the clymes of the Equinoctiall lyne, are naturally hotte, althowghe they bee otherwise temperate by the diuine prouidence. And therfore suche fleshe or fyshe as is taken and kylded in these regions, can not bee preserued from putrefaction except it be rosted, sodden, or perboylde, the same daye that it is kyld. And wheras I haue sayde that such regions are naturally hot, and yet temperate by the prouide

cnce of god, it is so in deede.\textsuperscript{97}

Here Oviedo declared the Torrid Zone both hot and temperate. He did so twice in quick succession, the second time emphasizing this fact “in deede.” By classifying the region as \textit{hot but temperate}, Oviedo explained to Europeans that it was habitable but also very different from Europe. That he mentioned food so quickly after declaring the tropics temperate, and that the

\textsuperscript{96} Eden, \textit{decades}, f.183v. I have compared Eden’s translation of Oviedo to both a modern Spanish edition and a modern English edition of the work. I found few substantive differences among the text themselves, and virtually no differences in the sections treating the climate. But Eden altered the title of the section on the climate from the original by Oviedo. Oviedo placed his explanation of the habitable climate of the torrid zone in his chapter 10, entitled “De los indios de Tierra Firme y de sus constumbres y ritos y cirimonias” (“Of the Indians of Tierra Firme and their customs, rites, ceremonies”). When Eden reprinted the same material in \textit{The decades}, he did so under the title, “Of the temperature of the regions under or neare to the burnt lyne cauled Torrida zone or the Equinoctiall: and of dyvers seasons of the yeare.” For Eden explaining how the torrid zone was habitable, and drawing the attention of the reader to that point by retitling the passage, seems to have been more important than describing the lifeways of the Indians. Gonzalo Fernández de Oviedo, \textit{Sumario de la Natural Historia de las Indias}, ed. Alavaro Baraibar (Navarra: Universidad de Navarra, 2010), 119. Literary scholar Andrew Hadfield has studied Eden’s \textit{The decades} and judges his translation of Peter Martyr to “not differ significantly” from the Latin. Hadfield, “Peter Martyr, Richard Eden, and the New World,” \textit{Connotations} 5 (1995), 21, n.6.

\textsuperscript{97} Eden, \textit{decades}, f.183v.
food itself would putrefy after only a day unless cooked, vividly illustrated the climate’s great heat in terms easily understood by European readers. In this manner Oviedo described the torrid zone in ambivalent fashion as both similar to Europe (because Europeans could survive there) and drastically different from it (because it was so hot that food rotted in a mere twenty-four hours).

For Oviedo the turning of the seasons tempered the torrid zone. He appears to have measured temperateness in part by the capacity of an environment to support plant life, and by extension, human life. Soils in the torrid zone were so “hotte” that plants grew only in the upper six feet of soil cover. Yet he noted that this top layer of soil was “temperate and very moyste aswell by reason of thabundaunce of water whiche fauleth from the heaven uppon the earth at certeyne ordinarie seasons of the yeare (my emphasis).” What was important to Oviedo, then, was not necessarily that water tempered the hot soil, but rather the time in which water appeared in the torrid zone. In early modern usage, “certeyne” referred to something inevitable, fully established and grounded by experience. Personal experience was fundamental to the humanist intellectual mode in which Oviedo and his contemporaries worked, and recourse to experience was a standard method of grounding an argument in the early modern era. Oviedo’s contention that it rained in “certeyne ordinarie seasons” assured readers the region was indeed habitable because it was based on the personal experience of Oviedo and others. It was through the action of these dependable seasonal rains, he considered, that “the myghtie and supreme lorde which made these landes, hath most prudently provyded for the preservation of the same.”

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98 Ibid.
100 Eden, decades, f.183v. Here Eden seems to have described the temperateness of the torrid zone in providential terms in a way Oviedo did not. Oviedo wrote merely, “así por las muchas aquas que en aquella tierra caen del cielo (en sus tiempos ordenados y entre el año), como por la mucha cantidad de ríos grandísimos y arroyos y fuentes y
Eden interpolated a substantial note in the midst of Oviedo’s text to explain further the habitability of the torrid zone (Figure 3). Printed in a slightly smaller typeface and beginning with his initials, “R. E.”, Eden’s note was an important editorial act that made explicit his role as mediator of the text. The entire selection describing the equatorial climate occupied about two folio pages, of which Eden’s note took up about three quarters of a folio page. If the relative length of the two texts is any indicator of their importance, the sheer size of Eden’s interpolation (almost forty percent of the total length of the section) suggests the seriousness with which Eden considered elaborating on Oviedo’s discussion of the climate.

paludes de que proveyó aquella tierra aquel Soberano Señor que la formó” (“because the most waters in that earth fall from the sky (in their ordained seasons and over the course of the year), how the great rivers and streams and springs and lakes that the Lord God provided that earth were formed”). Oviedo, Sumario, 120.
Eden wrote that he intervened to clarify Oviedo’s contention that the torrid zone was temperate. The existence of a temperate torrid zone was a fact “vnknowen to the owlde wryters,” he noted, “and without consideration wherof reason can not perfectly conceaue howe temperate regions shulde be vnder the Equinoctiall lyne.”

101 Here he cited the De subtilitate (1550) of the...
Italian polymath, Girolamo Cardano (1501-1576). According to Cardano, Eden reported, water had been placed in the lowest elevations of the earth to temper it and to facilitate life, “that place might bee lefte for the habitation of beastes, and that water by his couldnesse might temperate and not destroy the life of beastes.” Water existed only in this “superficiall” part of the earth, “in the which, metals, plantes, beastes, and fysshes shulde be nuryshed.” The “lowest” region of the earth corresponded to the region under the torrid zone, so that “all waters” flowed toward the tropics “to mitigate with moyster thextremitie of heate which otherwise shulde haue byn intollerable in that clyme.”


103 Eden, decades, f.184.

104 Ibid. It is perhaps ironic that Eden resorted to Cardano’s theoretical explanation to support a claim based on Oviedo’s personal experience. It demonstrates the extent to which contemporaries continued to turn to learned philosophy to authenticate a proposition. It also suggests that convincing readers the torrid zone was habitable required the support of multiple authorities.
Figure 4: Richard Eden’s in-text note within Oviedo’s explanation of a habitable torrid zone ends on f. 184v. Richard Eden, *The decades of the newe worlde* (London: 1555), ff. 184r-185r.

Oviedo’s text resumed after Eden’s intervention (Figure 4). In addition to its regular inundations, Oviedo argued, the torrid zone boasted “many roughe and hyghe mountaynes” whose “temperate ayer and pleasaut, cleare and moderate nightes” contributed to its temperateness.\(^{105}\) Oviedo defended his own claims against those of the ancients because the latter had never been to the torrid zone and therefore had “no certeyne knowleage” of the place. In

\(^{105}\) Ibid., f. 184v. Although Oviedo’s focus on “hyghe mountaynes” contradicted Cardano’s characterization of the torrid zone as the lowest elevation on the globe, my concern here is with the import of Eden’s intervention rather than correspondence between the texts he cited.
their ignorance they had declared the torrid zone “naturally vnhabitable,” but Oviedo was able “to witnesses the contrarie by testimonie of syght and feelyng as by most certeine senses, hauyng liued many yeares in these regions, by reason wherof better credit ought to be giuen me then to such as haue grounded their opinion onely vpon coniectures.”

Sixteenth-century Europeans thus made sense of the climate of the torrid zone in part through its seasons. They did so not merely to understand the region in an abstract sense, but also because understanding the seasons was a rhetorical method that bolstered claims that the region was indeed as temperate and habitable as its promoters claimed. For example, Oviedo reiterated his contention that the torrid zone experienced seasons, noting that “whereas I haue sayde beefore that it rayneth in these regions at certeyne ordinarie tymes, it is so indeede.” But, he explained, seasons in the torrid zone took place at “contrary tymes” to the seasons in Spain. During the months of December and January, when Spain endured the worst of its cold and rainy winter, the torrid zone experienced its own “sommer and tyme of greatest drowght and without rayne.” Conversely the Spanish summer corresponded to the tropical winter, “the tyme when it rayneth most” during July “and a moneth before and a moneth after.” Yet Oviedo described the seasons in the torrid zone in a way that likened them to seasons in Europe, stressing the fact that natives of the tropics recognized their winters as “winters” and felt them as cold. The season “whiche they caule wynter” in the tropics was no colder than at any other time of the

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106 Ibid.
107 Ibid., f.185.
108 Ibid.
109 Ibid.
110 Ibid.
111 Ibid.

The text is opaque as to whether the people who felt the tropical winter as cold were Native Americans or Europeans. Because Oviedo referred in this passage to Darien, the Gulf of Uraba, and “golden Castile or Beragua,” I assume he had Central America in mind (f.185). This region had a small population of Spaniards in the first half of the sixteenth century, but that fact does not help me suss out about whom he wrote.
year, “the tyme in these regions being euer after one maner.” Here Oviedo distinguished between the cold winters familiar to Europeans and a season that justified the name, “winter,” merely because of its precipitation. Winter was that time when “the sonne is hyd from theyr sightes by reason of cloudes and rayne more then at other tymes.” And while this tropical winter was not the cold winter of Europe, “yet forasmuch as for the most parte of the yeare they lyve in a cleare, open, and temperate ayer, they sumwhat shrynke and feele a lyttle coulde durynge the tyme of the said moist and cloudy ayer, although it bee not could in deede, or at the least such coulde as hath any sensible sharpenes.” Oviedo conjured seasonal changes expected by Europeans in an attempt to make the torrid zone comprehensible as temperate, likening what he cast as a practically imperceptible change in physical temperature that accompanied the change of seasons in the torrid zone to the more drastic change in temperatures that took place during the change of seasons in Europe. Not only was there a winter in the torrid zone, then, but people in the region sensed it as winter, despite its not being as cold as his readers might expect.

In the second edition of *The Principal Navigations Voyages Traffiques & Discoveries of the English Nation* (1598-1600), Richard Hakluyt published a detailed text dedicated to proving the torrid zone habitable. Hakluyt extracted a selection from *A Trve Discovrse of the late voyages of discoverie* (1578) by George Best, an Eton educated sailor and participant in Martin Frobisher’s second and third voyages in search of a Northwest passage to China in 1576 and 1578. In his 1578 publication, Best prefaced his relation of all three of Frobisher’s voyages

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112 Ibid., f.185. A later selection in the *decades* written by Amerigo Vespucci entitled, “Of the Pole Anatarike and the starres abowt the same And of the quality of the regions and disposition abowt the Equinoctiall line. Also certeyne secreates touchyng the acte of saylynge,” referred to winter in a similar fashion. Here Vespucci quoted the Venetian explorer Alvise Cadamosto on Senegal, writing that “this country is ever hotte al times of the yeare. Yet is there a certeyne varietie which they caule wynter.” Ibid., f.248.

113 Ibid., f.185.

114 George Best, *A Trve Discovrse of the late voyages of discoverie, for the finding of a passage to Cathaya, by the Northvveast, vnder the conduct of Martin Frobisher Generall ... Also, there are annexed certeyne reasons, to proue all partes of the Worlde habitable, with a generall Mappe adioyned....* (London: Henry Bynnyman, 1578). While he
with a call for other Englishmen to attempt overseas ventures. He lamented the lingering fears of extreme climates that he believed dissuaded many English mariners from pursuing their country’s rightful place among seafaring nations. To overcome their fears, he prefaced his relation of Frobisher’s exploits with a detailed explanation of the workings of tropical and polar climates, entitled, “Experiences and reasons of the Sphere, to proove all partes of the worlde habitable, and thereby to confute the position of the five Zones.”¹¹⁵ Best’s discourse is an exemplary source for contemporary understandings of extreme climates in the late sixteenth century.¹¹⁶

As had Oviedo before him, Best based his argument for a temperate torrid zone on seasonal characteristics. He argued that the heat at a given latitude was determined by a combination of the angle of incidence of the sun’s rays upon the earth and the length of daylight at that latitude. The sun produced more heat as it approached a perpendicular angle to the earth, at which point the light both impacted the earth and reflected directly upward, effectively striking anyone in that spot of ground twice. Likewise the more hours of daylight a given latitude received, the warmer it would be, he reasoned, “for though the Sunne beames do beat perpendicularly upon any region subject unto it, if it [the sun] hath no continuance or abode
¹¹⁵ George Best, “Experiences and reasons of the Sphere, to proove all partes of the worlde habitable, and thereby to confute the position of the five Zones,” in Hakluyt, PN 1598-1600, vol.7, 252.
¹¹⁶ I have compared the version of Best’s discourse in Hakluyt, PN 1598-1600, vol.7 with the 1578 original and find virtually no difference between the text. In a few places Hakluyt divided particularly long passages into multiple shorter paragraphs. This practice has no effect on the meaning of the text. With regard to Hakluyt’s treatment of foreign language texts, F. M. Rogers considers him an accurate translator, empowered by his knowledge of Greek, Latin, Italian, Spanish, Portuguese, and French to render syntactically complex passages faithfully into English. F. M. Rogers, “Hakluyt as Translator,” in The Hakluyt Handbook, vol. I, ed. David B. Quinn (London: The Hakluyt Society, 1974), 37-47.
above the Horizon, to worke his operation in, there can no hote effect proceed.”\textsuperscript{117} The relative length of days and nights had additional influence on physical temperature. During the night the earth released cold, moist vapors. According to Best, these emissions inhibited the transfer of heat from the sun, so that it took some time in the morning for the sun to burn off the vapors before its heat could be felt. A region with longer night times would produce more of these cold vapors, and more vapors meant the heat of the sun would be blocked during the day for significant length time, yielding a proportionately colder temperature.

Best’s straightforward hypothesis yielded unexpected effects. When either the angle of incidence of sunlight or the length of daylight changed, so too did the heat; in some cases the two properties cancelled each other out, “so that wheresoever these two causes do most concurre, there is most excesse of heat: and when the one is wanting, the rigor of the heat is lesse.”\textsuperscript{118} Best drew upon this property as the basis for a surprising claim: he argued that the torrid zone and western Europe shared similar temperatures. When the sun was at the equator it struck the ground perpendicularly, causing its rays to “reflect and reverberate in themselves, so that the heat is doubled, every beame striking twice.”\textsuperscript{119} At the same time of the year and some fifty degrees of latitude to the northward, Britain received the rays of the sun at a much shallower angle. Here they struck the ground once and bounced harmlessly off into the sky, “and therefore our heat [in Britain] is the lesse for any effect that the Angle of the Sunne beames make.”\textsuperscript{120} Yet when England’s days began to lengthen in relation to those at the equator, the difference in temperatures between the two latitudes diminished. Now the longer days and shorter nights in England compensated for the sunlight’s sharper angle of incidence in the north, giving the

\begin{footnotesize}
\textsuperscript{117} Best, “Experiences,” in Hakluyt, PN 1598-1600, vol.7, 255.
\textsuperscript{118} Ibid.
\textsuperscript{119} Ibid.
\textsuperscript{120} Ibid., 255-256.
\end{footnotesize}
weaker rays of the sun more time in which to heat the earth. Meanwhile the nightly vapors were
less substantial during the shorter English nights than during the comparatively longer nights at
the equator; the longer hours of daylight then burned them off more easily and heated England
more quickly than before. Thus, Best reasoned, “by which two advantages of long dayes and
short nights, though we want the equalitie of Angle, it commeth to passe that in Sommer our heat
here [in England] is as great as there is there [at the equator], as hath bene proved by experience,
and is nothing dissonant from good reason.”121

Like the temperate zone, Best explained, the tropics experienced seasons. Unlike the
temperate zone, however, the region had two summers and two winters rather than the
procession of summer, fall, winter, and spring familiar to Europeans. In both the torrid and the
temperate zones, seasons were marked by the sun’s annual progress between the tropics. In June,
when the sun reached its furthest northward excursion at the Tropic of Cancer, Europe enjoyed
summer and the torrid zone had one of its winters. As the sun moved southward, the seasons
changed. When it arrived at the equator in September, temperate Europe experienced autumn and
the torrid zone had one of its summers. Reaching the Tropic of Capricorn in the south in
December, the sun’s position caused winter in both Europe and the torrid zone. And as the sun
returned northward it passed the equator again in March, bringing springtime for Europe and a
second summer for the tropics.

A second example, a comparison of the climates of the torrid zone and France in the
month of June, related to English readers the exact nature of the physical temperature of the
tropics. It also provided Best an opportunity to liken the tropical “winter” to the cold winters
with which Europeans were experienced. In this case his explication of the workings of the angle
of sunlight, the day length at different latitudes, and other factors posited that the heat felt in

121 Ibid., 256.
Paris in June actually *exceeded* that of the island of São Thomé, under the equator off the west coast of central Africa, at the same time of the year. Comparing São Thomé to Paris provided the English a yardstick against which they could measure their own experience of the summer heat, because the French capital sat in “a Climate to us well known, and familiarly acquainted by like height of the Sunne in both places.”\(^{122}\) By “both places” Best meant not Paris and São Thomé, but Paris and England. He implied that the English and French climates were similar in order to make his discussion of the heat of São Thomé more meaningful to his readers.

June was height of summer in Paris, but it was winter at the equator. Best argued that São Thomé did experience a form of winter, replete with cold. “Under the Equinoctiall in June is no excessive heat,” he wrote, “but a temperate aire rather tending to cold.”\(^{123}\) He implied the existence of seasons as Europeans understood them, with their characteristic oscillation between hot summer and cold winters. Temporarily abandoning his geometric principles, he appealed instead to the senses and customs: “for as they have there [in São Thomé] for the most part a continuall moderate heate, so yet sometime they are a little pinched with colde, and use the benefite of fire as well as we.”\(^{124}\) Conditions were similar across the Atlantic in the mountainous regions of Mexico and Peru. Here “the people a little shrincke at the cold, and are often forced to provide themselves clothing.” The Spanish reported “many people clothed” in the Americas, “especially in Winter, whereby appeareth, that with their heat there is colde intermingled, else would they never provide this remedy of clothing, which to them is rather a griefe and trouble

\(^{122}\) Ibid., 260. Note here that he seems to expect at least some readers to refer back to their own bodily experience of Parisian summers, another nod to the importance of eye witnessing. London is about 2.5 degrees north of Paris, or about 200 miles. Although 200 miles can make a lot of difference north to south when you consider climate.

\(^{123}\) Ibid.

\(^{124}\) Ibid.
then otherwise.”125 To argue that people in the tropics experienced a winter - and a cold winter at that - was to argue that the region was temperate.

Summing up, Best emphasized the importance of regular alterations in time:

Wee may therefore very well bee asserstained, that under the Equinoctiall is the most pleasant and delectable place of the worlde to dwell in; where although the Sunne for two houres in a yeere be direct over their heades, and therefore the heate at that time somewhat of force, yet because it commeth so seldome, and continueth so small a time, when it commeth, it is not to bee wayed, but rather the moderate heate of other times in all the yeere to be remembered. And if the heate at any time should in the short day waxe somewhat urgent, the coldnesse of the long night there would easily refresh it … If the heate of the Sunne in the day time doe burne or parch any thing, the moysture of the night doeth coole and refresh the same againe, the Sunne being as long absent in the night, as it was present in the day.126

In this passage Best up-ended conventional wisdom about the great heat of the torrid zone. He reminded his readers that a close, perpendicular sun occurred in the equator for only two hours each year, and a moderate heat prevailed for the rest of the time. Best could not afford to say that the sun’s beams did not strike the equator are right angles without undermining his entire argument. Instead he split hairs, averring that the sun is perpendicular to the earth here, but only twice a year, and only for an hour each time. Only then was it *perfectly* perpendicular to the surface of the earth, and only then would its reflections strike twice. He implied that at all other times the reflected light did not strike in the same place and that therefore the equator enjoyed only moderate heat. Thus it was a form of seasonality, in this case the cycle from day to night over twenty four hours, that accounted for the temperateness of the Torrid Zone. In Best’s formulation, then, if a place were hot and its heat were countered by some other condition later on, and especially if that condition were regular and dependable, then that place was temperate.

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125 Ibid.
126 Ibid., 265.
As late as 1625 Samuel Purchas continued to explain the temperateness of the torrid zone in his immense collection of travel writings, *Hakluytus Posthumus, or, Purchas his Pilgrimes* (1625).\(^{127}\) Purchas included excerpts from the Jesuit José de Acosta, whose natural history of the New World, *The Natural and Moral History of the Indies*, had appeared in Spanish in 1590 and in English in 1604.\(^{128}\) As did Eden and Hakluyt, Purchas selected parts of many travel narratives for inclusion in his larger compilation; his decision to include Acosta’s discussion of a temperate West Indian climate indicates explaining the workings of tropical climates remained relevant as late as 1625, after decades of English piracy and privateering in the Atlantic, settlement attempts in Guiana and Virginia, and the establishment of English trade to the East Indies.\(^{129}\)

Acosta drew on his own experience in Peru and Mexico to challenge the Aristotelian notion of an uninhabitable torrid zone. Doing so was an important goal for Acosta, for he devoted one of the seven books of his *Historia natural y moral de las indias* to explaining the

\(^{127}\) Samuel Purchas, *Hakluytus Posthumus, or Purchas His Pilgrimes, Contayning a History of the World in Sea Voyages and Lande Travells by Englishmen and others*, 20 vols. (Glasgow: James MacLehose and Sons, 1905).


habitability of the region. Rather than a dry wasteland, he reported, it was in fact quite humid. Seasonal characteristics such as abundant rains and the days and nights of equal length tempered the sun’s heat. Topographical features such as the proximity of the ocean, the presence of mountains, the region’s winds, and the providence of God also contributed to the region’s temperateness. Topographical features explained variations in environmental conditions that made other places in the torrid zone less than ideal habitations. Finally, the region was hot but temperate, such that sun’s heat could grow quite hot before being tempered by rain.

According to Acosta, the sun was the source of both the region’s great heat and its temperateness. The torrid zone was temperate because it was humid, “very moist and subject to raine,” by which “it doth temper this heat proceeding onely from the Sunne beames.” Acosta reasoned that the “great force of the Sunne in those parts” attracted water vapor, pulling it skyward from the surrounding ocean, which then fell as rain. By his reasoning, then, the very celestial body that the ancients believed was responsible for making the torrid zone uninhabitable in actual fact tempered it. It was nothing more than “the force and heate of the Sunne,” he judged, “[that] is the cause of raine in those Countries.”

The rains were seasonal phenomena. Acosta reported it rained in particular in the afternoon, “when as the Sunne casts his beames directly upon the earth, at which time he hath most force.” Travelers in New Spain and Peru attempted to finish their journeys before noon to avoid the rains. Altogether, then, “the dayes, the yeere, and the moneths, shew the truth hereof, that the violent heate of the Sunne causeth the raine in the burning Zone.” A second seasonal phenomenon was the short day length, so that under the equator, “the heat of the day

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130 Purchas, HP, vol.15, 7.
131 Ibid., 2.
132 Ibid., 3.
133 Ibid.
134 Ibid.
being there shorter and of lesse continuance, it causeth not so violent a heate.”¹³⁵ When he reported it was hotter in Andalucía in July and August than in the torrid zone at the same time because of Spain’s longer summer days, Acosta echoed the Englishman George Best’s claims that Europe was hotter than the torrid zone.¹³⁶ Winds were also important in Acosta’s reasoning: the “fresh and pleasant” winds of the region must certainly have been the work of God, sent to “that Region where the Sunne makes his course (which seemes should be burnt up) that by their coolenesse the excessive heate of the Sunne might be qualified.”¹³⁷

Because of these characteristics, Acosta felt justified in praising the place: “In truth there is no Region in the world more pleasant and temperate then under the Equinoctiall, although it be not in all parts of an equall temperature, but have very great diversities.”¹³⁸ These diversities made some regions more or less habitable and temperate. For example, differences in altitude made some lands hotter or cooler because “the Sunne beames have greater repercussions upon lower places” than on higher ones.¹³⁹ Likewise the winds varied from place to place within the same latitude, so that “some Regions and Cities [are] hotter then others, onely for that they feele lesse winde to refresh them.”¹⁴⁰ This was the same phenomenon that obtained at the city of Barlovento on the Canarian island of Las Palmas. Here the presence of the wind determined whether the place was hot or cold. A wind blowing inland from the ocean cooled the island at night. It dissipated during the morning, giving rise to great heat, only to return in the afternoon. “We have tried all this” while at Barlovento, “where in the mornings wee did sweat for heat, and at noone we felt a fresh aire” when the breeze returned.¹⁴¹

¹³⁵ Ibid., 8.
¹³⁶ Ibid., 8-9.
¹³⁷ Ibid., 11.
¹³⁸ Ibid., 7.
¹³⁹ Ibid., 10.
¹⁴⁰ Ibid., 9.
¹⁴¹ Ibid., 12.
Acosta’s credulity had reversed itself quickly upon his arrival in the Indies. “Having read what Poets and Philosophers write of the burning Zone,” he related, “I perswaded my selfe, that coming to the Equinoctiall, I should not indure the violent heate.” He was surprised to find that, at the height of the sun’s power in March, he “felt so great cold, as I was forced to goe into the Sunne to warme me: what could I else doe then, but laugh at Aristotles Meteors and his philosophie, seeing that in that place, and at that season, when as all should be scortched with heat, according to his rules, I, and all my companions were cold?” Ultimately the variation in time and temperateness kept alive the notion of a hot torrid zone, both fit into the hot but temperate category.

Purchas published similar information on the seasons in his translation of the Dutch writer Pieter De Marees on the Gold Coast. Originally published in Dutch in 1602, Purchas’s translation was the only English version of De Marees. De Marees described a hot climate tempered by the presence of its seasons. Like others, De Marees described a situation in which the natives themselves experienced a form of winter, despite the heat of the climate. While he mentioned only two seasons on the Gold Coast, he did note that the trees sometimes had two sets of leaves in a year, perhaps alluding to the notion of two summers and two winters in the torrid zone.

142 Ibid., 6.
143 Ibid., 6-7.
145 Purchas, Hakluytus Posthumus, vol.6, 319-320.
Conclusion

Temperateness was a category of geographical thought that connoted habitability. Early modern Europeans contrasted the temperate zone in which they lived to the zones surrounding it in which life was unsustainable due to extremes of heat and cold. Promoters of overseas ventures argued against this belief as they sought to encourage English expansion. The promoters and their collaborators understood from their observation of the Spanish and Portuguese and from their own experience trading and traveling that the torrid and frigid zones were habitable and inhabited.

When the promoters worked to prove the torrid zone and frigid zone habitable, they argued that various natural phenomena, occurring at regular, dependable intervals, “tempered” the climate and thus allowed for human habitation. Among these were winds, rains, the rotation of days and nights, and characteristics connected with the seasons. Temperateness was thus a function of time, a combination of extreme and less extreme climatic conditions that on average, in the aggregate, “tempered” the environment. A temperate environment was not necessarily one in which physical conditions were mild or moderate, but rather one that alternated in time between extreme and less extreme conditions. The English understood the climates of West Africa, the West Indies, and Virginia in precisely these terms.
CHAPTER 2

Seasonality and English Adaptation to the West African Tropics, 1553-1705

In 1961 the historian Philip D. Curtin described how the horrific disease mortality suffered by English soldiers and travelers in tropical West Africa between the years 1780 and 1830 saddled the region with a reputation among Britons as the “white man’s grave.”¹ In his 1981 synthesis on the Atlantic slave trade, James A. Rawley pushed this date back by over a century, arguing that reports of high mortality caused by tropical disease suggested that Africa had been considered a deadly white man’s grave as early as the 1660s.² In this chapter I argue that while the English may have considered tropical Africa a deadly place in the middle of the seventeenth century, it was not always so. Far from a hot and inhospitable torrid zone, at the outset of English overseas expansion in the middle of the sixteenth century, Africa was in fact central to English conceptions of habitable temperate climates.

During the second half of the sixteenth century, the English viewed West Africa as habitable and temperate, just as they did the tropical regions of the Americas. In fact, cosmographers and natural historians used Africa “to think with,” deploying examples from African geography in influential travel narratives that explained how the torrid zone in the Americas was temperate and thus habitable. Central to their arguments was a conception of seasonality rooted in both geographical theory and direct observation of the workings of the

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African climate. In particular the writers of these materials pointed to the dependable change of seasons and the diurnal change from hot days to cool nights in the tropical regions of Africa to argue that the torrid zone as a whole was habitable. Writers then extrapolated seasonal characteristics of the African environment to the tropics of the Americas and the rest of the world, so that Africa was at the heart of the concept of seasonality with which Europeans argued for the habitability of the torrid zone as whole. Accounts created by English sailors and traders who actually ventured to tropical West Africa between the 1550s and the 1620s demonstrate that ordinary mariners understood the African climate in terms of seasonality, just as did the learned cosmographers and natural historians.

Yet while the English considered the torrid zone temperate and habitable, it was still hot, and its great physical temperature remained a defining characteristic of the region. Many of the English who traveled to Africa died of disease, and survivors and metropolitan observers alike explained their deaths in part by the action of the hot climate on English bodies better suited to life in temperate Europe. For all its supposed temperateness, then, Africa’s heat made it a dangerous place, but contemporaries believed the risk of disease could be overcome by adaptation on the part of English visitors; Africa was not yet a white man’s grave. Between the 1550s and the 1620s, some prescribed timing voyages so as to arrive at the best time to trade while also avoiding sickly seasons. Once in Africa, they advised, travelers must practice strict temperance in eating, drinking, sex, and other bodily functions. Some believed the bodies of the English would simply change, becoming “acquainted” with or “seasoned” to the hot climate over time, so that they no longer suffered the characteristic fevers and other diseases that beset English visitors to the region. Still others advised traveling at night to avoid the heat of the day.
By the 1620s a new conception of the African climate heralded the birth of the “white man’s grave.” While they continued to think of the seasons as tempering the torrid zone, the English came to view seasonal phenomena as sources of the unhealthiness for which Africa was rapidly gaining a reputation. Observers identified the rainy season whose waters supported agriculture and tempered the heat as a primary cause of sickness for Europeans on the coast. From the 1660s commentators considered the African environment in light of neohippocratic medical ideas then gaining currency in Europe that linked unhealthiness to environmental conditions in the form of long term seasonal changes and shorter, more rapid changes in physical temperature. Writers increasingly explained the illnesses that struck down English sailors, slavers, and merchants by the diurnal oscillation of hot days and cold nights, rather than the annual change from summer to winter. In keeping with contemporary medical and environmental theory, they argued that poisonous vapors, fogs, and miasmas emanated from the earth on a daily basis and became impossible to avoid. Yet fully committed to plantation economies worked by African slave labor on the western side of the Atlantic, the English could not abandon the continent. They continued to prescribe vigilant personal temperance in an effort to reduce the continuing high mortality. Some made claims that Africa could be improved with the application of European standards of labor, and that by implication it was the Africans themselves who made their environment unproductive and their climate unhealthy.

A Temperate and Habitable Africa

Laggards in overseas expansion, promoters of English overseas ventures labored to prove to skeptical countrymen that the torrid zone was habitable and fit for exploitation during the second half of the sixteenth century. In order to do so, they drew upon a small but growing body

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of knowledge amassed by Spanish, Portuguese, Italian, and other travelers since the mid-fifteenth century. Compilers of the great English travel collections of the era such as Richard Eden and Richard Hakluyt, and translators such as Abraham Hartwell and John Pory, necessarily turned to other Europeans’ experiences of Africa to explain the habitability, or temperateness, of the torrid zone.

When Richard Eden selected the texts that made up *The decades of the newe worlde*, his 1555 book of English translation of writings on Iberian experiences throughout the globe, he chose material that explained to skeptical English readers how the torrid zone was habitable. As I discussed in the previous chapter, Eden’s translation of Oviedo’s 1526 book *La Natural hystoria de las Indias* explained that the torrid zone was tempered by “certeyne and ordinarie” seasonal rains. Eden reinforced Oviedo’s contention with a dramatic editorial intervention, interpolating into Oviedo’s text an excerpt from the Italian polymath, Girolamo Cardano, that corroborated the existence of water in the tropics. Cardano had explained how water flowed naturally to the tropics because the region occupied the lowest elevation on the earth. In Eden’s hands the two texts complemented each other, with Oviedo’s text identifying the torrid zone as habitable by virtue of seasonal rainfall and Cardano’s excerpt confirming that water existed in a part of world long considered a desert.

While Cardano had explained that water flowed into the torrid zone from elsewhere, he reminded readers that some of the waters that tempered the region originated within the torrid zone itself. Here he turned to an example from Africa to help explain the temperateness of the tropics. According to Cardano, the Nile began near the tropic of Capricorn and carried its life-giving waters northward through the torrid zone. It snaked its way through the continent,

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5 Ibid., f.183v.
“runnynge with all his braunches vnder and beyonde the Equinoctiall cyrcle, [and] disparseth through owt the burnt line of Torrida zona,” before emptying into the Mediterranean at Alexandria. Its situation reflected the working of divine providence as the river tempered the heat of tropical Africa: “it was necessary therfore that the greatest parte of the coulde and mosyst element shulde haue recourse thyther and consyst there, whereas was the greatest necessity to temper the heate of the soonne by mystynge and coolynge the earthe and the ayer, as vnder the Equinoctiall.”

Elsewhere in *The decades*, Eden treated the length of the days and nights as tempering the hot climate of Africa. In a passage from the German theologian and geographer Jacobus Ziglerus (1470-1549), Eden related how the heat of a given spot on the earth was determined by a combination of the length of the daylight hours and the angle of incidence of the sunlight that struck the earth. In the tropics the angle of the sun’s rays striking the earth was always near perpendicular, so that “so muche are they [tropical lands] the more burnt with heate, as Affrica.” The resulting heat was moderated, however, by the equal length of days and nights in the region, which helped to “restore the domage of the day past by reasõ of the moisture consumed by vapour.” If part of Eden’s task in promoting English overseas expansion into the Atlantic required him to publicize a habitable torrid zone, his examples from Cardano and Ziglerus used conditions in Africa to argue for a habitable tropics in the Americas.

Likewise the English mariner and adventurer George Best (1578) argued for the habitability of the torrid zone as a whole based on several African examples. Best considered

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6 Ibid.
7 Ibid., 263v.
8 “A true discourse of the three Voyages of discoverie, for the finding of a passage to Cathaya, by the Northwest, under the conduct of Martin Frobisher Generall: Before which, as a necessary Preface is prefixed a twofolde discourse, conteining certaine reasons to prove all parts of the World habitable. Penned by Master George Best, a Gentleman employed in the same voyages,” in Richard Hakluyt, *The PrincipalNavigations Voyages Traffiques &
West Africa the hottest environment in all of the torrid zone, but its heat was caused by topographical features rather than its latitude. Between Cape Palmas (in present day Liberia) in the west to São Thomé in the east, Best wrote, the Guinea coast was “more subject too many blooming and smoothing heates, with infectious and contagious ayres, then any other place in all Torrida Zona.” The heat was caused, however, by features of the landscape, “for it is most certaine, that mountains, Seas, woods and lakes &c. may cause through their sundry kinde of situation, sundry strange and extraordinary effects, which the reason of the clyme otherwise would not give.” In Best’s formulation uninhabitable areas became foils for the rest of the continent, which was habitable and thus temperate by implication. Elsewhere he described the presence of humans living in Ethiopia (located within the tropics) and Morocco (just to the north of the tropics), thereby proving that the region supported human life.

In addition Best argued that recent experience of English mariners in Africa had proven the torrid zone habitable. He related how a 1553 trading venture under Captain Thomas Wyndham had returned from Guinea, having “entred so farre within the Torrida Zona, that he was within three or foure degrees of the Equinoctiall.” A second voyage followed in 1554. Best pointed out that Europeans from Portugal, Spain, France, and England currently resided and traded on the African coast, while “black Moores, [and] Æthiopians, out of all partes of Torrida Zona” were able to survive in the “colde” of England. He discounted the phenotype of sub-Saharan Africans as evidence of extreme heat in the torrid zone, employing the Hamite myth to explain that the blackness of Africans derived not from the climate but rather from a divine

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*Discoveries of the English Nation, In Twelve Volumes* (1598-1600), vol.7 (Glasgow: James Maclehose and Sons, 1904) [hereafter PN 1598-1600], 250-283.

9 Ibid., 252. In this case *clyme* referred to latitude. Europeans had long correlated the heat of a given region to its latitude. Here Best argued that the great heat of parts of West Africa arose not from the latitude but from particular landscapes.

10 Ibid., 252, 269

11 Ibid., 252.

12 Ibid.
curse. The “blacknesse and curled haire” of the Africans arose from the curse of Ham, he wrote, so that it “proceedeth not of the hotenesse of the Clime, but … of the infection of blood.”

Finally he argued that the tropics of cancer and Capricorn were actually hotter than the equator itself, especially in those months when the sun reached the furthest extent of its annual oscillation. He called on the “Merchants of London, that trade yeerely to Marochus [Morocco],” to recognize that when the sun reached the tropic of Cancer in June, Morocco was “more subject to heate, then any place under or neere the Equinoctiall line.” Instead of being burnt by the proximity of the sun, during this time conditions in the rest of the tropics were “most fruitfull and delectable.”

When he published his English translation of Duarte Lopes’s *A Report of the Kingdome of Kongo* (1597), Abraham Hartwell worked to ensure that English readers understood that the torrid zone was habitable. For example, of the four subtitles displayed on the cover of the book, the first read: “Wherein is also shewed that the two Zones, Torrida & Frigida, are not onely habitable, but inhabited, and very temperate, contrary to the opinion of the olde Philosophers.”

To make clear the “Paradoxes” of a habitable torrid zone, “contrary to the opinion of the old world, and of the auncient Philosophers,” Hartwell repeated, was “one of the chief Motives, which moved me to translate this Report, that it might be more publickly known.”

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13 Ibid., 264.
14 Ibid., 253. A marginal note in the printed text drove this point home, noting: “Marochus more hote then about the Equinoctiall.” This refers to a kind of seasonality. Best argued that between May and July in the northern hemisphere, and between November and January in the southern hemisphere, conditions were hotter in the 6 or 7 degrees of latitude surrounding the tropics of Cancer and Capricorn, respectively, than they were in the remaining 40 or so degrees of the torrid zone. I include this here to emphasize the extent to which Best used African evidence to prove the entire torrid zone habitable by the action of its seasons.
15 Duarte Lopes, *A Reporte of the Kingdome of Kongo*, trans. Abraham Hartwell (London: 1597), f.3. Hartwell’s epistle to the reader is foliated. The main text is paginated. Hartwell directed readers to the recently published Latin version of the Jesuit missionary José de Acosta’s *Natural and Moral History of the Indies* for additional explanation of how the torrid zone could be habitable; f.3.
16 Ibid., title page.
17 Ibid., f.3.
The seasons were crucial to Lopes’s understanding of the temperateness of the Congo. Here in the southern hemisphere, the seasons were reversed from what Europeans would expect in the north. The winter season was characterized by rain. In the five months from April through August, the region received virtually non-stop rains. The enormous raindrops “doe maruellously supple[supply] the grounde, which is then very drie by reason of the heate of the Sommer past.” The heavy rains caused the flooding of rivers that helped make Africa habitable. Just as Cardanus had identified the Nile, Lopes pointed to the rains as responsible for the flooding of the Niger: “And in the kingdome of Congo and Guinea, through which runneth the riuer Nigir … you shall see the saide riuer encreased at the very selfe same time that the Nilus doth, but in deed carrieth his waters towards the west, directly against the Islandes of Capo Verde … refreshing and watering all those Regions that are full of scorching heates, and wildernesses and deserts.” In the summer the winds shifted to the south and southeast, cooling the region otherwise heated by its winter rains. “And certainly if the breath of these winds did not refresh and coole these countries of Aethiopia & Congo, and other places neere about them, it were not possible for them to endure the heate.” It remained hot enough that the inhabitants were still “constrayned to hange two coueringes ouer them to keep away the heat,” even at night.

As Hartwell’s version of Duarte Lopes appeared for sale, Hakluyt’s protégé, John Pory, was busy translating Leo Africanus’s *A Geographical Historie of Africa* (1600). The book documented the travels of the Muslim-turned-Christian convert Leo Africanus through north

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18 Ibid., 14-15.
19 Ibid., 15.
20 Ibid., 17.
21 Ibid. Lopes’s explanation of the temperateness of Africa appears to have been influential. The Dutch writer Jan Huygen van Linschoten reprinted it, with minor variations in wording, in his 1598 travelogue. Jan Huygen van Linschoten, *Iohn Huygen van Linschoten. His discours of voyages into ye Easte & West Indies Deuided into foure bookes*, trans. Iohn Wolfe (London: 1598). Likewise the translator John Pory directed readers to Lopes’s text in his own transcription of Leo Africanus’s *A Geographical Historie of Africa* (1600), 41.
Africa down into the “fifteene kingdoms of the Negros” lying along the Niger River. Leo Africanus produced the original manuscript in 1526, and the book itself was first published by the Italian geographer and compiler Ramusio in 1550. In the late sixteenth century Richard Hakluyt believed an English translation would help bolster the trade to the East Indies by providing information on possible watering places in Africa for English ships bounds for Asia. He convinced his assistant, John Pory, to undertake the work of translating Africanus from Ramusio’s printed version and from the Arabic and Italian manuscripts themselves.

In fashioning the translation, Pory effectively joined two separate works on Africa. He supplemented and preceded Leo Africanus’s original text with a significant amount of additional material derived from the writings of classical authors and eyewitness accounts of recent European travelers to sub-Saharan Africa and the islands off the continent’s coast, places that Leo Africanus himself had not visited. Pory wrote that much of Africa “betweene the said Tropiques vnder the Torrid or burnt Zone” was indeed habitable and inhabited, but there were also many places where life could not be sustained. Tropical Africa was “in many places vnhabitatable” because it could not be cultivated. The “principall causes” of this condition were “the scarcitie of water, [and] the barrennes of the soile, being either couered with unprofitable sande, dust, or ashes, or else being subiect to extreme heate of the sunne.” In some places shifting mounds of sand threatened cultivation, while others harbored “such abundance of venemous and hurtfull creatures, that for feare of them the land in some places can very hardly, & in others by no meanes be manured or inhabited.” “Howbeit where it is inhabited,” he added,

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23 Ibid., 5 [Leo Africanus]. The 1600 English translation of Leo Africanus is not paginated continuously. Introductory material written by John Pory begins with page 1, as does the main body of Leo Africanus’s text that follows it. When citing the 1600 edition I note the author in brackets following the page number: [Leo Africanus] or [Pory]. On Leo Africanus, see Natalie Zemon Davis, *Trickster Travels: A Sixteenth-Century Muslim Between Worlds* (New York: Hill and Wang, 2006).
“it is exceeding fertile.’’

Pory’s nuanced description of the torrid zone suggested that even a hot climate could be inhabited if it supported agriculture.

Like his contemporaries, Pory judged tropical Africa habitable by virtue of its seasons. The country of Abasia, or “Aethiopia the higher,” where the legendary Christian king Prete Ianni (Prester John) lived, had its southern border at 9° north latitude, well within the tropics. Abasia had two winters and two summers, he noted, “which they discerne not by colde and heate, but by rainie and faire weather,” and the land produced grains, sugar, and other commodities.

Further to the west, Cape Verde benefitted from two rivers, the Sanega (Senegal) and the Gambra or Gambea (Gambia) that flooded annually, fertilizing the land between them and making possible the production of crops: “The land comprehended between them both, by reason of their yeerely inundation (for from the xv. Of Iune they increase fortie daies toghether, and are so long time decreasing, after the manner of Nilus) abound with all kinds of graine and pulse whereof the climate is capable.”

Between October and July it rained daily. Yet the place was also hot, so that when planting the locals covered their seeds with sand “to defend it from the heate, which otherwise would scorch the grounde too excessively.”

The inhabitants of Guinea (west of modern day Ghana and Côte d’Ivoire) lived in a far less hospitable country by reason of its heat. During half the year, “so long as the sun continueth in our northren signes” between mid-March and mid-September, “this people in regard of extreme scorching heat, are constrained all the day time (being ordinarily with them of 12. howres) to retire themeslues within their houses, and to do all their busines in the night.”

Two forms of seasonality were operative in Pory’s description of Guinea. One was the annual cycle of

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24 Leo Africanus, Geographical Historie, 2 [Pory].
25 Ibid., 14 [Pory].
26 Ibid., 44 [Pory].
27 Ibid. [Pory].
28 Ibid., 42-43 [Pory].
hot season (mid-March through mid-September) and cool season (mid-September through mid-
March). A second was the “seasonality” of night and day, in which the change from day to night
mirrored the longer revolution of the hot and cool seasons. Both the annual seasons and the
diurnal “seasons” mitigated the extreme heat. Pory implied that during the cool season the people
of Guinea had the run of the land. But during the hot season they were forced to remain in their
homes and left only during the nightly “cool season.” For solace the people of Guinea repaired to
the many small waterways of the region, “the best and pleasantest things that are to be founde in
these forlorn countries,” where they collected water “partly for the watring of their scorched
grounds, & partly to quench their own thirst.” 29

While Hakluyt, Pory, and other armchair travelers of the second half of the sixteenth
century were busy translating and publishing descriptions of the torrid zone, their countrymen
who actually traveled to Africa also described it as temperate. While they did not usually stay in
Africa long enough to witness the annual cycle of seasons, English sailors and traders did
compare the climate to Europe’s seasons, and they specifically referred to the African climate as
“temperate.” Some likened Africa to parts of Europe itself. Notions of temperateness manifested
themselves among these common sailors in the form of associations between physical
temperature and latitude, in direct comparisons of the African climate to that of England, and in
finding African conditions counter to their reputation for extreme heat.

For example, the minister Richard Madox noted the heat of the West African coast during
a 1582 voyage to the East Indies, but he did not consider it to make the place uninhabitable.
Madox expressed surprise at finding a place in the tropics relatively cool despite its latitude.
Prior to reaching the Canary Islands (outside the tropics in 28 degrees north latitude) on June 17,

29 Ibid., 43 [Pory].
he recorded, “we had not one hot daye altho we be within 5 degrees to the [sun].” Moving southward, the fleet searched for the island of Boa Vista in the Cape Verde Islands. On 10 July Madox reported “we had the wynd at sowth and much rayn but the wether as our Englysh Autumnne save that the ayr was more thick and foggy.” Such a judgment is noteworthy; writing in July, in the midst of the warm season in Europe, Madox found the tropical climate to be similar to an English autumn. His comparison was meaningful in that if July were a warm month in England, an Englishman such as Madox could not be faulted for expecting the torrid zone to be even hotter at the same time. Instead he experienced the precipitation and physical temperature one could expect of his temperate homeland as the year progressed into winter.

Between 9 August and 2 October 1582, the English anchored at Sierra Leone to cure sailors who were seriously ill with scurvy. Madox described the weather and climate as temperate. “In the nyght comonly yt thundereth and rayneth,” he recorded, “but the after noone is fayr, hote and dry but yet clowdy.” He wrote the word “temperat” in the page margin next to this sentence, perhaps suggesting the combination of stormy and rainy nights balanced the heat and dryness of the days. Likewise on 25 August he recalled that “ther passed not many 24 howrs without lyghtening, thunder and rayn, but not great and the breez ether at the sea or on the hills was coole and cumfortable.” In September he wrote, “it must be noted that the heat of the sun, vaporish and sultry, follows upon very cold nights here, but the days are moderate and differ

30 Elizabeth Story Donno, ed., An Elizabethan in 1582: The Diary of Richard Madox, Fellow of All Souls, 2d ser., no.147 (London: Hakluyt Society, 1976), 145. In this passage Madox’s reference to latitude dealt with proximity to the sun, not to the equator. June 21 is when the sun it at its furthest northward excursion. In the Canaries (approx. 28N) near this day, Madox was indeed within about 5 degrees of the sun, not the equator.
31 Ibid., 151.
32 Madox and his fellows diagnosed the sailors’ illness as scurvy. Madox pointed out that the sickness was relieved after the sailors had spent several days ashore eating lemons that “scowred ther mowths, fastened ther teath and purifyed the blud.” Ibid., 175. His fellow traveler John Walker likewise identified the disease as “scurby” in his diary. Ibid., 305.
33 Ibid., 165.
34 Ibid., 175.
little from the nights in temperature.” During the seven weeks the fleet stayed at Sierra Leone, Madox sensed a gradual increase in temperature, but he did not record any illnesses, deaths, or other inconveniences arising from the heat as might be expected. He described August 14 and 25 as merely “hote.” During September he noted, “the days begin to grow hote here,” and 20 September was “a very hote day.” Yet Madox actually experienced greater heat at sea after the fleet left Africa than he had felt at Sierra Leone. As the ships crossed the Atlantic en route to Brazil, he complained on 19 October that his blood was “boiling with excessive heat, partly by reason of the air which had become inordinately hot” and partly through eating too many salted foods.

Madox and his fellows clearly understood the climate of Sierra Leone in terms of seasonality. They questioned both fellow Europeans and Africans about the seasons. On 12 September “it thundered a great deal and rained occasionally,” he noted, “but the inhabitants say that scarcely three showers will fall here again before the month of March.” When three Portuguese arrived from the Cape Verde Islands in mid-August, Madox and his shipmates pestered them with questions, including some dealing with seasonal characteristics. The Portuguese reported that winds blew from the east and north from March through May; from the south and southwest from June through August; and from the southeast for the rest of the year.

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35 Ibid., 190.
36 Ibid., 165, 175.
37 Ibid., 184, 190. Madox’s qualitative assessment of the heat aligns generally with modern temperature readings. Average temperature maxima for Freetown, Liberia taken in 1964-74 increased from 81.6°F in August to 84.8°F in October. Ronald James Harrison Church, *West Africa: A Study of the Environment and of Man’s Use of It*, 7th ed. (London: Longman, 1974), 44.
38 Ibid., 212.
39 Ibid., 184. The text provides no clue as to whether Madox referred to Africans or perhaps the Portuguese or Afro-Portuguese resident in the area. Because he did not mention a European nationality, I assume the word *inhabitants* referred to African natives of Sierra Leone.
40 Ibid., 168-169.
In two voyages to Benin in 1588-90, the ship captain James Welsh likened the climate of the Guinea coast to temperate England. In a document similar to a ship’s log, he recorded brief descriptions of navigational details, the weather, and the ship’s position. This utilitarian document was not created to preserve musings on the workings of the natural world. As such Welsh’s likening of the climate of the African tropics to temperate England stands out from the prosaic material in which it was embedded, and suggests that he may even have been surprised at what he found.

In early June, 1588, Welsh and his men were off the coast of Senegal in 15 degrees north latitude. Here they “found it as temperate as if we had beene in England and yet we were in the height of the sunne, for it was declined 23 degrees, and 26 minuts to the Northward.” Welsh’s reference to latitude in this log entry is important. While at he used the word “temperate” to refer specifically to weather (“faire and temperate weather”), in the entry of June 6, 1588, his linking of the adjective “temperate” with latitude suggests he referred to the climate. Because contemporaries associated climatic characteristics so closely with latitude, Welsh could only have been referring to general considerations of the climate and not mere transitory weather conditions. Here he equated the climate in the latitude of Senegal to that of England, demonstrating that an English sailor with direct experience of the tropics considered Africa to be temperate.

The following year Welsh was back in Benin on a second trip. On January 10, 1589/90 he reported, “all this weeke it was very foggy every day untill ten a clocke, and all this time hitherto

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41 “A voyage to Benin beyond the Countrey of Guinea, set forth by Master Bird and Master Newton Marchants of London, with a shippe called the Richard of Arundell, and a Pinesse; Written by James Welsh, who was chiefe Master of the said voyage, begunne in the yeere 1588,” in Hakluyt, PN 1598-1600, vol.6, 450-458.
42 Ibid., 456.
43 Ibid., 453.
hath beene as temperate as our summer in England.” On 12 May the English enjoyed “a faire temperate day, much like our sommer mornings in England, being but one degree and a halfe from the Line.” Once again a reference to latitude suggests Welsh spoke about the effects of the climate rather than mere weather phenomena. Much like writers such as George Best, who claimed the tropics themselves were hotter than the equator, Welsh later noted that “in this voiage we sailed 350 leagues within halfe a degree of the equinoctiall line, and there we found it more temperate, then where we rode” on the coast.

Varieties of Adaptation to the Torrid Zone

While English writers and travelers of the second half of the sixteenth century judged the torrid zone to be habitable, they understood that it retained its great heat. Just because the region was habitable did not mean that surviving there would be easy or could be accomplished without adverse effects on English bodies. Deaths from disease were a frequent occurrence in English voyages to tropical West Africa from the second half of the sixteenth century, and travelers often attributed their illnesses to the climate. Through the 1620s, then, the English traveled to Africa conscious of the need to conform their behavior to the hot climate.

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44 Ibid., 465.
45 Ibid., 466.
46 Ibid., 467. A marginal note next to this statement indicated, “It is more temperate under the equinoctiall, then on the coast of Guinie & Benin.”
47 Some travelers simply assumed that their mere continued presence in the tropics would inure them to the illnesses they encountered there. Anthony Ingram, a member of James Welsh’s 1588/89 voyage, related that many of the expedition’s crew contracted fevers while they traded at Benin. Ingram believed the men would not be so troubled by sickness on subsequent visits, “our natures at this first time not so well acquainted with that climate [my emphasis].” Ibid., 459. Likewise the Dutch traveler Jan Huygen van Linschoten (1598) noticed that people often became sick the first time they enveloped by the tropical heat. Linschoten traveled to the East Indies via Africa in 1583. En route off the coast of Africa about fifty miles north of the equator, his ship encountered a French vessel. Many of the French crew were ill, “as it commonly hapneth in those countries through the exceeding heate: & further they are for the most part such as never have beene at Sea before that time.” Linschoten thus suggested the tropical heat could be borne best by those thoroughly inured to sea travel. Linschoten, *discours*, 6.
In *The decades of the newe worlde*, Richard Eden narrated the tragic story in which a ship captain’s refusal to bend to seasonal dictates, together with his inability to control his men, doomed a trading voyage of great potential. In 1553 a group of investors prepared a small fleet of three ships to trade on the Guinea coast. Some of the highest officeholders in England were paying attention to the voyage. Among its backers were members of London’s mercantile elite, among them Sir George Barnes, Sir William Garrard, Sir John York, and Francis Lambert. Two of the three ships in were owned by queen Elizabeth I herself. The expedition was led by Thomas Wyndham, a merchant and ship captain who inaugurated the English trade to Barbary in 1551. This was an important learning opportunity for all involved as they tested African markets and environments.

The ships departed Portsmouth in August 1553 and arrived at the Canaries several weeks later. They were guided by Antoniades Pinteado and Francisco Rodrigues, two Portuguese pilots with extensive experience on the West African coast. Pinteado had previously commanded all Portuguese naval vessels on the coast before decamping for English service. He advised Wyndham to mind the seasons as the fleet made its way to the African coast. After departing the

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50 The three ships were the *Moon*, the *Lion*, and the *Primrose*. The crown owned the *Moon* and at least half of the *Primrose*. Wyndham was part owner of the *Lion*. J. A. Williamson says Wyndham owned all of the *Lion* and the navy owned the other two ships. Williamson, *Sir John Hawkins*, 41. Hair and Alsop say the *Lion* was probably partly owned by Wyndham, while the crown owned the *Moon* and probably owned the *Primrose*. Hair and Alsop, *English Seamen*, 11.


52 Ibid., 106.
Canaries, the ships sailed leisurely toward Guinea, “taryinge here and there at the deserte Ilandes in the waye, bycause they wolde not coome to tymely [early] to the countrey of Guinea for the heate.” Guided by Pinteado, the English sought to avoid the heat of the African coast at that time of the year.

When they did arrive in Guinea, the ships called briefly at Rio Sesto on the Malagueta Coast (between modern day Sierra Leone and Côte d’Ivoire) before heading on to the Gold Coast (present day Côte d’Ivoire and Ghana), where they secured 150 pounds of gold. Wyndham then ordered the fleet eastward to Benin, where he hoped to acquire pepper. Pinteado challenged Wyndham’s orders, warning the fast approach of the sickly season demanded the expedition return to England at once “for the safegard of the men and theyr lyues.” Continuing on to Benin, he argued, threatened to put the ships off coast during the “rossia,” the impending wet season. Pinteado referred to this as the local winter, “not for coulde but for smotherynge heate with close and cloudy ayer and storminge weather of such putrifyinge qualitie that it rotted the cotes of theyr backes.” Even if the ships arrived before the rossia, they would be exposed to the same dangerous heat they had sought to avoid on the way to Guinea itself, “coommynge to soonne for the scorchynge heate of the sonne which caused them to lynger in the way” in the first place.

Overruling Pinteado’s advice, the obstreperous Wyndham ordered the fleet on to Benin.

The English anchored off the Benin coast and sent a delegation inland to treat with the local king. They arranged to take delivery of some 80 “toonne” of pepper in three weeks. While the traders negotiated with the king, the sailors frollicked on the coast. “Partly hauynge no rule of them selues,” they gluttoned “without measure” on local foods and palm wine. They cavorted in the ocean surf, “in such extreeme heate runnynge continually” in and out of the water. “Not vsed

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53 Eden, decades, f.346v.
54 Ibid.
55 Ibid., f.347v.
before to such suddeyne and vehement alterations (then the which nothynge is more daun-gerous),” they paid dearly for their intemperance. The sailors were “browght into swellynges and agues” and began to sicken and die on the coast. As they waited for the Africans to collect pepper, the rainy season began, and the English became ever sicker, just as Pinteado had warned: “In so much that the later tyme of the yeare cõmyng on, caused the~ to dye su[m]tymes iii. & su[m]tymes.iii. or .v in a day [my emphasis].”

This rich passage reveals several assumptions about how the English believed they should comport themselves in hot climates. Eden’s informant criticized the men for consuming too much of the local food and wine. His criticism was in keeping with contemporary notions of maintaining health and adjusting to foreign lands. For centuries western medical thought had held that both overconsumption and abstemiousness in the “nonnaturals” – food, drink, sex, evacuation, exercise, and sleep – was a primary cause of sickness. A person who ate too much or too little, for example, altered the balance of humors in his body and became ill. A parallel tradition held that people were best suited to consuming the foods and drinks of their native lands. In Benin, then, the English sailors broke both rules by eating foreign foods in great abundance. A marginal note in Eden’s text indicated the importance he placed on their intemperance, drawing the reader’s attention to “the disorder and death of owre men.”

Also dangerous was the sailors’ swimming in the ocean in the heat of the torrid zone. Hippocratic doctrine held that rapid alterations of bodily temperature were responsible for

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56 Ibid. Hair and Alsop have located the wills of thirty-three of the seamen who sailed on this voyage. They have “no doubt” that most of the English who died on the voyage perished of tropical diseases on the coast. They note that the ships arrived during the dry season, so that the English were “acting correctly in the light of contemporary views about the safest time of the year for Europeans to visit Guinea,” and were probably “well-advised by their Portuguese guides.” Hair and Alsop, English Seamen, 10.
57 Among many others, see: Nancy G. Siraisi, Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice (Chicago: University of Chicago Press, 1990), Ch. 5; Ken Albala, Eating Right in the Renaissance (Berkeley: University of California Press, 2002).
illness. The changing of the seasons and their associated climatic phenomena brought on illnesses as the changing physical temperature, weather, seasonal diets, and other phenomena acted on the body.\textsuperscript{59} If the relatively slow change of the seasons caused illness, then it stood to reason that more rapid alterations of bodily temperature caused by wading in a hot climate could make one sick. Eden highlighted this idea when he described the swimming sailors as “not vsed before to such suddeyne and vehement alterations (then the which nothynge is more daungerous).” Bathing in the tropical heat, the sailors altered their body temperatures too quickly and became sick.

Alarmed at the sailors’ deaths, Wyndham ordered the ships to depart immediately. He soon died of disease himself, as did Pinteado a week later. As the death toll mounted, the English were forced to scuttle one of the ships for lack of hands to sail it. In their haste to escape the sickly coast they even abandoned the trading party upriver, leaving the English traders (including Francis Lambert) and possibly some of the pepper.\textsuperscript{60} Out of one hundred forty crewmen, a mere forty returned to England. Stung by the loss of a ship possibly owned by the crown, the investors would have learned important lessons about the conduct of African ventures. Assuming they took possession of an enormous amount of gold, their newfound knowledge of the Guinea trade would only have whetted their appetites for future African ventures.\textsuperscript{61}

The expedition’s most important lessons concerned temperance and leadership. By both refusing to take the advice of the more experienced Pinteado and failing to rein in the appetites

\textsuperscript{59} Hippocrates advised physicians to pay close attention to the changing of the seasons and their effect on human health. “With the passage of time and the change of the seasons, [doctors] would know what epidemics to expect, both in the summer and in the winter, and what particular disadvantages threatened an individual who changed his mode of life.” They must remember that “the changes of the seasons produce changes in diseases.” Hippocrates, “Airs, Waters, Places,” in Hippocratic Writings, ed. G. E. R. Lloyd (New York: Penguin Books, 1978), 149.

\textsuperscript{60} The text is unclear as to whether the English secured any of the pepper. Hair and Alsop are unsure as well; Hair and Alsop, English Seamen, 11-12. It seems a safe bet that the gold, purchased earlier and far more valuable than the pepper, was well secured shipboard and would have been carried back to England.

\textsuperscript{61} I assume the survivors returned home in possession of the gold because the story does not say they did not.
of his men, Wyndham doomed the expedition. The informant’s concern with temperance reflected a widespread medical belief in England. At the same time, however, it implied the English must police their desires more carefully in hotter climates because the heat exacerbated the effects of intemperance. Travelers could survive hot climates, but they must be especially careful to regulate themselves; indeed, venturing into hot climates called for even more attention to morality on the part of the English.

Likewise the gold trader Richard Jobson learned in 1620-1621 that adapting to the torrid zone required personal temperance above all else. Writing to “produce some rules of better order, then hath hither-unto bee kept amongst our Nation” in Africa, Jobson argued men in service to the company must conform both their bodies and their behaviors to the heat. The intemperance of the English who had preceded him in Africa had cost them their lives and saddled Africa - and by extension the African trade - with “a general scandall vpon the country” as sickly and “vnwholesome for our bodies.” Rather than the African environment, Jobson opined, the dead had only themselves to blame: “Indeede it is our owne disorders” that caused so many deaths.62 The Company of Guinea and Bynney which had funded the ventures on which Jobson reported bore much of the blame because it failed to find temperate men to lead its expeditions: “For the custome that hath beene hither-unto held, hath beeene without any diligence, to make choice of such Sea-men for gouernours, as were men of temperance, and commaund, who being able to temper well themselues, might the better gouerne the rest, whose ill carriages may be thought to bee great prouokers for shortning other mens dayes.”63 As in the 1553 voyage to Benin in Eden’s decades, Jobson reasoned on the basis of contemporary medical theory that held a balanced regimen to be the *sine qua non* of health. Because the regimen was seen as the responsibility of

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63 Ibid., 39-40.
each individual, any deviation from it was a moral failure that could only be laid at the feet of the sick person himself.

Jobson’s experience proved the need for personal temperance in the hot climate of Africa. The captain of Jobson’s ship was almost continually drunk between October 1620 and March 1620-21, when he died on the Gambia coast. The ship’s surgeon and several other heavy drinkers also died from their intemperance.64 Once in the Gambia, the crew split into two groups to trade upriver. Their disparate fortunes illustrated the dangers of intemperance in the tropical heat. One group was led by the chief factor, a man of utmost temperance himself, but who was blind to his underlings’ theft of the sack and aqua vitae the English carried with them as trade goods. He had taken care to man his party with robust and healthy sailors, “such … as were the most able, and likeliest bodies to hold out” in the climate, but in stealing and consuming the liquor, his otherwise healthy men “thereby wrought their owne confusions” and died. Only two survived, both burdened with “dangerous sickenesse.”65 Jobson led the other crew and was saddled with less healthy men, “such … as were giuen me, not such as I desired.” Nevertheless he enforced “a loving and orderly course of diet” among them, so that not a single soul died on the venture upriver. “And for my owne part,” he emphasized, “through the whole voyage, I was neuer one quarter of an houre sicke.”66

The sailors could not be held solely responsible for their intemperance, however. Jobson believed that the human body worked differently in the torrid zone than it did in England, and he argued that their drinking was actually stimulated by the hot climate itself. He had observed that the Africans preferred to eat at night and considered eating “in the heate of the day” to be “a

64 According to Jobson, the previous year’s expedition, of which he was not a member, also suffered deaths from overindulgence in alcohol. Ibid., 39-41.
65 Ibid., 40-41.
66 Ibid., 41.
thing wonderful vnwholesome.” Jobson agreed. Temperance in the torrid zone required not merely regulating the amount of food and drink one consumed, but also the times in which they were taken. The close proximity of the tropical noonday sun, “being then in his extremitie of heate,” threatened to dry and cool the human body so that digestion was hindered. In classical medical theory improper digestion was a major cause of sickness and disease. The heat of the sun drew moisture from the body, Jobson thought, leaving the stomach “most cold, and unapt for nutriment.” The English had traditionally consumed distilled liquors in the belief that they heated the stomach and aided in digestion. But Africa’s heat left the stomach so cold, he reasoned, that the English were tempted to dangerous overindulgence in drink. “Experience makes us see,” he reported, “that in the height and heate of the day we can with great facilitie, and without offence, drinke off such a draught, or quantitie of Aqua vitae … as if we should drinke heere in our native countrey [England] at one time, would certainly burne out our harts; nay more, wee finde our bodies naturally desiring, and longing for the same.” It was much safer to eat in “the coole of the morning, and again in the evening, [when] wee receive it with much more temperance, and a little giveth satisfaction.” By eating in the cooler parts of the day when the body was better able to digest its food, the English would drink less and forestall the illnesses that attended overconsumption of alcohol.

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67 Ibid., 39.
68 Ibid., 41.
70 Jobson, Golden Trade, 41.
71 Ibid., 41-42.
Intemperate and Sickly Seasons

With his prescriptions for proper leadership and personal temperance, Richard Jobson expressed optimism at the prospect of English adaptation to the heat of West Africa. At the same time, however, he presaged a profound shift in attitudes about the seasons that occurred as the English grew more experienced with hot climates in the seventeenth century. When Jobson’s book appeared in 1623, the English had yet to establish a permanent presence on the African coast. Beginning in the mid-seventeenth century, English trade to Africa grew, as joint stock companies like Jobson’s Company of Guinea and Bynney and unlicensed free traders sent ships to the coast to compete with the Dutch and other Europeans for goods. A series of English trading posts was established beginning with a post at Sherbro River in 1628 and continuing elsewhere through the 1650s. After mid-century the growth of slave-worked plantations in the English colonies of the West Indies and North America, in addition to opportunities to supply the Atlantic colonies of the Spanish and Portuguese with slaves, cemented the English presence in West Africa. With permanently manned forts and regular ship traffic to Africa, the English were now in Africa year round, and the devastating effect of African disease became ever more apparent to them.

With their increasing experience in sub-Saharan Africa, the English came to see the seasons not only as dependable moderating influences on the tropical heat, but also as dangerous phenomena that threatened traders, sailors, and soldiers with sickness and death. As the seventeenth century progressed, the same seasons that the English had credited with making the torrid zone habitable to all humans also seemed to make it unhealthy. This changing conception

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of the seasons was manifested in three ways. First, some observers considered the “winter” rainy season to cause disease at the same time that it mitigated tropical heat. Second, they began to consider the diurnal revolution from day to night as a kind of “season”, identifying the oscillation of physical temperature from hot days to cool nights as a cause of sickness. Cool nights that followed upon hot days precipitated toxic dews from the air, while poisonous vapors and miasmas issued from the earth. The healthiness or sickliness of the environment thus derived from changes incurred on a daily basis, as well as on an annual one. Third, in keeping with an emerging confidence in the ability of humans to alter the environment for improved agriculture and health, and as the slave trade and European disparagement of Africans grew apace, the English criticized African land use practices for some of the environmental conditions that caused illness. For the English, changing the way they looked at seasons implied that Africa was actually becoming less habitable to them, even as they grew more experienced in how to adapt to its environment. The practical effects of these ideas generated pessimism about the prospect of adapting to the climate. While it might have been possible to plan a voyage so as to avoid the sickly rainy season, it was clearly impossible to spend any time in Africa without being exposed to the change from day to night that contemporaries considered unhealthy.

As he surveyed the difficult lot of Gambian farmers, Richard Jobson signaled the new idea of dangerous seasons. Jobson contrasted what he considered the mild seasons in which the English cultivated their crops with the extreme seasons under which the Gambians labored. While the English benefitted from “seasonable times, to plant and sowe, and againe to reape,” with “gentle showres and raines, wherby we receiue them in a due season,” the Gambians were not so lucky. “For although their seasons are certaine,” he admitted, “yet they are violent and

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73 Note that the vapors and miasmas were not characterized by physical temperature; they were neither hot nor cold themselves. Rather they arose from daily changes in temperature.
feareful [my emphasis].” Jobson’s reference to “seasonable times” and “certaine” seasons was a clear reflection of the early modern English conception of a torrid zone made habitable by seasonal phenomena. Whereas the English had once considered the “certeyne ordinarie” seasons to make the tropics habitable, Jobson now judged the seasons of the Gambia to contribute to the “misery of this labouring people.”74 Where Oviedo had seen dependable seasons in the tropics as a sign of God’s providence, in the Gambia Jobson now saw them as a curse. His experience provided a clear contrast between the climates of England and West Africa, and led him to characterize the two environments as habitable but drastically different in character.

Gambia’s seasons were “violent” because the summer heat was excessive and the winter rains were torrential, and both made agriculture difficult and laborious. The Gambians lacked draft animals for plowing and were thus forced to perform the hard work of tilling and planting by hand. No planting could take place between September and late May, Jobson observed, because the soil was impervious to tools, baked “so hard, through the extreme heate of the Sunne,” that the Gambians could not turn it with their implements. Rather they must wait to sow until the rains began. Beginning in May, the rains became a flood by June, “powring it selfe violently foorth with such horrible stormes, and gusts of winde, and with such fearefull flashes of lightning, and claps of thunder, as if … heaven and earth would meet together.” Despite the severity of the rain, the Gambians had no choice but to brave the waters, “driuen to worke and labour … for [fear of] loosing the season of the grounds softnesse.”75

The seasons were “fearful” because death traveled in their wake. Jobson disputed a common belief among English sailors (“our Seamen”) who “directly charge the vnwholsomnesse

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74 Jobson, The Golden Trade, 125.
75 Ibid., 126.
of the ayre, to be the sole cause” of European deaths in Africa.\textsuperscript{76} He found the air to be unwholesome for only a short time each year. During the dry season, he explained, the soil “doth receive all that venome, or poysonous humours which distill either from trees or plants,” absorbing it along with the venom of poisonous snakes, toads, and scorpions. As long as it remained locked away in the hard, dry soil, this nasty mixture of toxic matter did no harm. But when the annual rains moistened and softened the soil, the “poysonous humours” were released from the earth. “Drawne up” from the “wet earth, by the exhalation of the hot Sunne,” they issued into the atmosphere as disease causing vapors.\textsuperscript{77} The English could help secure their health if they stayed clear of the coast at the beginning of the rains.\textsuperscript{78}

In addition to deadly diseases, the English attributed the dreaded “Guinea worm” \textit{(Dracunculus medinensis)} to the rainy season. The worms’ larvae infect tiny copepods (crustaceans) in fresh water. When the water is consumed by humans, the larvae embed themselves in the flesh of the legs and groin, before slowly exiting the body through painful sores.\textsuperscript{79} According to Samuel Speed (1665), the worms were caused by the rains of “certain showers called Alvais.” Anyone exposed to the rains must immediately wash his clothes and then hold the soles of his feet to fire for an hour, lest the clothes rot off his back and the worms

\textsuperscript{76} Ibid.
\textsuperscript{77} Ibid., 127.
\textsuperscript{78} The French slaver Jean Barbot, who traded for goods and slaves in Africa in 1678-79 and 1681-82, also considered the rainy season unhealthy. While he considered Africa as a whole to be “a dangerous place to stay,” in Sierra Leone he described the “air” – a common synonym for the climate resonated with assessments of healthiness - as being “good or bad according to the season.” English traders resident at Bance Island in Sierra Leone “are in a position to speak of this,” Barbot wrote. “It is inconceivable how many of this nation [the English] have died there … chiefly during the extreme season, when thunder, rain and lightning do not cease during six months.” P. E. H. Hair, Adam Jones, and Robin Law, eds., \textit{Barbot on Guinea: The Writings of Jean Barbot on West Africa 1678-1712}, vol. 1, Hakluyt Society 2d ser., no.175 (London: Hakluyt Society, 1992) [hereafter Barbot 1688], 219.
\textsuperscript{79} Donald R. Hopkins, “Dracunculiasis,” in \textit{The Cambridge World History of Human Disease}, ed. Kenneth F. Kiple (New York: Cambridge University Press, 1993), 687-689. The English were correct about the seasonality of the disease. Depending on the amount of rainfall a region of Africa receives, it appears either during the rainy season when planting takes place or during the harvest season, when standing water is “scarest and most polluted” (687).
proceed into his body. “Doing this,” Speed assured, “there is no harm done.”

A person who ignored his advice would endure the worm’s painful exit from his body. When they erupted through the skin, the worms were to be encouraged out with heat and then wrapped around a stick, turned gently, until the creature’s entire length had been extracted.

Just as the English characterized the rainy season as unhealthy, so too did they come to fear the oscillation between night and day. The same days and nights that they had once believed made the torrid zone habitable by tempering its heat now contributed to making it sickly. This development resonated with the emergence of neohippocratic medical theory in Europe itself. In the period 1660-1740, European medical thinkers placed renewed emphasis on ancient ideas that credited the interaction between human bodies and their environments, rather than specific humoral imbalances within bodies themselves, as factors in the incidence of disease. Physicians increasingly focused on air temperature and air quality as the key to understanding disease and health. They theorized that rapid changes in air temperature, along with particles, vapors, or “miasmas” emanating from the earth, vegetation, and “putrefying” or “corrupt” matter, infused the air and entered the body, thereby causing disease. In Europe physicians and natural historians collected data help to correlate air conditions, weather phenomena, and health, analyzing it with reference to the seasons and the emerging science of meteorology in an attempt to link specific

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80 S. Speed, *The Golden Coast, or, A Description of Guinney* (London: 1665), 11. Contemporary theory, based on classical precedent, held some vermin to be “engendered” from the rotting or corruption of matter. Some authorities saw the waters and rains themselves to be of a corrupting nature, but Speed was not among them. William Dampier believed the worms were contracted by drinking “bad Water.” William Dampier, *Voyages and Descriptions. Vol. II: in three parts* (London: James Knapton, 1700), 90. Each part of this volume of Dampier is paginated separately. This citation is to the second part of the book.

81 Riley, *Eighteenth-Century Campaign*, introduction and ch.1. While Riley’s focus was on Europe, it is interesting that the change in ideas he identifies took place at a time in which western European nations were gaining increased experience with life in the Americas, Africa, and Asia. For example, for contemporary ideas of the ability of humans to degrade their environments in an Atlantic context, see Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1800* (New York: Cambridge University Press, 1995). Mark Harrison suggests neohippocratic ideas grew from European overseas experience. Mark Harrison, *Medicine in an Age of Commerce and Empire: Britain and its Tropical Colonies, 1660-1830* (Oxford: Oxford University Press, 2010), 4.
atmospheric conditions to specific diseases. Subsequent efforts to correct for the corruption of the air necessarily called for altering the environment to remove or otherwise clean the atmosphere.

Observers in tropical Africa reflected the neohippocratic trend as they attempted to make sense of European mortality. They attributed sickness to changes in temperature from day to night, and especially to the presence of dews, vapors, and miasmas in the night air. In doing so they came to think of the change from day to night in the same way they thought of the change of seasons: phenomena that had once been considered to make a place habitable now made it less healthy. At Bonny (in present day Nigeria) in July and August, 1699, James (Jacques) Barbot, the brother of Jean Barbot, noted that nightly dews (as well as sex with local women) caused a colic which had “swept away an incredible number” of European traders. At Juda (Whydah), Jean Barbot described the nights as “cool and damp,” liable to cause sickness in those who slept without a blanket or other covering.

According to some travelers, the winds made the torrid zone sickly not because the nights were too warm, but because they were too cold. Jean Barbot referred to the “refreshing” daily winds from the sea as “the only pleasant thing” about the Danish fort of Frederiksborg at Cape Coast (Ghana). But at night the winds became uncomfortable and downright dangerous:

“Sometimes it is so cold that one is obliged to move out of the wind or put on extra clothes. This

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82 Europeans made sporadic efforts at recording meteorological phenomena in the colonies and trading posts of the Atlantic world from the middle of the seventeenth century. See J. Hillyer to Dr. Bathurst, 25 April, 1688, Royal Society Centre for the History of Science, London [hereafter Roy. Soc.] MSS EL.H.3.77; “Part of Two Letters from Mr. J. Hillier, Dated Cape Corse, Jan. 3. 1687/8 and Apr. 25. 1688. Wrote to the Reverend Dr. Bathurst, President of Trinity Colledge, Oxon; Giving an Account of the Customs of the Inhabitants, the Air, etc. of That Place, together with an Account of the Weather There from Nov. 24. 1686. to the Same Day 1687,” Philosophical Transactions, vol. 19 (1695-1697), 687-707; Sir Hans Sloane, A voyage to the islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the natural history ... of the last of those islands; to which is prefix'd an introduction, wherein is an account of the inhabitants, air, waters, diseases, trade, &c. ..., 2 vols. (London, 1707-1725).
84 Barbot 1688, vol.II, 634-635.
great chilliness is what causes so many illnesses and deaths in this garrison, which is more prone [to sickness] than any other garrison [of men] from Europe.” Barbot’s brother, James (Jacques), described the entire region between the Gold Coast and São Thomé as cold when he trolled the coast for slaves in the middle of 1699. Sailing from Accra to New Calabar in mid-to-late-May, James Barbot complained of “very cold days and nights, being as raw cold as in the channel of England in September.” The weather continued “very cold” when he arrived at New Calabar (present day Nigeria) in June. When the ship departed Bonny for São Thomé in September, he recalled, “we found the weather commonly so cold, though so near the line [the equator], as to be raw and pinching as on the coast of Brittany.” The sailors wrapped themselves up against the cold, be they “never so hardy.” Barbot expressed surprise at the cold here; after all, São Thomé sat in the heart of the torrid zone and had long been considered exceedingly hot.

Adaptation to Sickly Seasons

Despite growing unease about the tropical seasons and the dangers they posed to health, the English continued to seek ways to adapt to the climate throughout the seventeenth century. Their efforts focused almost entirely upon avoiding sicknesses caused by the rainy season, the change from day to night, and related phenomena. As the Wyndham voyage of 1553 had demonstrated, the best way to adapt to a sickly season was to avoid Africa altogether during its “winter” rains. For Richard Jobson in the 1620s, the English did not even have to avoid the rainy

85 Barbot 1688, vol.II, 399-400.
86 “Slaving Voyage of the Albion-Frigate,” 75. Whereas James Welsh (1588/89) had compared Africa to England to argue for its temperateness in the late sixteenth century, a century later James Barbot was doing the same thing but commenting upon the intemperateness of the weather.
87 Ibid., 76.
88 Ibid., 86. While the crew shivered with cold, slaves stuffed into the hold endured a heat that was “sometimes so excessive that the surgeons would faint away and the candles [they carried for light] would not burn.” Under these conditions Barbot advised against the practice of carrying sick slaves to the open deck of the ship for fresh air, because the shift from the hot hold to the cold night air would only hasten their deaths. Ibid., 85-86.
season in its entirety, but merely its earliest days. He described how the poisonous vapors issued into the air at the beginning of the long rainy season, so that the time of the earliest rains was “very pestilent, and full of danger.”89 In this he was clearly reacting to the blooming mosquito populations that attended the onset of the rains. But the vapors hung about in the air only until they were cleared by subsequent showers, and therefore they posed no threat to health during the rest of the season. Because he assumed the air was so quickly purified, Jobson advised future travelers merely “to avoid the being in those first raines” and to have collected water for use in drinking and cooking prior to the start of the rainy season.90 Jobson was optimistic that the English could overcome the problems that bedeviled them in Africa. In his estimation, knowledge of the seasons allowed the English to “take into consideration, how the times and seasons of the yeare, are unto us discovered, that the turbulent and infectious seasons may bee provided for, and men advised the better to beare them, and provide for themselves.”91

By the second half of the seventeenth century, however, up to three hundred English resided in Africa throughout the year as they manned trading forts and purchased commodities, including slaves.92 Unable to avoid the rainy season, let alone the change from day to night, they were forced to devise ways to stay healthy in the deadly climate. They relied on the ancient concept of personal temperance. Medical orthodoxy from the time of Hippocrates held that health depended upon the interaction between a person’s environment and his behavior. Health consisted in maintaining the unique balance of the four humors – blood, phlegm, choler, and

90 Ibid., 127-128.
91 Ibid., 163.
melancholy – within each individual’s body. People sought humoral balance by adhering to a personal regimen, regulating the six “non-naturals” of food, drink, exercise, rest, evacuation, and sex. All people must consume or perform the nonnaturals in moderation; too much or too little of any of the non-naturals could upset the humoral balance and induce illness. Ultimately this concept of health implied that illness could be attributed to an individual’s own moral failing.

While the English increasingly ascribed to neohippocratic medical ideas that attributed illness to environmental factors beyond the control of human beings, they nevertheless continued to see moderation in the nonnaturals as crucial to maintaining health during the second half of the seventeenth century. They attributed the diseases suffered by the English in West Africa to a variety of intemperances, including drinking too much alcohol, having too much sex, and eating too much or too little. By correcting misbehaviors such as these, they argued, the English could adapt to the climate. As Jean Barbot noted in his 1688 travel narrative, Europeans in the torrid zone “have learned from experience that the human frame can, with practice, adjust to even immoderate heat.” For Barbot “practice” referred to a process of self-care and self-restraint that signaled the responsibility of individual Europeans to care for themselves in the tropics.

Observers continued to cast significant blame for illness in Africa on alcohol. So widespread was the general European medical idea of personal temperance, and so central were alcoholic beverages to European foodways, that condemnations of excessive drinking are practically ubiquitous in travel writings and correspondence. The 1693 narrative of the slaver Thomas Phillips provides an excellent later example. For him many sicknesses afflicting the English in West Africa arose from environmental phenomena such as swamps, rains, and the

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93 Among many others, see Siraisi, Medieval and Early Renaissance Medicine, Ch. 5.
stench of ordure emanating from slave pens, yet even in a narrative so attuned to environmental causes of disease, Phillips attributed the deaths of his white crew to intemperance. Both his crew and his cargo of slaves came down with the “white flux” about a week after departing São Thomé for the West Indies. He did not know how the slaves contracted the disease, but he believed the crew picked it up from a combination of climate and too much drink. “Next to the malignity of the climate,” Phillips thought, “I can attribute it to nothing else but the unpurg’d black sugar, and raw unwholesome rum” that the sailors consumed in punch.96

Examples from the correspondence of the East India Company in the late 1650s and early 1660s demonstrate the centrality of the regimen – and the individual’s personal responsibility in maintaining it - in contemporary thinking about health and adaptation to hot climates.97 Between 1657 and 1665, the East India Company held a charter for English trade on the Guinea coast, an important component of its primary trade to Asia. The company exchanged English textiles and other manufactured goods for African gold, which its ships then carried on to Asia to purchase goods at Bengal, Surat, and Madras. A small group of traders and soldiers did the company’s business in West Africa, with leadership and clerical staff at Ft. Cormantine on the Gold Coast and traders scattered among various outforts as far away as Benin. Sickness and death appeared frequently in the letters that passed between the company’s African factories and its headquarters in London; men on the ground in the Gold Coast reported the passing of company employees, while officials in London kept the Agents and factors apprised of the recruiting and shipping of replacements for the dead.

96 “Slaving Voyage of the Albion-Frigate,” 68. Likewise Jean Barbot noted that the Danes who inhabited the fort at Fredericksborg on the Gold Coast suffered from their heavy drinking, having imported their habit of drinking lots of distilled liquors to the tropics. Their sicknesses were due in part to the fact that the Danes, “being born in a cold climate where they are accustomed to strong drinks, make as much use of them here as if they were in the land of their birth.” Barbot 1688, vol.II, 399-400.
The employees in Guinea and their bosses in London attributed different causes to the high mortality in the coastal forts and factories. Employees often blamed the hot climate. When Agent Lancelot Stavely shipped out of Fort Cormantine in May, 1658, he hoped to arrest what he characterized as the long-term degradation of his health in Africa. “I find my strength & abillity of body soe much Decayed by my long stay here,” Stavely announced, “that itt is Dangerous for me to remainee Longer.”

Stavely’s successor, James Conget, echoed him a year later. Conget had worked his way up the chain of command from factor to Agent (the highest ranking company official in Africa) over the course of some six years on the coast. Before he left company service in October 1659, he had often complained of his own sicknesses in Guinea.

Writing the company from Barbados in February 1660, where he had stopped on his way home to England, he planned to the West Indies in a month and would brief the company on goings-on in Africa upon his arrival in London. He had contemplated sailing in February but could not, because “the weaknes of my Body, by reason of being soe long in a hott Cuntry, will not Endure the Cold Stormes of winter” on the north Atlantic.

While the Agents and factors blamed the climate for their sicknesses, the company rather suspected intemperance. Reflecting on the recent deaths of three factors in November 1659, it admonished the men on the coast to attend to their health by practicing temperance in all things:

It having … pleased the Almighty to deprive vs of 3 of our Factors, wee must therefore mind you, that are yet remaeying … that as you hope for the continuance of your healthe, and lives, to the glorie of God and your owne Comforts, that you avoid all manner of Excesse, & keepe to a moderate, and temperate dyet, and to shunn that bestly Synn of Drunkennesse, which laies men open to all other vices, and prepares them to all manner of wickednesse, bringing diseases to their bodies, and hazard to the Salvation of their Soules.

98 OC 2647, Lancelot Stavely at Fort Cormantine to the East India Company in London: undated letter said by Company to be written 1 May 1658, in Makepeace, Trade, 9.
99 OC 2766, James Conget at Barbados to the East India Company in London 4 February 1659/60, in ibid., 53.
100 East India Company in London to the Agent and factors at Fort Cormantine 8 November 1659, in ibid, 44.
In this case the company blamed the men for their own sicknesses. If they were sick, it must be owing to their drunkenness and the bad behaviors that flowed from it. In a parting shot, the company washed its hands of responsibility for their health. “Wee have by this ship furnished you with Medecines, and other Provisions, for the preservation of your healths,” it informed them. “It must therefore bee your cares, to husband and improove them, to that purpose, to which wee intend them, & not profusely & Lavishly to wast or mispending them.”

The East India Company may have referred to sex when it condemned the vices to which drunkenness “laies men open.” Nicolas Villault believed Europeans contracted fevers and the Guinea worm by having sex with African women. Fevers were “for the most part occasion’d by their women,” he opined. Likewise he suggested several defenses against the Guinea worm, among them admonishing travelers “to abstain from Women” while on the coast. Jean Barbot warned Europeans against both drink and sex during the sickly season in “the lands of the Foules and Jaloffes” of Western Africa. “Those who plunge into excesses with wine and women find a certain and quick end,” he wrote, often dying in less than a day from fevers. Barbot rehearsed theories for the high European mortality at the Gold Coast. Some attributed it to the Europeans having been born in a different climate; others said it had to do with the vapors in the air. Still others “add to these very likely reasons that the Europeans are excessively debauched with women and wine, and I go along with this view.” James (Jacques) Barbot identified fevers as the number one killer of Europeans at Bonny. A man who survived them won several years’
immunity from subsequent attacks, “provided he is temperate as to wine and women.” Likewise he attributed the colic to the “excessive use of women” or the evening dews. Europeans who contracted venereal diseases here could expect to suffer through gruesome deaths. “I cannot therefore but seriously recommend to all such as happen to go thither,” he admonished, “to forbear having to do with any black women as they value their own lives.”

Jean Barbot placed particular emphasis on the role of changing the diet in causing sickness among Europeans in Africa. Like many of his contemporaries, Barbot believed that “our bodies share much of the nature of the climate into which they were born and in which they were bred, this being the result of the food we eat.” Leaving Europe for long periods of time forced people to eat foreign foods, and in Africa they could expect to become ill. While the Africans remained healthy, the Europeans were “out of their element here … [and] find everything different, especially the food, which, being almost all of it tainted by the heat, further corrupts the blood and causes these regrettable acts of intemperance.”

J. Hillyer, an employee (probably a surgeon) of the Royal African Company at Cape Coast, complained of the “ill-diet and ill-government” of his colleagues. They did not each much food in the first place, “having neither stomach, nor mony to buy what they want.” Instead they “drink excessively … of Liquors very hot and Spiritous.”

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106 “Slaving Voyage of the Albion-Frigate,” 81.
108 Barbot 1688, vol.II, 575. In a way Barbot echoed Jobson, who had believed that the heat of alcohol stimulated Europeans to dangerous intemperance in alcohol. For Barbot the African food, altered by the heat of the climate in a manner to which Europeans were unaccustomed, also tempted them to intemperance in one form or another.
Others identified wearing wet or insufficient clothing as a potential killer because it threatened to make people too cold. At Cape Coast J. Hillyer opined, “I think that much of the mortality (not all) that happens among strangers, is the effect of their ill-diet & ill-government of them-selves.” For one thing, “men guard themselves lesse from the air then in other places, trusting to the heat of the climate, & receive the cool of the evening with onely a shirt.” Hillyer believed that the air of Guinea, “tho not so cold, is much more suttle & peering here then in our country,” capable of entering the body and causing sickness more easily than the air of England.110

Finally, some writers contemplated the possibility of improving African lands in order to make them healthier. An important component of English agricultural and economic thought since the sixteenth century, “improvement” or modification of lands by the application of labor, was also a way to make them healthier.111 Contemporaries believed, for example, that clearing land of trees would improve airflow and blow away contagious miasmas. In Africa, however, where they had no plans to cultivate the land themselves, the English focused their improving efforts solely on making the place healthier for those engaged in the trades for slaves and other goods.

In the mid-1680s the English contemplated alterations to the ground cover at Cape Coast in an attempt to make it less sickly. Dr. Ralph Bathurst, a physician and member of the Royal

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110 Ibid. In addition, many sources nodded approvingly at what they described as the widespread African practice of sleeping with one’s feet facing a fire. This kept a person warm and defended against various diseases. Pieter De Marees, Description and Historical Account of the Gold Kingdom of Guinea (1602), trans. Albert van Dantzig and Adam Jones (New York: Oxford University Press, 1987), 115; Barbot 1688, vol.I, 126.

Society, had written to J. Hillyer at the Royal African Company’s fort at Cape Coast Castle, seeking Hillyer’s opinion on the possibility of improving the healthiness of Cape Coast by altering the landscape. Hillyer replied, “I remember for the unhealthinesse of the place, you proposed to Enquire if it were woody, & if any good might be done to it by cutting down the woods, as has happened’[sic] in many American plantations.” He doubted clearing the woods would make much of a difference. He blamed the Africans’ land clearing techniques and what he considered their laziness for any sickness that might have been caused by the woods. Cape Coast Castle sat amid hilly, shrub-covered land cut by narrow defiles, Hillyer explained. The Africans farmed only about one tenth of the available land, clearing it perfunctorily by merely cutting and burning the plants without actually removing them from the ground. The shrubs quickly grew back from the roots after burning. “It may be that if those shrubs were destroyd’[sic], the matter might be mended,” Hillyer considered, but he had his doubts. To clear the entire area would require “bring[ing] the people to some kind of industry, & that will not be easy; they are wholly given to laziynesse, & so entirely bread up in it that there must be the greatest chang[sic] imaginable before they become any whit tolerable.” He concluded that “the fault of the wood (is (by the laziynesse of the people) without any remedy.”

When he passed through the English trading post at Bunce Island (Sierra Leone) in 1682/83, the Brandenburger Otto Friedrich von der Groeben saw that the English had altered the landscape in an effort to improve the salubrity of the place: “for the sake of good air, it has been cleared of all trees, so that the earth can more openly give off its vapours and so that the sun can

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113 Roy. Soc. MSS EL.H.3.76, J. Hillyer to Dr. Bathurst, 3 January 1687/88.
cleanse them with its heat.” Unfortunately the sought-after improvement in healthiness had yet to take effect, for von der Groeben found the English traders there, including their governor, John Case, “quite ill from the land illness.” For his part, Jean Barbot thought that merely clearing the ground would help make Rufisco (Rufisque in present-day Senegal?) more comfortable: “The heats are here intolerable in the daytime … and especially at noon; for it is then generally a dead calm at sea, and no manner of air can come to it from the land, by reason it is so close shelter’d behind the thick woods standing about it.”

Conclusion

The earliest English venturers to tropical West Africa understood the climate to be both habitable and temperate. As both learned scholars and English mariners reported, the revolution of Africa’s wet and dry seasons and the oscillation of hot days with cool nights made human habitation possible in a region traditionally considered too hot to support human life. As the English gained experience with the climate in the second half of the sixteenth century, they came to recognize that the seasons affected the health of mariners who ventured to the region. From the 1550s through the 1660s, those with experience on the coast recommended the English take a variety of precautions to help them stave off disease in Africa, prescribing they time voyages to avoid the wet season if possible and to observe strict personal temperance. From the 1660s, sources indicate observers identified not only the annual cycle of wet and dry seasons as a cause of disease, but also the shorter diurnal change from day to night and its attendant fogs and other phenomena, as sources of disease that struck the English. Over the second half of the seventeenth


115 Ibid., 22.
century and into the eighteenth century, at the same time that the slave trade made imperative a permanent English presence on the African coast, the English came to see life in Africa as increasingly untenable. By the turn of the eighteenth century, they had come to believe that the very seasons that made Africa habitable also made it hostile to European settlement. So hostile did they find the environment, in fact, that not even ironclad adherence to a temperate regimen could guarantee health and survival on the Guinea Coast.
CHAPTER 3
Temperateness and Temperance in Seventeenth-Century Barbados and Jamaica

During the seventeenth century the English understood the climate of the West Indies through related seasonal and moral concepts. When they established their first permanent colonies in the West Indies in the late 1620s, the English conceived of the tropical climate in precisely the fashion that had been laid out by Iberian observers and published in English travel compilations during the sixteenth century: the torrid zone was made habitable by seasonal phenomena such as the annual progression of wet and dry seasons and the diurnal revolution of days and nights of equal length. Reassured and encouraged by the dependable passage of the seasons, English planters set about cultivating islands in a tropical region that before 1492 was thought incapable of supporting agriculture and human life.

The ecological transformation resulting from the production of sugar, beginning first in Barbados in the middle of the seventeenth-century later in other English islands, transformed the way the English conceived of the tropical climate. Prior to the 1640s, Barbadian planters on emerging plantations employed a mix of English indentured servants and African slaves to produce cotton, tobacco, and indigo. Between the 1640s and the 1660s, the planters turned almost entirely to producing sugar with slave labor. The adoption of sugar as the primary export crop and the codification of the plantation complex as its mode of production transformed the ecologies and disease environments of Barbados and other English West Indian islands. Importing tens of thousands of African slaves to do the difficult work of planting and harvesting
the crop, the planters denuded Barbados of its original forest cover and subjected it to stick and hoe by 1665.¹

The planters’ decision to devote the Barbadian economy almost entirely to sugar brought with it unintended environmental effects. The African slaves who labored on the new plantations and the white sailors who shuttled them across the Atlantic carried in their bodies the microorganisms that cause malaria and yellow fever. *Aedes aegypti*, the mosquito vector for yellow fever, was an additional, unregistered passenger on slave ships crossing the ocean. Once in the Caribbean it joined native *Anopheline* mosquito species capable of carrying the plasmodium that causes malaria. Welcomed by the warm climate, ample sources of blood from the bodies of planters and slaves, and common standing water, the mosquitos thrived in the plantation environments of the West Indies. The resulting disease environment caused horrific mortality among the islands’ English populations.²

The disease environment that attended sugar production challenged the faith of the English that the tropics they now inhabited were as temperate and healthy as they had assumed.³ Seeking a way to understand their heavy mortality, the English combined notions of personal

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³ Here I follow historian Gary Puckrein, who has argued that the yellow fever outbreak was the only serious disease event suffered by Barbados prior to 1671. Puckrein views the two decades between 1690 and 1710 to have had the “worst health conditions” in the island’s early history. Gary Puckrein, *Little England: Plantation Society and Anglo-Barbadian Politics, 1627-1700* (New York: New York University Press, 1984), 181-194; quote, 184. Puckrein also believes the lack of discussion of high mortality in any of the few surviving qualitative sources on Barbados prior to the transition to sugar production indicates the island was relatively healthy. Larry Gragg follows him in arguing for a relatively healthy Barbados prior to the introduction of sugar. Larry Gragg, *Englishmen Transplanted: The English Colonization of Barbados 1627-1660* (Oxford: Oxford University Press, 2003), 166-169. Kenneth Kiple has argued that the island was free of malaria and subject only to yellow fever during the seventeenth century. Kenneth Kiple, *The Caribbean Slave: A Biological History* (New York: Cambridge University Press, 1984), 16. Richard S. Dunn considered the environment to be healthy during the what he termed the “tobacco age” of 1627-1640. Richard S. Dunn, *Sugar and Slaves: The Rise of the Planter Class in the English West Indies, 1624-1713* (Chapel Hill: University of North Carolina Press, 2000), 49, 54. Barbadian population growth at this time was not the result of natural increase, however, but rather accrued through migration of servants in the burgeoning economy.
temperance at the heart of contemporary medicine with a reflexive resort to ancient notions of a deadly hot tropics. At the intersection of these ideas sat alcohol. The English arrived in the islands primed by the knowledge that tropical heat could cause them life-threatening digestive problems. Contemporary medical theory supported the notion that drinking alcohol, especially distilled liquors, would help maintain vital bodily functions in the heat of the torrid zone. I argue that English anxieties about the progress of colonization in the West Indies during the seventeenth century were thus reflected in their attitudes toward alcohol consumption. Prior to the adoption of sugar production, observers of both Barbados and Jamaica decried the slow pace of improvement in the islands and attributed it to idleness induced by the colonists’ drinking. After the adoption of sugar production and its attendant changes in the disease environment, observers pointed to alcohol as the source of the horrific white mortality for which the islands were quickly gaining a reputation throughout the English Atlantic world.

In order to understand the mortality and to promote white immigration to the islands, observers performed a two-fold rhetorical maneuver that drew on elements of early modern medicine and environmental thought. On one hand they adopted from medical culture the common notion that an individual was responsible for his own health through the practice of temperance in the nonnaturals of food, drink, sleep, exercise, sex, and evacuation. On the other hand the English changed the way they described the climate. As the epidemiological effects of sugar production mounted, colonists emphasized the heat of the climate while at the same time continuing to proclaim its temperateness. By thus emphasizing the heat, they intensified the threat posed to health by chronic drunkenness; in effect they argued that drinking too much, particularly in hot climates, caused sickness and death. I argue this was an effort to temper the

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climate in rhetoric in a manner that placed the blame for white mortality not on the environment, but on alcohol and the people who consumed it. In fact, they argued, drinking too much made the very seasonal characteristics that tempered the climate more dangerous to heavy drinkers. By the 1680s these intertwining developments were complete. Both Barbados and Jamaica had undergone environmental transformations produced by sugar production and were now amenable to malaria and yellow fever. Meanwhile defenders of the West Indian colonies had established a pattern of defending their environments which would influence the reputation of the islands into the nineteenth century. In doing so they contributed to the common-place notion of the islands as hot, sickly places peopled by debauched and lazy English colonists.

**Seasonality and Habitability in the West Indies**

As his ship neared the island of Barbados in late June, 1631, Sir Henry Colt understood that the torrid zone was made habitable by its seasons. He found the climate of the “torrid zone or middle region” of the earth’s latitude to be “temperate enough” for habitation; indeed, the island was already populated by young planters and their servants. The sun’s heat was moderated by cooling breezes that blew from the north and east. Colt also understood the revolution of wet and dry seasons here, noting that “you have seldome any rain, but 6 months in the year.” Unfortunately he had arrived at the beginning of the rainy season, “in your winter monethes ye sunne, being soe farr remoued from you into ye Tropick of Cancer North.” He complained that the “dayly showres of raine windes, & cloudy, sultry heat, declares it was ye worst time of all ye

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Colt thus described the torrid zone as hot but temperate: it was hot year round, with seasonal rains that supported agriculture and breezes that cooled its heat.

Colt set off temperate Barbados, located deep within the tropics in thirteen degrees North latitude, from the supposedly much hotter tropic of Cancer, located ten degrees and some seven hundred miles further to the north. Colt found Barbados itself to be healthy, but the journey from England to the West Indies was “dangerous bycause of ye change of Climates, especially about ye Tropick” of Cancer. With his son contemplating a trip to the region, Sir Henry advised him to mind his diet and health, “in wch consisteth ye whole performance of this Journy.” As he approached the tropic of cancer, he risked coming down with a fever or calenture, “wch haue killed many in ye hott season of ye yeer[my emphasis].” Not only was the tropic of Cancer less temperate than Barbados, but it too was subject to seasonal phenomena.

For the anonymous author of “A Briefe Discription of the Ilande of Barbados” (1650-1651), it was “no Paradox” that Barbados was temperate, because its seasonal characteristics mitigated the heat of the tropics. The daily breeze that accompanied the sun across the sky “never failes to comfort the traveller and qualify the heate that otherwise, would be soe injurious that noe man could endure its force.” Days and nights of equal length made for cool nights, “soe coole that lying in a Wastcoate on a good feather bedd I can indure on mee two Blancketts.” And during the rainy “winter” season of August through December, the trees retained their foliage and continued to fruit.

Several observers compared the Barbadian climate favorably with the climate of temperate Europe. The author of “A Briefe Discription” described it as cool and temperate like

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7 Ibid., 65.
8 Ibid., 98.
9 Ibid., 99.
10 “A Briefe Discription of the Ilande of Barbados,” in Harlow, Colonizing Expeditions, 43.
11 Ibid., 43-44.
the summers of Holland. Healthier than the neighboring islands, the climate was “much resembling England … and better agreeing with the temper of the English Nacôn.” In 1668 Nicholas Blake described it in terms of English summer clothing when he judged “the Climate verry temperate, so coole as a Man may verry well endure to goe as thick clothed all the yeare, as in England in sommer time; the days & nights in the remotest or neerest being of the sun, never differ past two howers.” John Reid in 1665 commended the island for its fertility and pleasant climate: “only is Wanteing Las Nieves que tenemos en españa yet its not so hott heer as it is in Spaine in tiempo de Caniculares.” Reid’s Spanglish phrase nodded at the island’s moderation between seasonal extremes that could be expected even in temperate Europe. In 1675 Dr. Thomas Towns compared Barbados favorably to the hot Mediterranean, pointing to the cooling breezes that accompanied the sun as reasons for its temperateness: “we need not hang over the fire to keep out cold, nor shut up doors at noon … nor set out beds in the tops of Houses (as they do in some places on the Mediterranean-Sea) to fence off the heat: For the Sun, notwithstanding his neighbourhood, is very gentle here, being fann’d with a constant gale from the East.” For the author Thomas Tryon, Barbados had neither cold weather “to consume what Summer brings

12 Ibid., 43.
13 Nicholas Blake to his Majesty, 28 February 1668/1669, UK National Archives [hereafter UKNA], State Papers Colonial Office Series [hereafter CO], CO1/67, no.95. In 1670 Blake sought permission from the crown to lead an expedition to seize and settle the island of St. Lucia. Pressing his case, he posed a series of questions about the island to his “Neighbour Martin.” Among the questions was one asking at “what time of the yeare the seasons of rayne doe most usually come, & how long they ordinarily continue.” Blake reported the island was fertile overall and that its rains appeared at the same time as those of Barbados. Nicholas Blake to Charles II, 20 October 1670, Library of Congress, Manuscript Reading Room [hereafter LC], State Papers Colonial Office Series [hereafter CO], CO1/25, no. 77; “A Coppie of a Remembronce sent by one y went to S’t Lucia dated the 18th of Sber 1670,” LC, CO1/25, no.77i.
14 John Reid to Bennet(?), 5 August 1665, LC, CO1/19, no.91. “Las Nieves que tenemos en españa” means, “the snows we have in Spain.” “Tiempo de Caniculares” refers to the dog days of summer.
forth,” nor was it too hot for comfort: “that Sol’s too ardent kisses may not be offensive, Nature provides always delicate cooling Briezes and refreshing Gales of Wind.”

The English had a similar understanding of seasonal phenomena in Jamaica. Less than a month after the English landed at Jamaica in 1655, a soldier who participated in the Western Design praised the island as tempered by diurnal land and sea breezes. During the failed English attack on Hispaniola in April, 1655, he had recognized the tempering effect of annual wet and dry seasons on that island. He was impressed by the fertility of the land, where savanna grass grew tall “though in this dry season.” In addition he praised “the greate healthfulness of the place, and temperateness of the aire especially in the nights.” The English decamped for Jamaica on 4 May, 1655. Probably relieved at having left the difficulties Hispaniola behind, they found conditions in Jamaica “never a whit inferior in any particular” to Hispaniola. Jamaica was “most pleasant and healthful to the utmost, we have a land wind and sea wind as at Hispaniola.” The climate was similar to that of Europe, “not soe hot as Italy by day, and cooler by night and mornings.” The days and nights differed by only two hours. Like Hispaniola, Jamaica had wet and dry seasons; the English had arrived during the dry season, and the three “rainy winter months” were August through October.

The English who wrote about Jamaica tended to use the noun “season” to refer to a period of life giving rain. Such a usage exemplifies the importance of seasonality to English conceptions of a habitable tropics. In Jamaica, a “season” was not merely a “certeyne and

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16 Thomas Tryon, Friendly advcie [sic] to the gentelmen-planters of the East and West Indies (London: 1684), 2-4.
17 Anonymous. June 1, 1655. Letter 1, Appendix D: “Letters concerning the English Expedition into the Spanish West Indies in 1655,” in C. H. Firth, ed., The Narrative of General Venables (London: Longmans, Green, and Co., 1900), 135. The English had landed at Hispaniola in April, 1655. The army was in disarray, and lacked proper supplies of food and water. After marching eighteen miles on their first day, a detachment of the army bivouacked at a plantation where they found water “standing in several holes, it having bee a very dry time in the country of late, and the rainy monthes at hand.” Ibid., 135. Thus the soldier recognized wet and dry seasons.
18 Ibid., 138.
19 Ibid.
20 Ibid., 139.
ordinarie” climatic phenomenon with characteristic weather patterns. According to John Taylor, who visited the island in 1687-88, “in this island of Jamaica the rains happen not as in the Europian countreys, but commonly happen in January and June.”

For almost three weeks the rains drenched Jamaica, “by which means ye rivers are fil’d, and the earth becomes fit for planting. And those raines the inhabitants call the seasons, for then they plant corn, sugar canes, indigo, etc.”

Sir Hans Sloane described how the savannas on the southern side of Jamaica were made fertile by the rains: “These Savannas answer our Meadow-Grounds in Europe, and after Seasons, i. e. Rain, are very green and pleasant.” Likewise agriculture was made possible by these rains. Having cleared a plot of land the colonists waited for the rains. “After Seasons, i. e. three or four, or more days Rain,” Sloane wrote, they planted various provision crops. After harvesting the land was cleared again, “before they expect a new Season,” in which the process began again.

In addition to the shorter “season” were the “two great rainy Seasons” in May and October, “and these Seasons, as they are call’d, from their being fit to Plant in, are generally so over the whole Island.”

In January the colonists also “expected a Season or Rain.” In July

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22 David Buissieret, ed., Jamaica in 1687: The Taylor Manuscript at the National Library of Jamaica (Mona: University of the West Indies Press, 2008), 116. According to OED, one specific definition of “season” referred to “the ‘rains’ or spells of wet weather in tropical countries. In the southern U.S., ‘a shower of rain or period of damp weather suitable for setting out tobacco and other plants’”; “season, n.”. OED Online. March 2013. Oxford University Press. http://www.oed.com.proxy.library.georgetown.edu/view/Entry/174349?rskey=IXgEzc&result=1 (accessed April 02, 2013). OED lists Sir Hans Sloane’s A voyage to the islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the natural history ... of the last of those islands; to which is prefix’d an introduction, wherein is an account of the inhabitants, air, waters, diseases, trade, &c. ..., vol.1 (London, 1707) as the first published use of the word with this specific usage, but I have found it used in this manner in manuscript sources going back to the 1660s. The first such use of which I am aware appears in a reference to Barbados instead of Jamaica: “The Lord William Willoughby’s Letter to the Lords of his Mat:ies Councill about the Caribbee Islands,” 9 July 1668, CO29/1, ff.58-61. All of the other instances of “seasons” as periods of rain that I have come across have referred to Jamaica.
23 Sir Hans Sloane, A voyage to the islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the natural history ... of the last of those islands; to which is prefix’d an introduction, wherein is an account of the inhabitants, air, waters, diseases, trade, &c. ..., vol.1 (London, 1707), xiv.
24 Ibid., xv.
25 Ibid., xxxii.
1682, Thomas Martyn reported the colony was in a “misserab. Condition.” A long drought had left the island unable to grow provisions, and many cattle and slaves had died, “wee having had noe Season since October last.” The lawyer F. Hanson in 1683 attributed Jamaica’s fertility precisely to such seasons. He wrote that between April and December the inland regions of the island had daily rain showers, “and this makes the Island fertile, especially if accompanied with those they call the general seasons, which are commonly great rains in May and November.”

In the West Indies the focus of seasonality was on diurnal changes that related to health more than on longer seasonal changes that made the climate habitable. When they did focus on longer seasonal changes, the English did so primarily in Jamaica, whose cold north winds were said to cause illness. The focus on seasonal “norths” set descriptions of the Jamaican climate apart from that of Barbados during the seventeenth century. In 1676 Charles Boucher, who had arrived in Jamaica the previous year, wrote to his old Oxford classmate, Edmund Halley, that that Jamaica was “very healthy, and not near so hot as people talk; but is not troubled with those colds wch in England benum of fingers; altho ye North winds will now and then make one shiver.” The physician Thomas Trapham in 1679 identified the norths as having great potential

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26 Ibid.
27 Thomas Martyn to Carlisle, 25 July 1682, British Library, Manuscript Reading Room [hereafter BL], Sloane MSS 2724, f.227. In June 1687 the Jamaican planter John Helyar complained of drought at Bybrook Plantation, the Helyar property in 16 Mile Walk. The entire island was in the grip of a drought, he wrote. “Since ys Island hath been possessed by the English there were never such a drought as we have had ys yeare for were we vse to have seasons (store of rayne) we have had in ys very 16 miles walke (ye piss pot of the Island) as much Dust as you have in England in the dryest time there wch whill certainly render provision excessive dear.” John Helyar to William Helyar, 30 June 1687, Somerset Heritage Center [hereafter SHC], DD/WHh 1089 pt.3, no.9 (1687).
28 F. Hanson, ed. The Laws of Jamaica (London: 1683), a3v-a4r.
29 David Watts relates the norths precisely to diurnal temperature change. The temperature change was greatest during the winter. During this time cold low pressure systems in North America could facilitate the movement of cold air into the West Indies. They can cause cooler temperatures in the Bahamas and struck the north sides of Cuba and Jamaica. Watts confirms that these cold winds could stunt sensitive crops on the north sides of the islands. In addition, the Intertropical Convergence Zone moved just south of the equator at this time; by drawing the trade winds further to the south, the ICZ helped the cold winds from the continent reach into the Caribbean. Watts, West Indies, 17.
to alter health. He classified them into three varieties. One group arose in the mountains of
Jamaica and blew into the southern part of the island. A second group blew in from Cuba and
affected the north side of the island, but lacked strength to overcome Jamaica’s central mountain
range. The third and most dangerous winds were those that blew from Cuba with enough force to
overtop the mountains. Appearing during the “norths season” when the sun was furthest away in
the tropic of Capricorn, the winds caused dry belly ache, soreness of the eyes and throat, and
tertian fevers in “disposed Bodies.”

For John Taylor the norths provided the only appreciable
difference in temperature in the year. These winds were so cold that planters found “a kind of
white hoar frost” on vegetation in the hours before dawn. During the cold nights the norths
helped precipitate cold “dues and densities” that Taylor believed were “vereie prejudiciall to the
health of every man.” Sir Hans Sloane referred to the third group of norths when he described
them as blowing “clear over the Island” between December and February. The winds made it
impossible to grow sugar cane on the north side of the island, while on the south side they
remained strong enough to “throw down every thing” in their way. At times the norths were so
strong that they topped the mountains and combined with the land winds, blowing hard down
onto the southern coast with enough force to block the sea breezes entirely. Probably because the

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31 Thomas Trapham, A Discourse on the State of Health in the Island of Jamaica. With a provision therefore Calculated from the Air, the Place, and the Water: The Customs and Manners of Living, &c. (London: 1679), 9. Trapham attributed their effect on people to differences in the pores of newcomers and old residents of the West Indies. This also affected health during the change from day to night differently for different people. According to OED, Trapham’s book was the first published source to refer to the Jamaican norths. The historian Mark Harrison identifies Trapham’s book as the first dedicated volume on the diseases of the West Indies. Mark Harrison, Medicine in an Age of Commerce and Empire: Britain and its Tropical Colonies, 1660-1830 (Oxford: Oxford University Press, 2010), 41.

32 Buissieret, Jamaica in 1687, 110.

33 Ibid., 112.

34 Sloane, voyage, vol. 1, ix, xliii.

35 Ibid., ix, xxxii.
norths were cool winds, Sloane did not remark further upon the effect of their blocking the sea breezes.

But the norths were not without consequence for Jamaica, because they contributed to ill health. Francis Watson blamed a north wind in part for the deaths of Lady Modyford (the daughter-in-law of Governor Sir Thomas Modyford) and a Mrs. Herne in September 1680. The women had “surfeited [overheated themselves] with dancing in the night.” They died after walking home “in a great north,” and “taking cold upon it.” Sloane recorded that in January and February 1688, the norths caused an “Epidemical, and contagious” outbreak of “Chincoughs” (whooping cough) among the poorer children of the island. The children were residents of flimsy “Savanna Houses” made of reeds and palm leaves. “Expos’d on every side to the Winds, and not strong enough to keep them out,” the children came down with the deadly cough.

Over time the English came to see irregularities in the seasons on both Barbados and Jamaica. They spoke most often of droughts that followed in the absence of rainy “seasons.” Unlike in the case of Africa, however, there is no evidence that droughts contributed to notions of an uninhabitable West Indies or the rhetorical warming of the Caribbean. Contemporaries did not discuss droughts in the context of sickness, for example. Droughts did, however, threaten agriculture. It was in this context that they received the most attention and the loudest cries of

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38 Sloane, voyage, vol. 1, civ.
40 In Jamaica: John Style’s Description of Jamaica, 24 July 1665, LC, CO1/19, no.81; Thomas Lynch to Slingesby, 5 November 1672, LC, CO1/29, no.43; Thomas Martyn to Carlisle, 25 July 1682, LC, Sloane MSS 2724, f.227; John
anguish, most likely because the English were already living there and were there to stay, unlike in West Africa.

Finally, the action of the norths blowing against Jamaica’s central mountain range effectively gave the two sides of the island different seasons. The January rainy season occurred mainly on the north side of the island. According to Sloane the north winds whipped the heavy rains up to a special violence there, but rarely with enough strength to cross the mountains into the south side. In effect, then, there were different seasons on the northern and southern halves of the island. Thomas Trapham claimed the seasons differed between north and south as well, but without reference to the north winds.

*The Culture of Drink in the Seventeenth-Century English West Indies*

If the English understood the climate of the West Indies to be temperate, they could not say the same of its English inhabitants. Richard S. Dunn closed his classic social history, *Sugar and Slaves: The Rise of the Planter Class in the English West Indies, 1624-1713* (1972), with two influential chapters of cultural analysis. In chapters on “Life in the Tropics” and “Death in the Tropics,” Dunn described the terrible disease mortality that struck down both whites and blacks by the thousands. Slaves perished from causes over which they had no control – disease, overwork, and malnutrition chief among them. Likewise the English population suffered from malaria and yellow fever, diseases to which they had little prior exposure and which exacted

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41 Sloane, voyage, vol. 1, xxxiii.
42 Trapham, *A Discourse*, 35.
horrific mortality costs. Yet Dunn pointed out that mortality among the white islanders arose not only from sickness, but also from their manner of living. Beset by virulent new diseases, the English hastened their own deaths through a combination of stubbornness and what people of the twenty-first century refer to as “unhealthy lifestyles”:

The planters quickly decided that Englishmen were not designed by providence for physical toil in the tropics. After a little more experience they concluded that Englishmen could not even live comfortably in the tropics. Naturally they blamed the Caribbean environment for the debilitating diseases and early deaths they suffered, but for some of their problems they had only themselves to blame. In their basic domestic arrangements – food, clothing, shelter – the early settlers stubbornly resisted accommodation to the tropical facts of life. They retained English habits ill suited to the Caribbean climate and developed new habits ill suited to any climate.43

Among these ill habits, Dunn reserved special condemnation for the planters’ overindulgence in food and drink, on which the wealthy “glutted themselves as much or more than the gentry at home.”44 He was particularly attentive in detailing both the planters’ heroic drinking and its effect on their health.45 While he recognized the contribution of tropical diseases like malaria and yellow fever to white mortality, Dunn echoed contemporary critics who attributed the high white mortality of the islands to too much food, sex, and drink.46 High mortality and overconsumption revolved in a vicious cycle, fostering a self-centered, libertine culture among the white inhabitants. With little hope of reaching old age, white West Indians lived for the day, treating their slaves with brutality and undermining their own constitutions in the pursuit of pleasure.

I offer an alternative interpretation of alcohol consumption among English colonists in seventeenth-century Barbados and Jamaica. I argue that seventeenth-century English colonists,

43 Dunn, Sugar and Slaves, 264.
44 Ibid., 281.
46 Ibid., 302-07.
merchants, sailors, and soldiers viewed drinking alcohol as a rational response to life in the hot climates of the Atlantic world. An important part of European culture, drinking expressed notions of sociability, conviviality, and hospitality. Indeed, there can be little doubt that they would carry metropolitan attitudes toward drink with them into hot climates. In fact, in some ways alcohol became more important to English life in the tropical Atlantic. While alcohol had long been taken as a digestive aid in Europe, many English in hot climates believed it a necessity to restore vital heat that the sun sapped from their stomachs. And alcohol, whether sack, Madera, or rum, was an important commodity in the trading networks on which the Atlantic economy was based. Despite the complaints of contemporaries and modern historians, then, contemporary cultural practices, medical ideas, and the wider Atlantic economy itself created conditions that encouraged alcohol consumption in the hot climates of the seventeenth-century English Atlantic world. Alcohol was central to the early modern English diet. During the seventeenth century the English drank in amounts that would have required them to consume alcoholic drinks throughout the day. For example, Londoners drank three quarts of ale or beer per person per day in the mid-seventeenth century. In 1684 England’s commercial brewers produced more than 18.5 million barrels of beer, yielding 2.3 pints per person per day; according to historian Jon Burnett, the late seventeenth century was probably high water mark of beer consumption in early

47 Kupperman, “Fear of Hot Climates,” 221.
50 A. Lynn Martin, Alcohol, Sex, and Gender in Late Medieval and Early Modern Europe (New York: Palgrave, 2001), table 2.1, 29. Because these are per capita measures, Martin assumes adult men drank more than either women or children, and the amounts they consumed would be somewhat higher than indicated here.
modern England, with tea, coffee, other drinks gaining ground over beer in the eighteenth
century.51

In the hot climates of the Atlantic world, however, English travelers and colonists usually
had to make do without their cherished beers. European grains did not grow well in the West
Indies, leaving the English without ingredients for brewing in the island colonies.52 Beer often
failed to survive long sea voyages, corrupted by bad casks, heat, or simply the passage of time.53
In the West Indies the English imported drinks or turned to local substitutes such as mobby (a
mixture of potato juice and water, sometimes fermented), citrus drinks, and rum-based drinks.54
Because they shipped well, however, distilled spirits often replaced beer among the English in
hot climates.55

The English valued alcohol not just as a beverage but as a medicine that promoted
digestion.56 Seventeenth-century medical culture held that many illnesses arose from improper

51 The commercial brewers brewed for both domestic consumption and export. They supplemented widespread
home brewing, which accounted for some 65% of total English production in 1690. Burnett, Liquid Pleasures, 114.
If Burnett’s figures are correct, and assuming home brewers brewed solely for domestic consumption as the citation
suggests, then they would have produced an additional 4.3 pints per person per day. Combining this with the 2.3
pints per person per day produced by the commercial brewers, some of which was for export and some of which for
home consumption, the average person would have consumed somewhere between 4.3 and 7 pints of ale or beer per
day.
52 Dunn, Sugar and Slaves, 273; Alfred W. Crosby, Jr., The Columbian Exchange: Biological and Cultural
Consequences of 1492 (Westport, CT: Greenwood Press, 1972), 65, 67, 70-72; Charles de Rochefort, The History of
Barbados St. Christophers, Mevis, St. Vincents, Antego, Martinico, Montserrat, and the rest of the Caribby-Islands,
in all XXVIII … Englished by J. Davies of Kidwelly (London: 1666), 5.
53 Burnett, Liquid Pleasures, 162. Beer did sometimes survive the passage from England to the West Indies. In
September 1655, Major Robert Sedgewick was pleased that the beer shipped along with the troops on the Western
Design remained potable: “Amongst the rest of our Provisions our beere proved generally very good wch was a very
great refreshment and is so to this day.” Robert Sedgewick to “Right Worp:ll,” 6 September 1655, LC, CO1/32,
no.25, f.89.
54 Among others see: Beachamp Plantagenet, A description of the Province of New Albion (London: 1648), 5;
Richard Ligon, A True & Exact History of the Island of Barbados (1673) (London: Frank Cass, 1998), 27, 31-33,
52, 93.
distilled liquors were probably more economical to freight. They would have sold for higher prices than beer, thus
offering merchants more profit per unit of volume and weight.
56 Ken Albala, “To Your Health: Wine as Food and Medicine in Mid-Sixteenth Century Italy,” in Alcohol: A Social
Wine in Early Modern England,” The Social History of Alcohol and Drugs 18 (2003), 35-50. Alcohol was a primary
digestion. When the stomach lacked heat for proper digestion, the English attempted to restore it by consuming hot foods, spices, and drinks. Because these substances conveyed sensations of warmth to the body when consumed, the English reasoned they could be used to augment the body’s own internal heat. For example, contemporaries took wine to add heat and moisture to the body and to facilitate digestion. Distilled liquors were used in the same way.

As the seasons changed, so too did the body’s ability to digest its food. Following Hippocratic doctrine, contemporaries believed that the heat of the stomach changed in relation to seasonal temperatures and became less capable of digestion in the hotter summer months. In 1655 the almanac maker R. Healy wrote of the English summer that “the natural heat is now dispersed abroad unto the outward parts of the body, and man is now not so hot within as in Winter.” If the English summertime were capable of reducing their vital bodily heat, contemporaries reasoned, then the powerful heat of the torrid zone must surely work drastic change in their bodies. As Karen O. Kupperman has shown, some believed the body’s ability to digest food differed in hot climates, at least for newcomers. William Hughes (1672), a doctor who served on a naval vessel in the West Indies, explained how the stomach operated differently in hot climates compared to colder ones. Hughes believed the stomachs of people who were “Naturaliz’d” to the hot Caribbean were cooler than the stomachs of the metropolitan English. The tropical stomach was “more lank and weak, by reason of the external ambient heat; and therefore require[s] such aliment … which is most easily digested.” By contrast the “hotter

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ingredient in many early modern medicines. For recipes, see William Vaughan, Directions for Health: Naturall and Artificiall: Deriued from the best Phisitians, as well Moderne as Antient, 6th ed. (London: 1626), sec. 2, ch. 3.

57 Kupperman, “Fears of Hot Climates,” 221.

58 Albala, “To Your Health,” 12.


60 Kupperman, “Fears of Hot Climates,” 221.
stomachs” of the metropolitan English were “naturally strong enough to dispense with that [food] which is more solid, here in this our more Northern Hemisphere.” ¹⁶¹ The English in the West Indies drank distilled liquors precisely to remedy this weakness of stomach. Because “all kinde of Drinks, either naturally hot, or artificially made so, especially hot Countries, are most wholesome,” Hughes argued, “I think all rational persons, who have ever been in the Indies, will conceive it so to be, by the frequent drinking of Rum, Brandy, and other hot Spirits.” ¹⁶²

The mere physical sensation of heat seems to have influenced the English to drink in hot climates. In both England and the Torrid Zone, they associated heat with sensations of “faintness” or weakness. In 1600 John Pory described São Thomé as being so “extremely hot” that “such as are borne in Europe, can very hardly walke or moue themselves for faintnes” between December and February. ¹⁶³ When Hans Sloane observed an “epidemic fever” in Jamaica in the late 1680s, he assumed the weakness that accompanied it existed “by reason of the hot Climate.” ¹⁶⁴ In the hot climates of the Atlantic, the English thus consumed alcohol to cure faintness. Samuel Speed, a promoter of African trade, advised travelers to Guinea in 1665 to carry “A bottle of Aqua-vitae, or, a quart of Brandy, being a Sovereign Remedy in the cure, as recruiting that heat within, that is weakened by a more extream one without.” ¹⁶⁵ In the 1680s Hans Sloane suspected alcohol was behind a patient’s heart problem in Jamaica. Sloane’s patient had been treating himself with alcohol during the hottest part of the summer, apparently to his detriment: “in the Dog days [he] had been so much troubled with faintness, as even several times

¹⁶¹ William Hughes, The American physitian; or a treatise of the roots, plants, trees, shrubs, fruit, herbs, etc. growing in the English plantations in America (London: 1672), 145-6.
¹⁶² Ibid., 142.
¹⁶³ Leo Africanus, A Geographical History of Africa, trans. John Pory (London: 1600), 51-52. Leo Africanus did not describe the coastal regions of West Africa. For the 1600 translation, Pory composed a lengthy introduction compiled from more recent travelers’ reports that covered coastal West Africa and the islands like São Thomé.
¹⁶⁴ Sloane, voyage, vol. 1, xciv. Sloane witnessed this fever early in his visit to the island. After more experience with the island’s diseases he came to believe that the weakness that attended it was a product of the fever itself, and not the climate.
to fall into Syncopes [syncopation of heartbeat or failure to beat; arrhythmia] … To take away his faintness, he had prescribed, as I apprehend, too much Wine and spirituous Liqours, which may give present relief, but in the end destroy.”

In fact, some argued that the heat of the Torrid Zone stimulated Europeans to drink more than usual. The trader Richard Jobson marveled at the amounts of liquor Englishmen consumed in the Gambia when he traveled there in the early 1620s: “in the height and heate of the day we can with great facilitie, and without offence, drinke off such a draught, or quantitie of Aqua vitae, or hot waters, as if we should drinke heere in our native countrey at one time, would certainly burne out our harts; nay more, wee finde our bodies naturally desiring, and longing for the same [my emphasis].” For Jobson, then, the heat conspired with the very bodies of the English to betray their health, tempting them to dangerous intemperance in the heat.

English social customs also encouraged drinking among those who traveled to hot climates. They carried with them a culture of hospitality and conviviality, of which alcohol was a central component. In Europe the customary consumption of alcohol took place whenever people gathered to do business, socialize, or celebrate. Toasting or “drinking healths” had been popular in England since the late sixteenth century. There can be no doubt that practices of toasting and “large garaussing” crossed the Atlantic. If alcohol helped keep a person healthy in the Torrid Zone, then it is possible that toasting one’s health took on new meaning in such dangerous and sickly hot climates. Welcoming newcomers with a drink (or drinks) was a common practice.

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66 Sloane, *voyage*, vol. 1, cxxxix. Sloane attributed many of the diseases he treated during his time in Jamaica from 1687-89 to intemperance in drink. Although in this case he believed his patient’s drinking was ultimately detrimental to his health, I cite it to point out that the patient himself believed consuming alcohol would help cure faintness.

67 Richard Jobson, *The Golden Trade, or a discovery of the River Gambra* (London: 1623), 41-42. The medical writer Thomas Tryon warned potential travelers against drinking too much alcohol in hot climates. He warned that drinking too much brandy could permanently cool the stomach, so that people had to drink so much of it to help digestion that it killed them. Tryon, *Friendly advcie [sic]*, 30-31.

among Barbadian planters. Father Antoine Biet, a French priest who called at Barbados in 1654, reported that sharing a drink of brandy with newcomers was “the custom of the country,” offered as “the first gesture of welcome.” Calling at Barbados in late 1690, the traveler Richard Simson noted how “hard Drinking” accompanied trade on the island: “A continual resort of multitudes of of[sic] People carrying on Trade, is the occasion of a great deale of Collateral good fellowship.”

Whether preserving health, sealing business deals, or greeting newcomers, English denizens of the hot climates of the Atlantic world consumed alcohol in much the same way they had in England. They arrived in hot climates primed by the knowledge that they would experience great heat and that this heat could cause them digestive problems that imperiled their lives. Consuming distilled liquors thus constituted for them a crucial adaptation to the hot climate of the Atlantic world as they understood it. Drinking for these reasons does not support the persistent historiographical common-place of an immoral and debauched white West Indian populace. While contemporaries clearly believed that some people drank more than was necessary, early modern Europeans consumed large amounts of alcohol each day, and it is not inconceivable that the environmental and social conditions of life in the West Indies encouraged them to drink even more. At the same time, however, drinking for medicinal, social, and convivial purposes could slide very easily into drinking merely to become intoxicated. Observers blamed drunkenness for some of the problems the English encountered in hot climates. Chief among them were idleness, sickness, and death.

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69 Gragg, Englishmen Transplanted, 176-78.
71 “Richard Simsons voyage to the Straits of Magellan & S. Sea in the year. 1689,” BL, Sloane MSS 86, f.56.
Drunkenness and Idleness in Barbados and Jamaica

On tropical West Indian islands made habitable by seasonal phenomena, the English anticipated developing export crops that could be supported by the hot climate. In this section I survey the relationship between environmental conditions and moral ideas on Barbados and Jamaica in the years before and after the islands’ respective transitions to sugar production. In both cases English observers decried what they considered the slow pace of economic development. Prior to the introduction of sugar cultivation, observers criticized the gentlemen planters of Barbados and the soldiers of early Jamaica, branding them as idle for their failure to cultivate the agricultural commodities made possible by the tropical climate. They voiced a rhetoric of drunkenness, attributing the islands’ economic difficulties to what they considered the intemperate alcohol consumption of the inhabitants and the social disorder that resulted from it. The Barbadian colonists’ transition to sugar production in the middle of the seventeenth century, followed by the beginning of sugar production in Jamaica in the quarter century after 1655, transformed the disease environment of the islands and made them increasingly deadly to English inhabitants and African slaves alike. As each island’s economy changed, the rhetoric of drunkenness changed as well. In the second half of the seventeenth century, the numbers of African slaves increased dramatically, and the islands sought white migrants to help balance the slave population and maintain English control over their laborers. But with the islands’ reputations for sickness spreading throughout the Atlantic world, they feared potential colonists would choose to migrate to other, healthier colonies. During the second half of the seventeenth century, then, the rhetoric of drunkenness changed. Promoters of English migration to the islands attempted to temper the hot climate in rhetoric by placing the blame for high white mortality on the colonists’ drunkenness. Once a cause of idleness before sugar production, drunkenness
became a scapegoat for the sickness that attended the plantation complex in Barbados and Jamaica.

The first English settlers arrived in Barbados in 1627 and set about planting in its relatively salubrious environment. The English generally considered Barbados a healthy island in its early decades. While its people were victims of a yellow fever epidemic that spread throughout the West Indies in 1647-52, its robust white population growth prior to the epidemic attests to the “general wholesomeness” of the island prior to the adoption of sugar monoculture.\(^\text{72}\)

Among the few extant descriptions of the island prior to the transition to sugar, two linked the climate, labor, and drunkenness. Sir Henry Colt reckoned Barbados to be “temperate enough,” cooled by breezes with “\textit{y\textdegree} sunn only hott.”\(^\text{73}\) Far more dangerous was the tropic of cancer to the north, “\textit{vnder \textit{w\textdegree} you must past for pestilent feauours & Calentures, \textit{w\textdegree} haue killed many in \textit{y\textdegree} hott season of \textit{y\textdegree} yeer.”\(^\text{74}\) Despite its hot climate, then, Colt judged Barbados relatively temperate and healthier in comparison to the area under the tropic itself.

If the climate were temperate, however, the early planters were not. Colt chastised the island’s young landowners for their drunken and disorderly way of life. “You are all younge men, \& of good desert,” he complained, “if you would but bridle \textit{y\textdegree} excesse of drinkinge, together \textit{w\textdegree} \textit{y\textdegree} quarelsome conditions of your fyery spiritts.”\(^\text{75}\) The Barbadians drank heavily, and in company with these “\textit{deuourers vpp of hott waters},” Colt himself had taken to drinking more than usual: “I, in \textit{y\textdegree} Imitation of this bad example of yours, \& for your societye, was brought from . 2 . dramms of hott water a meale, to . 30 . \& in a few dayes if I had continued this acquayntance, I doe beleev I should haue binn brought to \textit{y\textdegree} increase of . 60 .” Colt was ashamed

\(^{74}\) Ibid.
\(^{75}\) Ibid., 65.
of himself for having forgotten so quickly the lessons of temperance learned over a lifetime. “For in a few dayes you corrupted me,” he lamented, “y‘ haue seen moore, & liued many moor yeers to be moor wise & temperate.” 76

The planters fought amongst themselves when drunk. “Your younge & hott bloods,” Colt admonished them, “should not haue oyle added to encrease y‘ flame, but rather cold water to quench it.” 77 Most important for Colt, the drinking and “manifold quarrells” of the young planters distracted them from the work of raising tobacco and cotton. 78 Their desultory attempts at clearing and cultivating the ground failed to meet Colt’s expectations. The planters’ idleness was manifested in the idleness of their servants. “Your seruants also you keep to Idly; they continually pestred our shipp without any occasion or acquaintance, lingering sometimes 24 howres wth us, although noe man spooke to them, to avoyde labour, w‘ I am perswaded few of you looke after.” 79 Colt reported a ten-day stretch in which he saw not a soul at work on the island. 80 Like other Englishmen of his day, he placed great value in closely tended, productive agricultural land. Yet looking on the half-cleared plots of early Barbados, he saw little more than “bushes, & long grasse, all thinges carryinge y‘ face of a desolate & disorderly shew to y‘ beholder.” 81

The planters’ failure to cultivate Barbados was made all the more galling by what observers believed to be the wondrous productivity of the land, itself facilitated by the island’s hot climate. It would be a terrible waste not to take advantage of the possibilities offered by the island’s environment. “Now, doe but consider what you are owners of,” Colt reminded the

76 Ibid., 66.
77 Ibid.
78 Ibid.
79 Ibid.
80 Ibid.
81 Ibid.
planters. “Your ayre & soyle produceth with a maruaylous swiftnesse. Whatt cann eyther ye earth or sea afford ye meanest man of you all might nott haue in aboundance? Add but to it your owne endeauourss”

His message was clear: the planters committed a grave error in failing to exploit the productive potential of the sun-baked Barbadian fields. It must have pained Colt, then, to recognize that the same hot climate that made the island so fertile also made the planters so drunken and shiftless. He admitted as much when he wrote, practically sighing in resignation, “but you are all beholdinge to your climate, moor than to your soyle or Industry."

Likewise Tom Verney, the wayward son of a gentry family in Claydon, Buckinghamshire, considered Barbados “the best and healthfullest in all the westerne islands” in a letter to his father in 1638. Yet Verney described drunkenness as one of “the evills that doth most annoy us.” He believed that “were it not for that great sin, this would be one of the bravest islands that ever I saw or heard of.” He described men so drunk that they did not stir when they were bitten and even devoured by the armies of land crabs that infested the island. While drunkenness threatened the cultivation of the island, however, Tom Verney was not above cashing in on it. Observing how spirits “never lyeth upon merchants hands in this island,” he asked his father to send him fifty cases of spirits to sell in 1640. He assured his father that the liquor would not make him “an ill husband,” but rather he would sell them to his depraved fellow

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82 Ibid., 67.
83 Ibid.
84 “Tom Verney’s Account of Barbadoes. Addressed to His Father, Sir Edmund,” in Letters and Papers of the Verney Family Down to the End of the Year 1639, ed. John Bruce (London: Printed for the Camden Society, John Bowyer Nichols and Sons, 1853), 194. In 1646 James Parker reported the island was in the midst of a drought that he attributed to the immorality of the colonists: “Much drought now oppresseth, and I wonder … at God’s great patience to so profaine a people for swearing and drinking as the vulgar be.” James Parker to John Winthrop, 24 April, 1646, in The Winthrop Papers, vol. 5, 83-84.
85 “Tom Verney’s Account,” 194.
86 Ibid.
planters. “They are generally such great drunkards in this island,” he said, that they chose “to
buy them drink, all though they goe naked themselves.”

The condemnation Colt and Verney leveled at the early planters of Barbados was
inflected with consciousness of social status. The planter’s idleness comprehended their failure
to direct their servants and their own debauchery and infighting; in fact, the planters’ idleness
facilitated that of their servants. At a time in which English landowners justified their social
position in part by their capacity to direct orderly households, the planters’ inattention to duty
was appalling. The consequence was that an island believed to be wondrously fertile, located in a
climate capable of producing valuable crops that could not be cultivated in England, was left
uncultivated and unimproved.

In early Jamaica, officials were also vexed by idleness among their underlings, a laziness
the officials believed was spurred by drink. England seized the island in 1655 as part of the
Western Design, an invasion of Spanish holdings in the Americas undertaken to help legitimate
the Cromwellian regime. Originally directed at Hispaniola, the English botched their attack and
turned instead to the sparsely inhabited island of Jamaica. The invading force consisted of
several thousand English soldiers and sailors plus 3,000–4,000 Barbadian colonists. Both groups
suffered grievous mortality from disease during the invasion and subsequent occupation of the
island, struck down by typhus, dysentery, malnutrition, and probably falciparum malaria. Some
12,000 English ventured to the island between 1655 and 1661; by the latter year some 8,000 had
died there.

89 McNeill, Mosquito Empires, 102-4.
Military officers and others cursed the idleness of the troops for at least ten years after the invasion. The soldiers refused to cultivate food for themselves and chafed at being forced to work on the plantations of their officers. The officers’ complaints reflected not only their frustration at the insubordination of the troops, but, as in Barbados, the potential for a tropical island to go unimproved. The army was chronically short of supply and had no choice but to grow its own crops in Jamaica, especially after supply from England was halted in 1657. Yet many soldiers, exhausted from the campaign, the poor provisions, and tropical disease, refused to plant. Both contemporaries and modern historians agree that the men did seek to avoid such work. Many had no intention of returning to the kind of labor they had endured in Barbados at the hands of their harsh masters.  

Suffering from diseases, beset with rumors that the state would abandon them on the island, and in some cases forced to work on the plantations of their own officers, they lost their will to work and became ever more resistant to authority. They were nothing if not “disinclined” to work for their supper.  

In both Barbados and Jamaica, English authorities transferred their traditional fear of disorder to the West Indies. The fear of social unrest that accompanied population growth and economic change in England during the sixteenth and seventeenth centuries had been one of the benefits touted by promoters of English overseas expansion since the sixteenth century, with colonies cast as a way to best make use of unemployed laborers. As Richard Hakluyt had boasted in *The Discourse of Western Planting* (1584), “this enterprize will be for the manifolde employment of nombers of idle men, and for bredinge of many sufficient, and for utteraunce of the greate quantitie of the commodities of our Realme.” Here the unemployed, many of whom were resistant to work in the first place, would learn “howe to lyve, and how to maynetayne and

91 Ibid., 89-90.
92 Ibid., 111.
feede their wyves and children.” The English had a long tradition of blaming idleness on drink. Beginning in the late sixteenth century and continuing into the Civil War years, Puritan and gentry reformers regulated alehouses and prohibited church ales in an effort to correct the morals of “idlers and vagrants.” In the colonies as at home, authorities often explained disorder as the result of drinking.

Contemporary accounts of the invasion of Jamaica are thus filled with references to the rank-and-file as irredeemable idlers who joined the army precisely to avoid hard work. Major Robert Sedgewick blasted these men as “so lazy and idle, as it cannot enter into the heart of any Englishman, that such blood should run in the veins of any born in England.” In 1657 Colonel Edward Doyley, an officer who would become the first governor of the island, reported that the troops “grumble at working [and] say they are deceived and Spirited.” Three years later, Captain Thomas Lynch advised disbanding the army altogether because the soldiers were not likely to do the work necessary to plant the place. Indeed, Lynch believed they had joined the army precisely to avoid the labor of farming and were “both unwilling and unapt for work.” Their disinclination to labor was compounded by their hatred for Jamaica, “a Country wch (for their suffrings in itt) they genlly abhorre.” Meanwhile a report to the Council of Foreign Plantations opined that the troops were able to feed themselves without working and were pleased to be idlers: “The Soldiers are at Libertie whither they will work or noe. Hunger and

97 “Considerations about the peopling & settling the Island Jamaica,” n.d., LC, Egerton MSS 2395, f.284. This is repeated as “Captain Linches his paper concerning Jamaica,” c. November 1660, LC, CO1/14, no.54.
necessitie only compelling them. Not aboue a sixt or 8th part doe worke, by reason they have ordinarie provisions sufficient.”

Others believed the officers were the problem rather than the rank-and-file. Major Sedgewick and Vice-Admiral Goodson reported that the officers sought to go home to England and had sabotaged the planting in an attempt to convince Cromwell to abandon the island. The soldiers were dejected and sick, it was true, but “to deal plainly … they enjoy health in a reasonable measure, yet they have generally an averseness to this place, which is rather fomented, than endeavoured to be removed, by the officers.” Officers were upset that they had found no treasure in Jamaica and agitated to go home rather than plant. In lieu of transportation home they sought permission to go plundering other Spanish plantations. Colonel Brayne reported the officers discouraged the soldiers from work, and some were prosecuted for it.

For both the officers on the ground and their superiors in London, the soldiers’ refusal to work was worrisome. A population that refused to produce its own food threatened England’s hold on the island. Jamaica needed to be populated so its people could build an economy, attract traders, and defend the island from Spain. The future status of Jamaica was an open question until 1670, when Spain recognized English possession of the island. The colony had only a subsistence economy and was ruled by a military government until 1661. Throughout this period Spain demanded its return and showed no signs of abandoning its claims on the island. Given these conditions contemporaries feared Charles II might simply return Jamaica to Spain. The king and his ministers weighed whether to retain the colony throughout the 1660s. He had

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98 “Whither the English now upon Jamaica may yet probably be understood to be a collonie,” January 10, 1660/1, Eg.2395, f.289.
99 Major Sedgwick, and vice-admiral Goodson, to the protector, March 12, 1655/6, in Thomas Birch, ed., A Collection of the Papers of John Thurloe, Esp; ... Containing Authentic Memorials of the English Affairs from the year 1638 to the Restoration of King Charles II, vol. 4 (London: 1742) [hereafter Thurloe State Papers], 601.
100 Ibid.
101 Ibid., vol. 5, 770; Taylor, Western Design, 90, 120-23.
inherited it from Cromwell and could rightly fear that the troops remaining there were loyal to the Protectorate. Rumors bobbed about the Caribbean that Jamaica would be given away, and they seemed to gain currency when the crown divested itself of holdings in Dunkirk in 1662 and Bombay in 1669. 102 Charles II considered selling St. Christophers to France in 1668. While the king abandoned this idea, “there is no reason so[sic] suppose that other English colonies might not have shared this fate … had they not measured better to the economic and strategic standards of the time.” 103 Others feared Charles would trade Jamaica back to Spain in return for an alliance. According to the historian A. P. Thornton, these rumors were “not entirely far-fetched”; Spain’s ambassador to England complained that two English Ministers of State had solicited bribes from him in exchange for voting to get rid of Jamaica. 104 

Military officers, London merchants, and ordinary colonists’ fears were thus understandable: Jamaica needed to be populated with people who would work. From the beginning of the colony, the fear of dispossession stimulated appeals from the island, London merchants, and officials to send servants to perform the work the soldiers refused to do. First Cromwell in late 1655-1656 and later Charles II in December 1661 issued proclamations encouraging colonists in England and elsewhere in the Atlantic to settle in Jamaica. 105 In spite of their efforts, officials complained about the paucity of settlers into the 1690s. Doyley, Modyford, and Lynch all argued at different times that Jamaica must solve its labor problem with African slaves.

Jamaica’s reputation for unhealthiness made the problem of populating it more difficult. The news of the horrible mortality English troops suffered in the aftermath of the invasion, in

103 Ibid. 
104 Ibid., 75. 
105 “A Proclamation for the encouraging of Planters in His Majesties Island of Jamaica in the West-Indies” 14 December 1661, LC, CO1/15, no.94; Taylor, Western Design, 111-112.
addition to the deaths of hundreds of civilian colonists in subsequent years, created a reputation for Jamaica as a charnel house. Such rumors could be heard in the neighboring West Indian islands and as far away as New England. In 1655-1656 Cromwell sent an envoy, Daniel Gookin, to New England to recruit settlers for Jamaica, but upon hearing of the island’s sickliness, most demurred.106

It is important to note that during the first five years of settlement, contemporaries attributed to alcohol responsibility neither for idleness nor sickness; this was impossible when the island lacked liquor in the first place. In fact, they argued that insufficient supplies of alcohol were responsible for the diseases that struck the troops. As early as 1655 General Robert Venables, who commanded the Western Design in partnership with Admiral William Penn, defended himself from accusations of incompetence during the operation. Venables laid out the full range of causes of death during the fighting at Hispaniola and later at the occupation of Jamaica. He argued that the men died largely because the navy had hoarded provisions. Left to shift for themselves, the soldiers ate whatever fresh foods they could gather, along with whatever poor quality provisions were foisted upon them by the navy. Combined with their labors and exposure to the elements, Venables believed, this diet caused fluxes that killed the soldiers in droves. He accused Penn of hoarding brandy, commenting upon it several times in his relation of the invasion of Hispaniola. Concluding his defense, he reflected on the navy’s failure to deliver “bread and brandy, the chief preservers against fluxes in these parts.”107 The navy even denied brandy to Venables himself when he left the island for England in 1655.108

Edward Doyley also believed the shortage of alcohol contributed to the sickness that beset the island. In March 1656 he reported to Secretary of State John Thurloe that “the Lord

106 Thurloe State Papers vol.4, pp.440, 634-5; Thurloe State Papers vol.5, pp.6-7, 147-8, 509-10.
108 Ibid., 59-60.
hath been graciously pleased to smile on us, and to send healing amongst us. So that at this present, our condition (as to health) is very good, considering where we are, and that our private soldiers drink nothing but water."\(^{109}\) Unable to afford the extortionate prices the navy asked for liquours, the soldiers’ “continual drinking” of the local water had caused “dropsies, and other distempers” among them. Doyley chastised London for failing to send alcohol or the money to buy it: “We are much amazed to see in the last invoicce of stores no manner of liquors for us … and desire humbly, to lay it before his highness, how we shall subsist without that or money.”\(^{110}\)

In addition to preserving their health, some saw in alcohol a solution to the island’s labor problem. One Simon de Casseres visited the island in the fall of 1655 and found the army lacked skilled laborers to construct fortifications. London needed to send masons and bricklayers, he advised. Along with them should be sent “Plenty of brandey wine, with some portion of it to bee allotted to capt. Hewes, as an incouragement to his men in fortification.”\(^{111}\) Likewise an anonymous proposal to the government suggested rewarding an additional ration of brandy to industrious soldiers.\(^{112}\) In 1657 Doyley himself had sought brandy from the state. Busy fighting Spanish guerillas, he wrote asking for supplies, including brandy, “wch answere money in many things.”\(^{113}\) Meanwhile Thomas Povey and other merchants who advised the state and provisioned the military argued that to keep Jamaica it must be resupplied and the soldiers paid. They recommended paying the troops 1/3 in cash, 1/3 in clothing and other supplies, and 1/3 in brandy.\(^{114}\)

\(^{110}\) Ibid., 603.
\(^{111}\) Ibid., 62.
\(^{112}\) “Consideracons for ye more [convenien?] supplying of his Highness affaires in ye West Indias,” n.d., Eg.2395, ff.8-10, pp.96-98.
\(^{113}\) “Lettr upon the death of Coll Brayne,” Eg.2395, f.146. After 2 September, 1657.
\(^{114}\) “To the Right Honbl the Com[m]ittee of the Councill for the Affaires of Jamaica,” 17 October 1658, Eg.2395, f.159.
By the early 1660s, however, alcohol was plentiful in Jamaica, and observers argued it contributed to the island’s slow development. Doyley returned to England in 1663 and presented his prescriptions for further developing Jamaica to the Lord Chancellor. Now a planter himself, Doyley expressed guarded optimism at the possibility of cultivating sugar, indigo, and tobacco - if the moral conditions were right. He attributed the colony’s lack of development to several factors, but “the cheife occasion of the povertie of that Island” was alcohol. Doyley complained that unscrupulous merchants flooded Jamaica with liquor. This wave of spirits “deboists and impoverishes the people” and “causes frequent Mutinies & disorders.”

Indebted to the merchants, Jamaican planters paid their debts with poor quality tobacco, which contributed to the poor reputation of Jamaican leaf.

Doyley’s solution was to favor planters over merchants. He asked the king to forbid the importation of brandy to the island because it “impoverishes the People and hinders the Sale of Rume and drinke of that Nature made by ye sugar Planters” like himself. While Jamaicans were apparently satisfied to spend their money on the more expensive brandy, Doyley hoped to force them to buy rum instead. Indeed, he was not concerned with drunkenness and ill health as much as he was with propping up English sugar planters. Under this plan “the Sale of the Rume would something recompense the low Price of their Sugar” and “would encourage others to Plant Sugar Canes.”

In his capacity as official he had sought to limit the importation of alcohol to maintain labor productivity and had been overruled by the merchants. But Doyley had little problem with alcohol if it were produced by planters like himself; in his estimation it was only the stuff brought in by the merchants that caused trouble.

115 Doyley to Lord Chancellor, n.d. (c.1663), BL, Additional MSS 11410, f.13.
116 Ibid., f.13v.
117 Ibid., ff.14v-15.
Doyley’s self-serving explanation of idleness in the island was echoed in a plan to import cattle to the island. In 1665 Sir Thomas Modyford, the newly-installed governor of Jamaica, hatched a plan with planters Thomas Lynch and Charles Littleton to purchase cattle from the Spanish at Hispaniola for sale to the English in Jamaica. Modyford wrote to Henry Bennet, Secretary of State, to gain support for the plan. Jamaica had teemed with cattle at the time of the conquest from Spain, but since then their numbers had been reduced to two thousand by English troops seeking money for alcohol. Modyford reported, “the ill governed Souldiers have made such an havocke that they killed them [the cattle] for their hides which they sould for a bottle of Brandee apeece leaveing their bodyes to rott in ye fold.” Modyford got at two kinds of immorality here. On one hand he deplored the soldiers’ wastefulness, destroying valuable cattle for mere alcohol. On the other he lamented how this wasted valuable pasture land. Here he keyed into the imperative to improve lands: “here are most excellent Pastures,” now laying waste, “readie Prepared to feede a Millio[n]” cattle if they could be obtained. Modyford claimed to be pained by the sight, “it Greiveing my heart to see somuch brave Grasse to turne to no Accompt.”\(^{118}\) Both Doyley and Modyford martialed the common-place of drunken and idle soldiers to advance schemes that would benefit them financially and must be taken with a grain of salt. But as the English on Barbados and Jamaica began to produce sugar on slave worked plantations, they would see in alcohol a source not of idleness, but of disease.

\textit{Drunkenness and Disease in Barbados and Jamaica}

In the years prior to the transition to sugar production and the concomitant environmental transformation of the West Indies, contemporaries saw drunkenness as undermining the

\(^{118}\) Modyford to Henry Bennet, 25 April 1665, LC, CO1/19, no.27, f.39. See also Lynch to Bennet, 12 February 1664/65?, LC, CO1/19, no.23.
improvement of the colonies contributing to the idleness of Barbadian planters and the English soldiers on Jamaica. In the years after the transition to sugar, observers argued that alcohol undermined improvement by causing not idleness, but disease. At the same time these writers began to emphasize the heat of the climate, even when they referred to it as “temperate.” In the context of the transformation of the islands’ economies and disease environments, I argue writers performed a rhetorical maneuver designed to distract attention from criticism of the island environment and direct it to the behavior of the sick individuals themselves.

By the middle of the seventeenth century, depictions of the Barbadian environment began to change. In 1650-51 the anonymous author of “A Briefe Discription of the Ilande of Barbados” hinted at such a change in his description of the island. At a time in which Barbadian planters were busily turning their energies and the landscape to sugar production, and importing African slaves to do the work, the anonymous writer believed the Barbadians made themselves sick with drink. He referred to the average planter as “a German for his drinking, and a Welshman for his welcome ... hee takes it ill, if you pass by his door, and not tast of Liquor”119 One planter was so insulted when a rider refused his offer of a drink that he ordered the man off of his property straightaway, caring little when the horse crushed his newly sprouting crops. Such drinking, the writer believed, would lead to sickness. Despite its many advantages, the place was unhealthy because of the behavior of the colonists: “if the debaucht lives of the people did not prevent nature,” the he opined, “it would be as temperate, and wholsome as it is a fertil, and plentifull Country.”120

The transition to sugar and slavery altered the island’s ecology, creating a disease environment deadly to Europeans. The continual influx of African slaves and the comings and

120 Ibid., 43.
goings of European mariners brought large numbers of people who carried the plasmodia that cause malaria and yellow fever to the islands. The burgeoning sugar plantations, where disturbed ground and broken pottery containers for sugar collected standing water, provided ideal breeding sites for the mosquito vectors of both diseases. Because demographic data for Barbados prior to the 1660s is virtually nonexistent, historians’ population estimates for the early period of settlement vary widely. John J. McCusker and Russell R. Menard estimate an English population of 30,000 and an enslaved African population of 12,800 in 1650, about a year after Richard Ligon left the island and two years after the end of the 1647-8 yellow fever outbreak.\textsuperscript{121} Despite their disagreement on absolute numbers, there is a consensus among historians that the decade of the 1650s witnessed the slave population surpassing that of the English population. This would indicate a worsening disease environment for whites (and blacks) in the coming years.\textsuperscript{122}

Richard Ligon’s \textit{A True & Exact History of the Island of Barbados} (1657) is an important transitional work in the rhetorical warming of the West Indies, recording both a changing disease environment and the moral critique that it inspired in an English observer.\textsuperscript{123} By the time Ligon visited Barbados in 1647-50, the transition to sugar production was well underway, and conditions were favorable for malaria and yellow fever. He arrived during the first recorded yellow fever outbreak in the Americas in 1647-9. Ligon attributed the cumulative effects of the conjunction of sugar production, slave imports, and the disease outbreak to immoderate alcohol consumption in the hot climate.


\textsuperscript{122} In terms of disease endemicity, a population made up of 60% immune people (African slaves who survived yellow fever infection during childhood and thereby gained permanent immunity to further outbreaks) can still host an epidemic of yellow fever. A population of 80% immunes will not host an epidemic, thus shielding the 20% of the population who are not immune with “herd immunity.” In the case of Barbados in the 1640s and 1650s, the slave population was less than one third of the total population. Yellow fever could certainly be present and there were more than enough nonimmunes to fuel an epidemic. McNeill, \textit{Mosquito Empires}, 44.

Ligon witnessed plantation life up close, working as a plantation manager or overseer. He enjoyed the company of elite planters such as Sir Thomas Modyford and Thomas Walrond.\textsuperscript{124} Appearing in 1657 and again in 1673, Ligon’s narrative was the only travel account dealing with Barbados to be published in the seventeenth century.\textsuperscript{125} The book undoubtedly informed English attitudes toward the West Indies and hot climates. For example, in the early 1670s the Royal Society drew up a list of questions about the West Indies stimulated by reading travel writings such as Ligon’s. Because the palm-royal tree was “said by Ligon” to be capable of “speciall uses,” the Society asked travelers to the West Indies to send a sample of its wood back to London for examination.\textsuperscript{126} Several members of the Hartlib Circle, the network of intellectuals who corresponded with Samuel Hartlib in the middle of the seventeenth century, wrote to their fellows of Ligon’s book.\textsuperscript{127}

Ligon treated the climate of Barbados as hot but temperate, with four month of weather like that of England and eight months of distinctly hot temperatures. He described a “hot Countrey” in which the great heat affected all facets of island life.\textsuperscript{128} For example, planters penned their livestock with living hedges rather than traditional wooden fences because the


\textsuperscript{125} Gragg, *Englishmen Transplanted*, 13. Karen Ordahl Kupperman writes that the book combined travel literature with prescriptive information on how to settle the Caribbean. A “major goal” of Ligon’s writing was to create “a masterpiece of travel literature.” Another goal was to describe the process of sugar production and to promote investment and settlement in the Caribbean by providing “detailed instructions for people in England who might be considering investment in Barbados or the newly acquired Jamaica, or even emigration.” Karen Ordahl Kupperman, introduction to *A True and Exact History of the Island of Barbados*, by Richard Ligon (Indianapolis: Hackett Publishing, Inc., 2011), 7.


\textsuperscript{128} Ligon, *True & Exact History*, 67.
moisture and “violent heat” of the climate quickly rotted fence boards.\textsuperscript{129} The pigs enclosed by the hedges could be smelled a mile away; their stench was “sure the most noysome of any other beast, and by reason of the Suns heat much worse” in Barbados than it might be in cooler climates.\textsuperscript{130} Imported perishables like olives, olive oil, and wine were unloaded from merchant ships at night lest the heat of the day ruin them.\textsuperscript{131} Likewise the heat inhibited all variety of recreations. Ligon advised the prospective immigrant to have a “willingness to change the pleasures which he enjoyed in a Temperate, for such as he shall find in a Torrid Zone.”\textsuperscript{132} He warned potential colonists against pursuing many of their customary diversions in such a hot climate. He frowned on both horse racing and vigorous dances as “too violent for hot Countries.”\textsuperscript{133} The great heat prohibited the growth of aromatic English flowers, and the humidity diminished the intensity of perfumes.\textsuperscript{134} Even sex was affected, as partners’ bodies were made “so sweaty and clammy, and the hand cannot pass over, without being glued and cemented in the passage or motion; and by that means, little pleasure is given to, or received by the agent or the patient.”\textsuperscript{135} Rather one should be prepared to satisfy himself with shooting, bowling, cards, and dice.

Ligon believed the heat of the climate was the root cause of disease among the inhabitants. Between September and April the island weather was both hot and moist, and “with this great heat, there is such a moisture, as must of necessity cause the air to be very unwholsome.”\textsuperscript{136} Servants and slaves who worked in the hot sun and muggy air returned to their quarters drenched in sweat. Those without a change of clothes quickly became ill in the diurnal

\textsuperscript{129} Ibid. \\
\textsuperscript{130} Ibid., 33. \\
\textsuperscript{131} Ibid., 39. \\
\textsuperscript{132} Ibid., 104. \\
\textsuperscript{133} Ibid., 105-7. \\
\textsuperscript{134} Ibid., 107. \\
\textsuperscript{135} Ibid. \\
\textsuperscript{136} Ibid., 27.
revolution from hot to cold as the heat of day gave way to the chill of night. Of course rum could be used to prevent or treat such illnesses, warming bodies that had become too cool through overwork. Plantation doctors administered it to servants and slaves after a day’s work, “for when their spirits are exhausted, by their hard labour, and sweating in the Sun, ten hours every day, they find their stomachs debilitated, and much weakned in their vigour every way, a dram or two of this Spirit, is a great comfort and refreshing to them.”

Ligon approved of a judicious drink in preventing disease, but he cautioned that drinking too much in such a hot climate would exacerbate the effects of the heat and cause illness. While “certainly strong drinks are very requisite, where so much heat is,” one must be moderate in taking them: “And though some of these be needful if they be used with temper; yet the immoderate use of them, over-heats the body, which causes Costiveness, and Tortions in the bowels; which is a disease very frequent there; and hardly cur’d, and of which many have dyed.”

Other times Ligon did not explicitly link disease to drinking in the hot climate, but the force of his denunciations of intemperance in drink suggests that a contemporary reader versed in Hippocratic medicine would make that connection. He noted that the diseases of Barbados were “more grievous, and mortality greater by far than in England, and these diseases [of Barbados were] many times contagious.” They were often caused by intemperance, striking a man “either by his own ill dyet or distemper.” Ligon arrived in Barbados in early September 1647, at the beginning of a yellow fever epidemic that raged for two years. He thought it was a form of plague, “or as killing a disease.” Reflecting on the possible origins of

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137 Ibid., 93.
138 Ibid., 27.
139 Ibid., 117.
140 Ibid.
the disease, he conceived it could have been brought to the island from abroad. Otherwise it must have arisen from “the distempers of the people of the Iland: who by the ill dyet they keep, and drinking strong waters, bring diseases upon themselves … But I have this reason to believe the latter: because for one woman that dyed, there were ten men; and the men were the greater deboystes.”

In Ligon’s hands, then, the climate of Barbados became hotter rhetorically. It was true that strong liquors were needed to maintain digestion here, but overindulgence in them in this climate caused illness.

The transition from criticizing drunkenness as the cause of idleness to criticizing it as the cause of sickness and death took place more quickly in Jamaica. By the mid-1660s writers on Jamaica placed the blame for sickness almost entirely on drunkenness. By the time England seized Jamaica from Spain and commenced settlement in 1655, Barbados was midway through the transition to widespread sugar production. Jamaica would tread the same path, as English army officers and then settlers took up sugar planting in the aftermath of the conquest. It is difficult to know for sure when the ecological transformation of the islands had progressed enough to account for the lion’s share of deaths in Jamaica. Participants in the Western Design and Jamaican officials into the 1660s attributed deaths of soldiers and settlers to dysentery and other diseases caused by insufficient or poor quality provisions. The historian J.R. McNeill suggests Jamaica was home to falciparum malaria at the time of the conquest. Certainly by 1673, when the island was host to 7,768 whites and 9,504 blacks, the demographic, economic, and ecological conditions would have been ripe to support endemic malaria, at least in the parishes surrounding Kingston/Port Royal/Spanish Town on the southern coast of the island.

141 Ibid., 21.
142 McNeill, Mosquito Empires, 102-04.
where much of the enslaved population was concentrated.\textsuperscript{143} When contemporaries noted the agues and fevers that attacked the islanders, they were likely talking about malaria.

As the Anglo-Jamaicans imported more and more slaves to produce sugar, their rationale for attracting white immigrants changed. Although still in its “infancy,” Jamaican sugar production had gained a secure foothold by the 1680s and was the island’s largest export crop in 1680.\textsuperscript{144} In 1689 Jamaican sugar output rivaled that of Barbados, with Jamaica producing 12,000 hogsheads and Barbados 15,000-20,000.\textsuperscript{145} At this time it hosted 10,000 English residents and 30,000 African slaves.\textsuperscript{146} Because the laboring population was overwhelmingly enslaved and provisioned by its owners and slave-tended food plots, it consequently had little access to liquor. An idle slave was probably not idle because he was drunk. Drunkenness thus no longer constituted as great a threat to Jamaica’s development as a plantation economy and therefore its use in rhetoric changed.

While they continued to seek white settlers into the late eighteenth century, by the 1680s Jamaicans did so not because they needed additional laborers but because they needed militiamen to help police the island’s black majority. As the black population grew, the need for white settlers to defend against a slave rebellion increased. In the second half of the seventeenth century, the several English West Indian colonies altered the terms of service for indentured servants, transforming them at the stroke of a pen to freemen. In 1652 Barbados offered to halve a servant’s term of service and to reimburse his master if the servant agreed to serve in the

\textsuperscript{143} Dunn, \textit{Sugar and Slaves}, 155. A map depicting Jamaica in 1670 in Watts, \textit{The West Indies} shows plantations all around the Jamaican coastline, but especially concentrated in the southern parishes of Clarendon, St. John, St. Catherine, and St. Andrew. Most of them are located along rivers. Ibid., Fig. 7.2 “‘Plantations’ present in Jamaica in 1670 (after Long 1774),” 293. I have consulted Edward Long’s 1774 \textit{The History of Jamaica} and can find no maps similar to the one published by Watts.


\textsuperscript{146} Dunn, \textit{Sugar and Slaves}, 312.
militia. In 1673 Jamaica went a step further by freeing willing servants outright; Barbados followed in 1685, offering even more liberal terms.\footnote{Abbott Emerson Smith, \textit{Colonists in Bondage: White Servitude and Convict Labor in America, 1607-1776} (New York: W. W. Norton & Company, 1971), 236.} Indeed, West Indian assemblies legislated the amounts of food and clothing that masters must provide to indentured servants not merely to ensure their proper treatment, but “because of their extreme anxiety to attract immigrants” in the face of ballooning slave populations.\footnote{Ibid., 237.}

The introduction of slave-worked sugar plantations to Jamaica transformed the island’s ecology and disease environment, giving rise to malaria and yellow fever that contemporaries attributed to alcohol consumption. The shocking white mortality of the conquest and early years of settlement understandably saddled Jamaica with a reputation as a sickly place.\footnote{For Jamaica’s poor reputation as a sickly place in the seventeenth century, see Amussen, \textit{Caribbean Exchanges}, ch.2; Carl Bridenbaugh and Roberta Bridenbaugh, \textit{No Peace Beyond the Line: The English in the Caribbean, 1624-1690} (New York: Oxford University Press, 1972), 207, 217; Cyril Hamshere, \textit{The British in the Caribbean} (Cambridge: Harvard University Press, 1972), 71.} It made perfect sense for people contemplating migrating to one of England’s overseas possessions to be leery of a sickly island in the torrid zone. Jamaican planters and their allies, intent upon securing themselves against the slave majority, quickly came to the defense of the island, pushing back against the notion that the hot climate was to blame for so many deaths. To criticize the climate was to call into question the viability of Jamaican settlement at a time when the island’s tenure as an English possession was in doubt. Supporters of Jamaica responded by blaming alcohol for sickness rather than the climate. In doing so they turned to notions of bodily temperance.

In 1661 Edmund Hickeringill defended the climate in his aptly entitled, \textit{Jamaica Viewed ... Together, with the nature of it's Climate, fruitfulnesse of the Soile, and it's suitablenesse to English Complexions}. Hickeringill wrote to counter the “Partiall Censures & nick-names which prejudice and interest have injurious impos'd upon the Island of Jamaica.” He averred that
Jamaica was “rather the Grave then Granary” of English settlers, “but that such a Mortallity should proceed, either from the Clime, being scituate in the Torrid Zone … or from any accidental Malignitie in any of the Elements, peculiarly entail’d upon it, whereby it should be lesse habitable then any other most auspicious settlement remains here to be controverted [my emphasis]” The place was temperate and troubled with no endemic diseases, he argued, “so that a wise man needs no other Physick there but his Temperance.”

Likewise John Style defended the climate during his 1665 visit to the island. Hoping to establish his sons as planters, Style traveled to Jamaica to view the island’s prospects for himself. “I conceive the clymat most healthy … soe yt it is not the country but the deboysteness and intemperance of the people in the country that brings the evill reporte uppon it.” The temperate Style was himself living proof of this, “for my part I never had my health better then since I came heather noe doe I finde it fare worse with others that keepe themselves temperat. (which few doe[:]) drinke and woemen not the clymate breedes people distructione.”

Jamaican governor Thomas Modyford found it necessary to defend the climate as well. In November 1665 he penned a report on recent events in the region that demonstrates his understanding of the relationship between climate, alcohol, and sickness. He first set about explaining recent setbacks in the second Anglo-Dutch War of 1665-67. That April an expedition against the Dutch islands of Saba, Statia, and Curaçao had failed after the soldiers had sickened themselves with drink. The English succeeded in capturing Statia and planned to advance upon Curaçao when their momentum was interrupted. In Modyford’s judgment, the expedition’s commander, Colonel Theodore Cary, “permitted their stay to[sic] long” on the island before beginning the next stage of the attack. This gave time for merchants to ship wine and brandy to

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151 John Style to “Rt. Hon.,” 24 July 1665, LC, CO1/19, no.81, f.187.
the troops via St. Christophers. While the officers squabbled over captured plantations on Statia, the alcohol worked its effect on the men. It “so corrupted their braines, lessened their number, & destroyed their provisions” that the entire operation collapsed and returned to Jamaica. Declaring himself “much frustrated” by this turn of affairs, Modyford contemplated outfitting privateers for the planned attack on Curaçao.  

While Modyford did not explicitly relate the sicknesses of the soldiers on Statia to the combination of alcohol and the hot climate, his discussion of Jamaican troops in a subsequent paragraph makes this clear:

I must confesse yᵉ place is very subiect [to] turne all distempers into Agues and feavers wᶜ'h since my com~ing has apeared most on yᵉ old army officers, who from strict saints are turned the most debosht devills. And realy (my lord) no man hath died h[ere], but … yᵃ he gott his desease either by surffetts or travelling att high noone in an hott day, or being wett with raine & not changing in season; The Spaniards at their first com~ing (I meane those yᵗ trade with yᵉ Royall Comps:) wondred much at the sicknesse of some of our people, but when they understood of yᵗ strength of their drinkes, & yᵉ great quantity they charged them selves with, & yᵗ litle observations of times & seasons, they told me they wondred more they were not all dead. Their health in all places [emphasis added] depending upon their temperance.  

Modyford argued that the real source of illness here was personal intemperance. Those who failed to look after themselves had only themselves to blame for their sicknesses. By exposing themselves to the elements – including the heat of the midday sun – some men brought sickness on themselves. Most importantly they foolishly courted danger with their outsized drinking. Modyford marshaled the opinions of the Spanish to bolster his claim that the fevers and agues so characteristic of hot climates mainly struck men who were great drinkers. Such behavior would sicken people anywhere, not just here.

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152 Thomas Modyford to ?, 16 November 1665, LC, CO1/19, no.127, f.274.  
153 Ibid., ff.274-5.
Likewise, the prominent Jamaican physician, Thomas Trapham, emphasized the crucial importance of temperance for maintaining health in Jamaica. For Trapham, Jamaica was both a “hot Country” and a pleasurable “summer country.” The heat had two very important consequences for potential migrants. First, Trapham believed that the very nature of the hot climate tempted people to dangerous overindulgence. Here, he said, “appetite is apt to over-rule our reasons, and the desire of good [pleasure] tempts to the nearest confines of evil, by how much more desirable the place and clime is, by so much the more need of circumspection.” 154 The hot climate’s effect of magnifying bodily urges made personal temperance much more important than elsewhere. Secondly, bodily processes operated more quickly in hot Jamaica than in cooler climates, “for Nature is not so yare [active or brisk] with her delinquents in the cold northern Tracts as between the Tropicks, where all motions being necessarily more quick, the punishment of all Intemperances afford less time for Repentance.” 155 Together these ideas set a high bar for temperance in the Jamaican heat: one must be aware of the need to be temperate, and one could not deny it without significant risk to himself. The implication in Trapham’s writing was that when a person became ill in Jamaica, it was his own fault.

The colonist who sought to preserve his health in the torrid zone must become what Trapham called a “regular living Jamaica man.” 156 The regulated Jamaica man was also a “careful Jamaica drinker.” 157 Trapham advised drinking water, to which “the long living Jamaica man must necessarily addict himself for his most usual drink.” 158 When he did drink alcohol, the careful Jamaica drinker should consume Madera, ideally mixing it with water, while avoiding

154 Thomas Trapham, A Discourse of the State of Health in the Island of Jamaica. With a provision therefore Calculated from the Air, the Place, and the Water: The Customs and Manners of Living, &c. (London: 1679), 3-4.
155 Ibid., 51.
156 Ibid., 58. The “regular living” or “regulated” Jamaican was moderate in all the nonnaturals.
157 Ibid., 53.
158 Ibid., 49.
brandy, clarets, sacks, and Canary wines. He must drink his wine only “to a natural warmth, not an inebriating Fire.” In so arguing Trapham placed responsibility for an individual’s health on the individual himself, in a way that English readers would understand whatever the climate.

In 1683 F. Hanson published a collection of *The Laws of Jamaica* in London. Ostensibly merely a collection of laws, Hanson betrayed the book’s promotional nature when he wrote these were not the only laws in effect in Jamaica, “lest strangers to Jamaica, might think these few Acts were all the Laws and Privileges of that Island, which might lessen it in their esteem, and discourage some from adventuring themselves or their fortunes thither.” Yet much of the front matter of the book concerned not the law but rather the climate. That Hanson felt it necessary to preface a legal text with discussion of the climate clearly reflected Jamaica’s reputation as a place both hot and sickly, where the heat of the climate caused the illnesses for which it was infamous. Hanson got straight to the point: while “some are apt to object the hazard of the Voyage, and … the unhealthiness of the Climate,” he informed them that the air was “always serene and weather constantly temperate.” “Though usually reputed very hot,” he argued, “yet it’s only so comparatively in respect of these Northern Climates, being with us [in Jamaica] always summer as if every Month were June.” Hanson drew on his own long years in the island to argue for its temperateness. “I have observed and can experimentally affirm for Twelve Years last past Jamaica to be as healthful a place as any part of England, for sober temperate persons, who have command of themselves, especially at first arrival, and can moderately drink one third Wine with two thirds Water, but on the other side I think it as pernicious a place to debauch in, as any in the World.”

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159 Ibid., 52.
161 Ibid., d2-d3. Underlining is Hanson’s.
Thomas Tryon, a London merchant who had spent five years in Barbados in the 1660s, explicitly linked ill health in the West Indies to the practice of drinking in its hot climate. While he argued that various factors tempered the West Indian climate, Tryon referred to it as a “hot climate” throughout his *Friendly Advicie*[sic] to the gentelmen-planeters of the East and West Indies* (1684). The work included a section on “Directions for the Preservation of Health, and Life in hot Climates.” Tryon opposed a common belief among Europeans who ventured to the islands that the climate made dwellers of the region have shorter lives than those who remained in Europe: “they blame the Climate, when themselves are only to blame: ‘Tis their own Intemperance, not that of the Heavens, which shortens their days.” The English in hot climates ruined their own constitutions by maintaining their customs of heavy eating and drinking, especially of “the strongest Liquors, as Madera Wines, Brandy and Punch.” This was particularly dangerous in hot climates. He considered “Great Drinking, especially of strong exhilarating Liquors” such as wine, brandy, and distilled spirits “very pernicious”:

> for all such Drinks, if not cautiously used … proves of fatal consequence; and wounds Nature to the very heart, as daily Experience does testifie, and doth sooner destroy Health [in hot climates] than in cold Countries … I know this is contrary to the Vulgar Notions, but it is agreeable to Truth, Experience and Reason; only People by a vitius Inclination, had a mind to debauch themselves with strong Liquors, and the Devil, to humor them, suggested that such Liquors (forsooth!) were necessary, and most to be used in hot Countries; and so they got a colour for their Excess, and continue the Maxime and now plead, They must be Drunk if they mean to be Healthy, &c.

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164 Ibid., 48.
165 Ibid., 48-49.
166 Ibid., 50.
Here Tryon suggested that some people used their very presence in the hot climate of the West Indies to justify their drinking.

In keeping with contemporary medical theory, Tryon reasoned that the hot climate sapped the body of internal heat and impeded the process of digestion. Like Richard Jobson in the Gambia, he argued that in such circumstances Europeans came to crave alcohol, but they did so at great risk:

in hot Climates, the natural or central [57]Heat being not so strong, by reason of the forcible Influences of the Sun … the Stomach and Digestive Faculty thereby become weak, and the inclination to drinking is encreased; for which reason many desire hot spiritous Drinks, finding a present Refreshment … but afterwards they find themselves heavy, dull and indisposed, their Stomach more feeble, cold and raw than before, which inclines them to take t’other Dram; and still, the more the worse, till Nature be debilitated to the utmost Extremity … therefore in all hot Climates [58]there ought to be double the care and temperance, as in cold, both in Meats, Drinks and Exercises.\(^{167}\)

By the 1680s, then, a pattern of discourse regarding drunkenness had been firmly established for the West Indies. English colonists and visitors to the region faced a climate that challenged them in both physical and moral terms. In the context of medical reasoning that attributed illness to personal intemperance, observers such as Thomas Trapham and Thomas Tryon warned that the hot climate of the West Indies tempted them to potentially deadly overindulgence in alcohol.

Conclusion

Alcohol facilitated English colonial expansion in the seventeenth-century West Indies. The English relied upon alcohol to help them adjust to life in the tropics in both material and cultural terms. At the material level, alcohol fueled the early colonies as a foodstuff and medicine. In cultural terms, alcohol helped contemporaries to understand the hot “new world” they now inhabited in the tropical Atlantic. Originally considered wonderfully temperate and

\(^{167}\) Ibid., 56-58.
fertile, the islands promised early settlers a quick return for little effort at farming. When they failed to yield such returns, the English made sense of their frustratingly slow progress by recourse to a discourse of drunkenness that blamed drunken colonists for the failure to properly exploit the islands. As the transition to sugar monoculture progressed from the mid-1640s, however, observers began to identify drunkenness as a source of disease rather than idleness. At the same time they began to emphasize the heat of the climate, rhetorically transforming once temperate islands into hot places. This shift in language coincided with the introduction of African slaves and diseases to the islands and can be seen in both Barbados and Jamaica. In the face of unsettling white mortality, the English scrambled to understand the island environments. Because they were conditioned to understand health in terms of the environment and personal behavior, it was natural that they would turn to both sets of ideas. Visitors and writers now attributed high mortality to excessive drinking in the hot climate. By the 1680s this critique was common and would influence characterizations of the West Indies for at least a century afterward. The changing depictions of drunkenness thus constitute a kind of cultural echo of the ecological change that resulted from the transition to sugar production, registering in the realm of culture the drastic change taking place in the physical environment.
CHAPTER 4
Varieties of Idleness in Temperate Virginia, 1607-1652

In this chapter I examine the moral significance of temperateness for English colonization of Virginia during the first half of the seventeenth century. Because it was situated within the temperate zone, the English considered Virginia’s climate to be habitable by definition. They described it in terms of the same seasonal phenomena by which they understood the climates of the West Indies and West Africa, regions located in the torrid zone, to be temperate and habitable. But if Virginia was temperate, its southerly latitude made it hotter than England, and in fact, the Virginia Company worked actively to distinguish temperate Virginia from the tropical West Indies in order to blunt criticism of what contemporaries considered the sickly climate of the Virginia colony. Virginia’s southerly latitude also affected its economy. To contemporaries steeped in latitudinal reasoning, Virginia’s hotter climate brought forth “natural productions” – precious metals, minerals, flora, and fauna – that differed from those engendered in the cooler climate of England. According to contemporary ideologies of mercantilism and agricultural improvement, Virginia’s natural productions had the potential to complement those of England and provide the mother country economic self-sufficiency. In this context, the English in Virginia were in fact obligated to exploit Virginia for those goods that Virginia produced that the mother country could not produce. The sericulture manuals of the 1620s and 1650s thus demonstrate how contemporaries relied upon their conceptions of the environment to encourage certain behaviors at the expense of others. In Virginia, the hot but temperate climate obligated planters to produce silk instead of tobacco; in effect the environment dictated what was moral and what was immoral economic behavior.
Because it was located in the temperate zone, the English understood Virginia’s climate to be habitable. First explorers and promoters, and then colonists themselves, pointed to its latitude and seasonal phenomena to confirm the temperate climate in the manner of Oviedo, Best, and other sixteenth-century travel writers. While situated within the temperate zone, however, Virginia suffered heavy losses from disease throughout the seventeenth century.

During the first two decades of the colony’s existence, metropolitan Englishmen and disgruntled colonists attributed its disease mortality not only to the poor management of the Virginia Company, but also to the colony’s climate. Fearful of losing the confidence of investors and potential colonists, the Virginia Company insisted that Virginia’s climate was healthy. They signified its qualities by referring to its latitude, seasons, and other factors in the precise manner set out by earlier travel writers. Virginia’s sickliness was caused not by its temperate climate, they argued, but rather by other factors such as the poor situation of Jamestown, the importation of diseases from abroad, and the idleness of the colonists themselves.

The extent to which the Virginia Company relied upon the colony’s location within the temperate zone to defend it against accusations of sickliness was exemplified by its response to the catastrophic events of 1609-1610. In 1609 Sir Thomas Gates, the newly appointed lieutenant governor of Virginia, led a fleet of nine vessels to resupply the colony with provisions and settlers. The fleet followed a common route to the Chesapeake, sailing south and then west through the Caribbean before turning northward up the North American coast to Jamestown. On July 14,1609, the ships were caught in a hurricane. Gates’s flagship was blown to Bermuda, where its passengers survived for ten months while building a new ship to continue on to Virginia. The remainder of the fleet straggled into Jamestown. Having lost thirty two passengers to disease on the voyage, the unlucky survivors arrived in time to suffer Virginia’s “starving
winter” of 1609-1610 in which a population of some five hundred was reduced to only sixty in a few months. Once it learned of these ordeals, the Virginia Company rushed out a pamphlet and then a sermon that scapegoated Gates for the colony’s recent calamities. According to the company it was the poor leadership of Gates, evinced by his decision to travel to Virginia via a route through the tropics rather than the temperate zone, that doomed the fleet and deprived the Jamestown colonists of leadership and supplies during the cruel winter of 1609-10.

For the survivors and later colonists in Virginia, the hot climate dictated specific economic activities. At the same time that the colonists began to devote themselves to tobacco cultivation, the Virginia Company sought to steer them toward a diversified agricultural economy focusing on the natural productions brought forth by Virginia’s climate. Company leaders and investors envisioned Virginia as an economic complement to England. In its southerly latitude, they anticipated the colony producing crops such as silk, wine, and flax that England currently imported from the Mediterranean and Asia. But the colonists’ attachment to tobacco after almost a decade of fruitless searching for precious metals, strengthened by the high price of the leaf in the European market, threatened the Virginia Company’s plans for diversified agriculture. The company took steps to encourage the settlers to produce other crops, in particular silk. In 1620 and 1622 the company produced sericulture manuals designed to encourage and instruct the colonists in the production of silk.¹ Central to the company’s arguments was a providential theory of nature that held Virginia’s situation within the southerly latitudes of the temperate zone obligated them to put the land to use by producing the crops for which the climate was best suited. They characterized the planters’ failure to take advantage of

¹ John Bonoeil, Observations to be Followed, for the making of fit rooms, to keepe Silk-wormes in: As also, for the Best Manner of planting of Mulberry Trees, to feed them (London: 1620); idem, A Treatise of the Art of Making Silke, or, Directions for Making Lodgings, and the Breeding, and Ordering of Silkworms, for the Planting of Mulberry Trees, and All Others Things Belonging to the Silke Art ... Set forth for the benefit of the two renowned and most hopefull Sisters, Virginia and the Summer-Ilands (London, 1622).
the latitude in this fashion as immoral behavior, a display of idleness among landowners who should know better. A second clutch of sericulture manuals appeared in the 1650s. By emphasizing the warmth and temperateness of Virginia, the company underscored the obligation to exploit it properly and demonstrated the importance of climate to debates on the morality of colonization.

A Temperate and Healthy Colony

The earliest English observers of the region stretching from Cape Hatteras to the Chesapeake Bay plainly judged it to be temperate and blessed by a warm climate that would facilitate the cultivation of valuable commodities the English purchased from more southerly lands. In August 1585, several weeks after arriving in “Virginia” as governor of the English privateering base at Roanoke, Ralph Lane wrote to Sir Francis Walsingham in a mood of great optimism. Already the English had discovered many commodities of great commercial potential on the mainland. Even the poorest places “doo neuerthelesse, euery where yealde sumwhat yt ether for knowen Vertue ys of pryce in Chrystendom, or sumwhat at leeste to ye smell plesinge.”

Not only was the land filled with commodities, but it was healthy and warm. “The clymate ys soo whoollesom, yeate somewhat tendying to heate, As yt wee haue not had one sycke synce wee enterdde into ye country,” Lane reported happily, “but sundry yt came sycke, are recouerd of longe dyseases especially of Reumes.”

Lane’s description of the climate as “whoollesom, yet somewhat tendying to heate,” signified two essential qualities of the Virginian environment. On one hand, it was healthy; Lane conflated healthiness with temperateness in a

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3 Ibid., 202.
manner natural to his contemporaries. On the other hand, the warmth of the climate signified the potential to produce commodities that could not be grown in England.

As befitting a temperate climate, Lane anticipated the change of seasons in Virginia. In September he announced his hope to spend “summe parte of ye wynter” with a group of Indians on the mainland. Indeed, previous experience in Virginia had provided the English with knowledge of its climate and seasons. When Philip Amadas and Arthur Barlowe reconnoitered the region for Sir Walter Ralegh in the summer of 1584, they found local Indians passing the seasons in plenty and ease. “The people onely care howe to defend themselves from the cold in their short winter,” they reported, “and to feed themselves with such meat as the soile affordeth.” Because Amadas and Barlowe were only in Virginia between July 13 and mid-August 1584, they would not have experienced the short winters of which they wrote. Their characterization of Virginia’s seasons probably arose from questioning the Indians, augmented with classical references to the golden age.

The most ardent of Roanoke’s promoters, Richard Hakluyt was at great pains to inform his readers that the English colony there basked in a temperate and warm climate. With Anglo-Hispanic relations deteriorating in the 1580s, Hakluyt could not risk publishing detailed descriptions of the colony and its environment lest it cause diplomatic tension and possible

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4 For example, the English merchant Henry Hawkes (1572), who lived in New Spain for five years, wrote of the hinterland of Veracruz, “this hote or sicke countrey continueth five and forty miles towards the city of Mexico; and the five and forty miles being passed, then there is a temperate countrey.” Richard Hakluyt, The Principal Navigations, Voyages, Trafficques & Discoveries of the English Nation (1598-1600), vol. 9 (Glasgow: James Maclehose and Sons, 1904) [hereafter PN 1598-1600], 379.

5 Ralph Lane to Sir Francis Walsingham, 8 September, 1585, in Quinn, Roanoke Voyages, vol.1, 214.

6 Hakluyt, PN 1598-1600, vol.8, 305. Barlowe’s description of the short winter was echoed in poet Michael Drayton’s “Ode to a Virginian Voyage” (1606): “To whose, the Golden Age / Still natures lawes doth give; / No other cares that tend, / But them to defend / From winter’s age, / That long there doth not live.” Drayton referred to Hakluyt in the final stanza of his poem: “Thy Voyages attend, / Industrious Hackluit, / Whose reading shall inflame / Men to seeke fame, / And much commend / To after-times thy wit.” Because Barlowe’s account appeared in both editions of the Principal Navigations (1589; 1598-1600), I suspect Drayton read it in Hakluyt and echoed it in this poem. Michael Drayton, “Ode to the Virginiaun Voyage,” in Genesis of the United States, vol. I, ed. Alexander Brown (New York: Russell & Russell, 1964), 86-87.
attacks on the colony by Spanish forces. Instead he promoted Roanoke indirectly in English translations of French, Spanish, and Italian works on the Americas. Hakluyt discussed Roanoke not in the translations themselves, but in the short dedications to Sir Walter Ralegh, the driving force behind the Roanoke venture, that preceded each work. With limited space in which to write, Hakluyt’s choice to emphasize environmental conditions in the dedications demonstrates the importance of climatic considerations to early English colonial ventures.\(^7\)

In his 1587 translation of voyages by the Huguenot explorer René Goulaine de Laudonniere, Hakluyt extolled the agricultural potential of the warm climate of Virginia. He advised Ralegh to see to the “planting of such things in that warme climat as wil best prosper there.”\(^8\) Hakluyt urged the English to emulate the painstaking labors of Spain and Portugal in the Atlantic. The Iberians had paid careful attention to the climate and country of each place they colonized and had tailored a mix of profitable crops and animals that best suited it. At Hispaniola the Spanish “found neither sugar-canues nor ginger growing there, nor any kind of our cattel: But finding the place fit for pasture,” they introduced cattle to the island, along with ginger and sugar. Together these commodities were “now the chiefe merchandise” of the island.\(^9\) Likewise at Madeira the Portuguese confronted an island covered with timber; “howbeit the climate being favourable, they inriched it by their own industry with the best wines and sugers in the world.”\(^10\)

Summing up other Portuguese efforts, Hakluyt drew the reader’s attention from north to south,

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\(^8\) René Goulaine de Laudonnière, “A notable historie containing foure voyages made by certayne French captaynes vnto Florida (1587),” in Hakluyt, PN 1598-1600, vol.8, 441.

\(^9\) Ibid., 441-442.

\(^10\) Ibid., 442.
inviting him to reflect on the potential profit to be gained in southerly ventures: “The like maner of proceeding they used in the Isles of the Açores by sowing therin great quantity of Woad [a dyestuff]. So dealt they in S. Thomas under the Equinoctial, and in Brasil, and sundry other places.”

The outbreak of war with Spain in 1588 forced Ralegh to abandon Roanoke. When the English managed to return to the colony in 1590, they found the settlement empty and the colonists missing, never to be heard from again. In the aftermath of the failure, promoters worked to rehabilitate Virginia’s reputation from what colonist Thomas Hariot derided as the “slanderous and shamefull speeches” of disgruntled former colonists. According to Hriot, these men complained of both the colony’s government and its environment, having “spoken ill of their Gournerours” and “slaundred the countrie itselfe.” References to Virginia’s climate and latitude thus figured prominently in Hariot’s defense-cum-prospectus, A briepe and true report of the new found land of Virginia (1588, 1590). Hariot considered Virginia an excellent location in terms of climate, commodities, and health. It boasted an “excellent temperature of the ayre … at all seasons, much warmer then in England.” With a warm climate much like that of the Mediterranean, Hariot predicted Virginia would one day rival Turkey, Italy, Spain, and Persia as a silk producer. He could vouch for the healthiness of the place as well, despite the complaints of naysayers. Hariot went as far as to claim that when the English explored the country during the winter of 1585-1586, they were lodged only “in the open aire upon the

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11 Ibid. Hakluyt might have specified that São Thomé was situated under the equator, or equinoctial, to emphasize the ability of southerly regions to produce crops that could not be cultivated in Europe.
14 Hariot, briepe and true report, 6.
15 Ibid., 31.
16 Ibid., 7-8.
Only four of the 108 colonists died that winter, testament to the goodness of the climate. The four English who died probably succumbed to pre-existing conditions, as they were already “feeble, weake, and sickly person before ever they came thither.”

English colonists began to die in shocking numbers soon after establishing the Jamestown settlement in 1607. During these early and uncertain years, news of high mortality around Jamestown quickly made its way across the Atlantic, spooking members of the company and potential settlers alike at a time when the Virginia venture desperately needed their participation. The Virginia Company leaped to defend the colony with a spate of broadsides, sermons, and publications in one of the earliest “sustained” publicity campaigns. In these earliest years of the venture, the Virginia Company, its allies, and the colonists themselves defended Virginia’s climate repeatedly in precisely the same manner that the English travel compilers had defended the climate of the torrid zone in the sixteenth century. Virginia, they pointed out, had seasons and other regularly occurring environmental phenomena characteristic of temperate climates. Labeling the Virginia climate “warm” to promote its potential to support commodities produced in the Mediterranean and elsewhere, Virginia’s defenders attributed its poor health not to the climate, but to factors such as the poor situation of Jamestown, to diseases introduced from abroad, and to the behavior of the colonists themselves.

The company’s explanation of mortality in Virginia exemplifies contemporary understanding of mid-latitude climates while reflecting criticism of the Virginia environment - often in the form of rumors - that has not survived for historians to examine directly. In

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17 Ibid., 32.
18 According to David Beers Quinn, the Virginia Company’s propaganda campaign was “one of the first on record to be sustained for a number of years. The company was very successful in preventing unofficial accounts from appearing in print.” David Beers Quinn, ed., New American World: A Documentary History of North America to 1612, vol.5 (London: MacMillan Press LTD, 1979) [hereafter NAW], 188. Wesley F. Craven reminds us that the company was exquisitely sensitive to its reputation throughout its existence. Wesley F. Craven, Dissolution of the Virginia Company: The Failure of a Colonial Experiment (New York: Oxford University Press, 1932), 42, 69, 78, 95, 203-204.
analyzing the Virginia Company’s defenses of conditions in the colony, I proceed from the assumption that if the company defended its venture in part by defending the climate, then critics of the colony must have reacted to reports of sickness and death by condemning the environment. If the company represented the climate of a colony in the temperate zone in the same way that travel compilers had represented the climate of the tropics as temperate, then Virginia’s critics may well have considered colony in the Chesapeake to be uninhabitable, or “intemperate.” It is important to remember that Virginia was founded in 1607, at a time in which the English had little experience living permanently in hot climates. To be sure, mariners, merchants, and elite promoters of English expansion certainly understood that the tropics were habitable by 1607. But as I have argued in the previous chapters, travel compilations and other sources demonstrate that the habitability of the torrid zone remained an open question in England into the late seventeenth century. By 1607 England had made only two short-lived attempts at permanent settlement in the hot climates of the Atlantic, the Roanoke colony in 1585-1587 and a colony led by Charles Leigh on the Wiapoco River in Amazonia in 1606-1608.19 Put simply, the English had little experience living in hot climates. With the habitability of the torrid zone in question, with the Virginia colony frequently described as a warm place that produced crops of warm countries, and with little permanent English experience in hot climates, metropolitan

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19 The English had traded to Brazil at least as early as 1530. Sir Walter Ralegh visited the Orinoco River in 1595 and sent expeditions to the Amazon littoral in 1596-1597. Joyce Lorimer, ed., English and Irish Settlement on the River Amazon, 1550-1646 (London: The Hakluyt Society, 1989), 4-5, 11-2. The first recorded English voyage to the West Indies was in 1527, and there were at least three hundred voyages by traders, pirates, and privateers to the Caribbean between 1550 and 1624. Philip D. Morgan, “Virginia’s Other Prototype: The Caribbean,” in The Atlantic World and Virginia, 1550-1624, ed. Peter C. Mancall (Chapel Hill: University of North Carolina Press, 2007), 349. Regular voyages to the tropical East Indies began only in 1601, and a trade factory was established at Bantam between 1601 and 1603. P. J. Marshall, “The English in Asia to 1700,” in The Oxford History of the British Empire, vol. I The Origins of Empire: British Overseas Enterprise to the Close of the Seventeenth Century, ed. Nicholas Canny (New York: Oxford University Press, 1998), 270. It is my contention in this dissertation that even with so many separate experiences, knowledge of which must certainly have circulated in sailing and mercantile circles, many English nevertheless continued to fear hot climates in the Atlantic.
observers could be forgiven for blurring the lines between temperate Virginia and potentially uninhabitable regions in the tropics.

Proponents of the Virginia colony thus described its temperate climate in detail. In the very first paragraph of *A Map of Virginia* (1612), Captain John Smith addressed the colony’s mortality head on by stating its latitude and suitability for English bodies, while averring that many settlers had indeed died in Virginia:

*Virginia* is a Countrey in America that lyeth betweene the degrees of 34 and 44 of the north latitude. The bounds thereof on the East side are the great Ocean. On the South lyeth Florida: on the North nova Francia. As for the West thereof, the limits are unknowne. Of all this country wee purpose not to speake, but only of that part which was planted by the English men in the yeare of our Lord, 1606. *And this is under the degrees 37. 38. and 39.* The temperature of this countrie doth agree well with English constitutions being once seasoned to the country. Which appeared by this, that though by many occasions our people fell sicke; yet did they recover by very small meanes & continued in health, though there were other great causes, not only to haue made them sicke, but even to end their daies, &c. 20

Smith’s reference to Virginia’s latitude did not simply tell readers where the colony was located, it reminded them that Virginia sat squarely in the middle (37-39N) of an expanse of land in the middle (34-44N) of the temperate zone. For contemporaries conversant in latitudinal reasoning, the implication that Virginia’s climate was temperate would have been clear. By preceding his declaration of the colony’s healthiness with information on its latitude, Smith used textual proximity to reinforce both ideas. He signaled to readers that Virginia’s location within the temperate zone guaranteed its climate posed no threat to the health of the colonists; its seasoning was not debilitating and the disease could be shrugged off with relative ease.

Elsewhere Smith’s writing exhibited the hallmarks of temperateness rhetoric, detailing the seasons one could expect in Virginia and informing readers how the extremes of temperature

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were mitigated over time by environmental factors such as the winds. Smith judged Virginia’s summers to be “hot as in Spaine” and its winters to be “colde as in Fraunce or England.” In the summer months of June, July and August, however, “the colle Breeses asswage the vehemencie of the heat.” Winter was from mid-December through mid-March. “The colde is extreame sharpe, but here the proverbe is true that no extreame long contiueth.”

The Virginia weather was mercurial, but it was no obstacle to agriculture. “Some times there are great droughts other times much raine yet great necessity of neither, by reason we see not but that all the variety of needfull fruits in Europe may be there in great plenty by the industry of men, as appeareth by those we planted there.” Here the climate was variable, but it was mitigated by the fact that neither drought nor rain continued for long periods of time. His discussion of crops in this assessment was significant because the ability of European plants to thrive in Virginia also indicated the climate was temperate. Likewise Smith noted that “here will liue any beasts, as horses, goats, sheep, asses, hens, &c. as appeared by them that were carried thither” by the English already.

Alexander Whitaker, a minister resident for two years in Virginia, relied upon similar ideas to counter the “calumnies and slanders, raisd vpon our Colonies, and the Countrey it selfe [my emphasis]” in his sermon, “Good Newes from Virginia” (1613). The Virginia climate was “very temperate and agreeth well with our bodies,” he reported, with mild seasons that indicated its temperateness. Whitaker viewed spring and fall as the “two longest seasons and most pleasant.” Summer and winter were more extreme, but were “both but short” and

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21 Ibid., 335.
22 Ibid.
23 Ibid., 353.
moderated each other over time: “The Winter is for the most part drie and faire, but the Summer watered often with many great and suddaine shewers of raine; whereby the cold of Winter is warmed, and the heate of Summer cooled.”25 For Whitaker, those who had died in in such a temperate climate had no one to blame but themselves. “Many haue died with vs heretofore thorough their owne filthinesse and want of bodilie comforts for sicke men,” he asserted, “but now very few are sicke among vs … I haue seene it by experience, and dare boldly affirme it, that sicknesse doth more rage in England quarterly, than heere yearely.”26

Virginia boosters like Whitaker attributed the sickness of the first two decades of the colony to a variety of non-climatic sources. In the summer of 1607, only a few months after the English arrived at Jamestown for the first time, forty six of the original 107 settlers died. Smith attributed their deaths to the factionalism of the principal men who led the venture, “through which disorder God (being angrie with vs) plagued us with … famin and sicknes.27 By May 1609 the Virginia Company had decided that the placement of Jamestown was at fault, “because the place is unwholesome and but in the marish of Virginia.”28 Surely it was the “unwholsome & contagious vapour” of the salt water “owze” around Jamestown that made it so sickly. The company pointed out that men at the settlements upriver at the falls of the James and downriver at Nansemond Island were healthy, “an infallible proffe of the temper of the Countrie.”29

25 Ibid., 39.
26 Ibid., 39-40.
27 John Smith, “A trve relation of such occurrences and accidents of noate as hath hapned in Virginia since the first planting of that Collony, which is now resident in the South part thereof, till the last returne from thence. Written by Captaine Smith one of the said Collony, to a worshipfull friend of his in England (1608)” in Barbour, Jamestown Voyages I, 173. In this publication Smith also alluded to the hoarding of food and alcohol by the chief men as contributing to the sickness. On the role of food hoarding in these factional disputes, see Michael A. LaCombe, “‘A continuall and dayly Table for Gentlemen of fashion’: Humanism, Food, and Authority at Jamestown, 1607-1609,” American Historical Review 115 (June 2010), 669-687.
29 “A true declaration of the state of Virginia,” in Quinn, NAW, vol. 5, 254-55. The company’s assessment was remarkably close to an analysis performed by historical geographer Carville Earle. Carville Earle, “Environment, Disease, and Mortality in Early Virginia,” in The Chesapeake in the Seventeenth Century: Essays in Anglo-
Sandys, brother of Virginia Company treasurer Sir Edwin Sandys, reported from Virginia in March 1623 that a recent load of colonists arrived ill because the Company had been provided with bad beer for them to consume on the voyage by its victualler, a Mr. Dupper.\footnote{George Sandys, ‘Letter to Mr. Farrer by the Hopewel,’ March 1622/3, in Susan Myra Kingsbury, ed., \textit{The Records of the Virginia Company of London}, vol. IV (Washington, D.C.: The Library of Congress, 1935) [hereafter RVC], 25; George Sandys, ‘Letter to Samuel Wrote,’ March 28, 1623, RVC, vol. IV, 65.}

Others argued that sickly colonists would have been healthier had they been more industrious.\footnote{Sir Thomas Dale, third in command and sometime acting governor in Virginia from 1611 to 1616, was a notable standout on this point. Dale complained that idleness arose from both the quality of the immigrants to Virginia and from the climate. In a letter to the earl of Salisbury in August, 1611, he complained of the behavior of “such people as we are inforced to bring over hither by peradventure, and gathering them up in such riotous, lasie and infected places can intetaine themselves with other thoughts or put on other behaviour then what accompanies such disordered persons, so prophan, so riotous, so full of Mutenie and treasonable Intendments, as I am well to witness in a parcell of 300 which I brought with me, of which well may I say not many give testimonie beside their names that they are Christians.” If their behavior was bad, so too was their health: “besides of such diseased and crased bodies as the Sea hither and this Clime here but a little searching them, render them so unhable, fainte, and desperate of recoverie as of 300 not three score may be called forth or imploied upon any labour or service.” Here Dale linked the Virginia climate with idleness and other bad behaviors of English. He suggested that the Virginia climate did affect the health of the English, but only of people already preconditioned to sickness by their own immorality. In effect he said that the Virginia climate, normally good, makes bad people worse. Not only were they poorly behaved, but were now sentenced to an enforced idleness by sickness. Sir Thomas Dale to the earl of Salisbury, 17 August, 1611, in Brown, \textit{Genesis} vol. 1, 506-507; “Dale, Sir Thomas (d. 1619),” Basil Morgan in \textit{Oxford Dictionary of National Biography}, eee online ed., ed. Lawrence Goldman, Oxford: OUP, , http://www.oxforddnb.com.proxy.library.georgetown.edu/view/article/7017 (accessed May 26, 2013).} For example, Sir Thomas Gates claimed to have cured some of the colonists of their sickness by making them work: “in a fortnights space he recovered the health of most of them by moderat labour, whose sicknesse was bred in them by intemperate idleness.”\footnote{“A true declaration of the estate of Virginia” (1610), in Quinn, NAW, vol. 5, 255.} In Virginia the colonial council reported the arrival of one hundred men to be company tenants in November 1611. The council ordered them rented to other colonists until Christmas to keep them from getting sick, “forasmuch as wee find by experience, that w[h]ere abundaunce of new men are planted in one body they doe overthrowe themselves either by Contagion of sicknes or by the mother and Cause thereof, ill example of Idlenes.”\footnote{Council in Virginia. ‘The putting out of the Tenantes that came ouer in the B.N. with other orders of the Counsell,’ November 11, 1619, in RVC vol. III, 226.}
Differentiating Virginia from the Tropics

The Virginia Company’s handling of the miscarriage of Sir Thomas Gates’s fleet to Virginia in 1609-1610 demonstrates how the company sought to portray the colony as temperate while simultaneously differentiating it from the tropics. The Gates voyage was the fourth fleet of colonists and supplies to Jamestown (although it is known to historians as the “third supply”). En route to Virginia the fleet was scattered by a storm. Appointed governor of Virginia, Gates was shipwrecked on Bermuda, where he remained with the other principal officers of the voyage for almost a year. The rest of the fleet traveled on to Virginia, but arrived with thirty two dead. It arrived to find the colony in disorder as colonists fought among themselves, consumed the common store of food sent from England, and neglected to plant food of their own. The colonists continued along this path through the bitterly cold and deadly “starving time” in the winter of 1609/1610. In 1610 the Virginia Company addressed the catastrophe in order to shore up support among investors and potential colonists. The way it did so reflected the extent to which the “fear of hot climates” loomed in considerations of colonization in this period. In order to help cast Virginia as temperate, the company blamed the disastrous outcome of the voyage on Gates’s decision to sail to Virginia via the torrid zone.

In early 1609 the Virginia Company sought a new route to Virginia.\(^\text{34}\) Vessels carrying provisions and settlers had previously traveled in a great circle around the northern half of the Atlantic Ocean. They sailed southward from England until they reached Madeira, where the trade winds and currents carried them southwest into the West Indies. Ships then sailed through the Caribbean and turned northward up the coast of North America to the Chesapeake.\(^\text{35}\) By 1608

\(^\text{34}\) “A True and Sincere declaration of the purpose and ends of the Plantation begun in Virginia” (1610), in Brown, *Genesis I*, 342.

the company had become dissatisfied with this route because it feared the Spanish would detect its ships as they passed through the West Indies. Phillip III of Spain considered the new English settlement in North America an unlawful encroachment on Spanish territory, and his diplomats had complained of its existence to their English counterparts. In order to lower its profile and discourage a possible Spanish attack on the colony, the Virginia Company sought a more direct route across the Atlantic that would avoid Spanish islands and vessels, reduce shipping costs, and elude pirates. It thus ordered the young Captain Samuel Argall (a future governor of Virginia) to scout out a “direct and clear passage” to the Chesapeake that would avoid “the southerly course of the Indyes.” He was to sail southward to the Canary Islands and then to cross the Atlantic, “leaving the Canaries to the East, and from thence, to run in a straigh westerne course” to Virginia. Departing England on May 5, 1609, Argall accordingly made his way to 30N, roughly in the latitude of the Canaries, and turned west. Passing Bermuda along the way, he arrived in Virginia on July 13, 1609 after a nine-week voyage.

Meanwhile the company prepared to send out the man chosen to be Virginia’s first lieutenant governor, Sir Thomas Gates. Gates was to precede the new governor, the Lord De La Warr, to Virginia, and command the colony until De La Warr’s arrival. Gates would join Captain Christopher Newport and Sir George Somers at the head of a fleet of nine ships carrying six hundred men for the colony. With Argall yet to report on his errand to find a more northerly route to the Chesapeake, the company left open the possibility of allowing one final passage to

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36 The third voyage was the “second supply” to Virginia, arriving in April, 1608. Barbour, *Jamestown Voyages*, vol. I, xxv-xxviii, ch.4.
39 Ibid., 343.
Virginia via the West Indies. In its instructions to Gates, the company forbade him from calling at Spanish islands unless in an emergency, but did not order him to stay clear of the West Indies altogether. He was “not [to] land nor touch any of the Kinge of Spaines his Dominions quetly possessed, without leave or license of the governor of such place as you shal by accident or contrary windes, be forced into [my emphasis].”

In conference with the ships’ masters, pilots, and “men of the best experience,” he was to select the route that was “safest and fittest for you to take, because we hold it daungerous that you should keepe yᵉ old Course of Dominico [Dominica] and Meins [Nevis] lest you fall into yᵉ hand of the Spaniard, who may attend in that roade ready to intercept you.”

Passing by Dominica and Nevis clearly courted interception by the Spanish, but the company appears to have envisioned Gates skirting the islands from a slightly further distance in consultation with his expert pilots. While the fleet’s exact route is unknown, Gates and his fellows agreed on a contingency plan: should the fleet be scattered by some emergency they were to meet at “Baruada [probably Barbuda] an Iland to the North of Dominico.” There they were to await their consorts for a week before sailing on to the Chesapeake. Because it sits only about sixty miles from Nevis, one of the places Gates had been ordered to avoid, the choice of Barbuda as the site for a rendezvous suggests the fleet planned at least to skirt the West Indies and thus to sail within the tropics.

Gates’s fleet was famously scattered by a hurricane on July 14, 1609. The flagship *Sea Venture* containing Gates, Newport, and Somers took on water and its pinnace was destroyed. Only by continual, frenzied bailing did the crew keep the ship afloat long enough to land at Bermuda. Here Gates and the rest survived, unknown both to the colonists in Virginia and the

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42 Ibid., 12-13.
company in London, for some ten months before constructing two new ships and sailing on to the Chesapeake in May 1610. Meanwhile four ships of the original fleet of nine regrouped after the storm. They decided against proceeding to Barbuda and instead made their way directly for Virginia. Arriving on August 11, 1609, they were joined by the three remaining vessels over the next few weeks. They arrived in time to endure – and succumb to - the horrific “starving winter” of 1609-1610, as some 440 of 500 English colonists died from exposure, disease, and starvation.

By late 1609 word had reached London that the Gates fleet had miscarried and the governor had failed to reach Virginia. Writing from Virginia, Gabriel Archer, captain of the Blessing, informed the company that the fleet had traveled through the tropics. According to Archer the fleet “ran a Southerly course from the Tropicke of Cancer, where hauing the Sun within sixe or seuen degrees right ouer our head in Iuly, we bore away West.” Assuming Archer’s estimation of latitude was correct, the fleet was well within the tropics. In the “feruent heat and loomes[weak] breezes” of the torrid zone, the sailors and colonists contracted calentures, a contemporary term for fevers often associated with hot climates.\(^{44}\) Thirty-two men died of the disease and were “throwne ouer-boord,” but none died on Archer’s Blessing.\(^{45}\) Another captain of the fleet, John Ratcliffe, reported two ships “had great loss of men by the Calenture” in a letter to the earl of Salisbury in October 1609.\(^{46}\)


\(^{46}\) “Radcliffe to Salisbury,” 4 October, 1609, in Brown, Genesis I, 334. Archer had heard that the other vessel carried the plague. “Gabriel Archer, from Virginia, to an unknown friend,” in Barbour, Jamestown Voyages II, 280

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In Gates’s absence, the colony’s troubles deepened. Smith had been injured and was sent home by his political enemies. Relations with the Indians deteriorated. Powhatan ordered attacks on the English, who crowded into Jamestown for safety. The bad blood left the colonists unable to trade with the Indians for food, and some were executed for stealing provisions from the company storehouse as starvation neared. It is difficult to judge whether Gates would have been any more successful in diplomacy with the Indians and procuring food for the colony. Although he set about restoring order in the struggling colony upon his arrival at Jamestown on May 24, 1610, he soon made the decision to abandon the colony for lack of food.47

Ever protective of its reputation and recognizing the need for swift action to contain criticism, the Virginia Company published an explanation of the debacle in early 1610. A True and Sincere declaration of the purpose and ends of the Plantation begun in Virginia (1610) reads much like any modern effort at corporate damage control: the Virginia Company admitted its wrongdoing, explained away what problems it could, and assured critics that it had already taken steps to correct the situation. The company promised to address “all the objections, and confesse ingenuously all the errors and discouragements, which seeme to lye so heavie” on the venture and to “restore it to the Premarie estate, life and reputation.”48

His fate as yet unknown, Gates became a convenient scapegoat for the company in London. According to the company, Virginia’s recent misfortunes stemmed from the lieutenant governor’s decision to sail via a route through the tropics. While the company had originally described the new route scouted by Argall as a means to avoid Spanish possessions and pirates, it now claimed such an alternate route was instead necessary to avoid sickness caused by passage

48 “A True and Sincere declaration of the purpose and ends of the Plantation begun in Virginia” (1610), in Brown, Genesis, vol. I, 341. The book was registered with the Stationers’ Company on December 14, 1609 and probably appeared within a few months. Ibid., 337.
through the tropical climate. It composed its relation of Gates’s route to mislead readers by implying he had planned to travel along Argall’s new route westward from the Canaries, when in fact Argall did not reach Virginia until July 13, 1609, after Gates’s fleet had set out for Virginia. Leaving England on July 8, 1609, the company claimed, the fleet “shaped a course for the height of the Canaries; within few days sail, the Governor calling a Council of all the Captains, Masters and Pilots, it was resolved, they should run southerly unto the Tropic, and from thence bear away West.”49 By specifying the fleet was bound for the “height” of the Canaries, the company implied that Gates planned to sail to the latitude of the Canaries in 28N and then head for America. Instead, the company claimed, he had decided to sail directly into the tropics before turning west for the mainland.

Gates’s decision, the company pleaded, was a serious “error” that would “take up all the objections of sickness” that might be leveled against the company and the climate of Virginia itself. When the remainder of the fleet regrouped for the voyage to Virginia, “the sun being then in [the Tropic of Cancer],” the company argued, “was the cause of all the infection, and disease of our men.”50 Recall that in its orders to Gates of May 1609, the company had instructed him to determine a course for the voyage in consultation with the other leaders of the expedition. It had directed them to avoid Spanish possessions but did not prohibit him from traveling via the West Indies. But now it turned against him. It was not the company’s fault that men had arrived sick, nor was it the country’s. Rather it was the responsibility of Gates and “all the Captains, Masters and Pilots” who had chosen to venture into the tropics.

Contemporaries would recognize a route traveling under the Tropic of Cancer to be a serious risk. It was sometimes reported that surface of the earth located directly under the tropics

49 Ibid., 345.
50 Ibid., 345-346.
themselves – the actual latitudes of 23.5° north latitude and 23.5° south latitude corresponding to the Tropics of Cancer and Capricorn, respectively – was hotter (and thus potentially more sickly) than the expanse of the torrid zone between them. The company relied upon this belief when it noted that the fleet was “in this height [the Tropic of Cancer] and resolution, short of the West-Indies 150 leagues” when the storm struck and the ships were scattered. By the company’s reckoning, the ships had sailed under the Tropic of Cancer because the surviving vessels had regrouped “fourteen degrees to the south-ward of Virginia” and headed on to the colony. Jamestown is situated in 37° north latitude; fourteen degrees to the southward would place the ships precisely under the Tropic of Cancer. The ships decided not to go to Barbuda, the appointed meeting place north of Dominica, “which doubtlesse the Admiral himselfe did not observe, but obeyed his own directions [my emphasis]” and was probably there now repairing his ship. With regard to the “length and danger of the passage” through the Atlantic, the company announced it had already taken steps to find a better route to Virginia by sending Argall on his scouting mission for a mid-latitude route across the ocean.

The second problem facing the colony was disorder caused by “dissention and ambition” among the present commanders and the “the Idlenesse and bestiall slouth, of the common sort, who were active in nothing but adhearing to factions and parts.” In this, too, Gates was responsible, for his decision to sail via the tropical route and the subsequent miscarriage of the

51 In 1631 Sir Henry Colt identified the tropics themselves – the actual lines of latitude rather than the torrid zone between them – as particularly given to calentures. “The Voyage of Sir Henry Colt,” in V. T. Harlow, ed., Colonizing Expeditions to the West Indies and Guiana, 1623-1667 (Nendeln/Lichtenstein: Kraus Reprint Limited, 1967), 99. “An Account of Africa” (1675), BL, Sloane MSS 1837, 2. George Best (ca. 1578) described the earth under the tropics to be hotter than the torrid zone itself, but using his characteristic reasoning judged the Tropics of Cancer and Capricorn to be as temperate as the rest of the torrid zone. George Best, “Experiences and reasons of the Sphere, to proove all partes of the worlde habitable, and thereby to confute the position of the five Zones,” in Hakluyt, PN 1598-1600, vol. 7, 253, 266.
52 “A True and Sincere declaration,” in Brown, Genesis I, 346.
53 The tropics begin at 23°26’ North and South latitude. By the company’s estimation, Gates’s fleet was almost directly under the tropic of cancer in 23°N.
54 Ibid., Barbuda is in 17°N.
fleet had deprived Virginia of effective leadership yet again. With Gates missing, the four hundred people landed from the fleet had been “put ashore without their Governor” and refused to submit to government. Deprived of “any order from [Gates] … no man would acknowledge a superior nor could from this headless and unbridled multitude, be anything expected but disorder and riot.”\textsuperscript{56} It is clear that the missing Gates was a scapegoat; according to the company the colony now required “the necessity of a present supply, to redeem the defects, and misadventures of the last: that seeing all the dangers and sicknesses have sprung from \textit{want of effecting our purpose of sending an able Governor.”}\textsuperscript{57} As part of the “present supply” the colony so desperately required, the company would send out the Lord De La Warr as governor by late January to set things right.\textsuperscript{58}

When the Virginia Company marked De La Warr’s departure with a sermon on February 21, 1610, climatic concerns were again front and center. De La Warr’s sermon was composed and delivered by minister, investor, and Virginia Company advocate William Crashaw, a dedicated defender of the Virginia venture who worked hard to correct what he considered misconceptions about the colony and to discredit the people who spread them.\textsuperscript{59} He delivered his sermon at approximately the same time that \textit{A True and Sincere Declaration} appeared, providing the company an additional opportunity to shape its message to investors and critics and to stress that in De La Warr it already held the solution to the colony’s problems.

\begin{footnotes}
\item[56] Ibid., 347.
\item[57] Ibid., 350. These are the company’s italics.
\item[58] In fact De La Warr would not leave until April 1 1610, delayed by an inability to secure additional men and supplies. Glover and Smith, \textit{Shipwreck that Saved Jamestown}, 197.
\end{footnotes}
The sermon was in fact a bald appeal for investment in a company in need of capital. Crashaw challenged objections that the English presence in Virginia was unlawful; that any effort at colonization would be too feeble and too poorly manned to succeed; and that an investment in the company promised profits that were too small and too long delayed to merit speculation. The climate remained a problem as well, with potential investors and colonists skittish because, as Crashaw paraphrased their concerns, “the countrey is farre off, and the passage long and dangerous, the climate hot and disagreeing with the state and temper of our bodies.”\(^{60}\) Crashaw dismissed fears about the length of the passage, declaring it an easy two months that the company hoped to reduce to as short as one month. Mariners who heard or read the sermon would have scoffed at his claim of a passage to Virginia that took only a month, for the route to Virginia was one of the longest to an English colony. The average passage to the Chesapeake by a single vessel in the late seventeenth century, long after Crashaw wrote, required between eight and ten weeks.\(^{61}\)

More important than the length of the passage, however, was its route through the temperate zone. Apparently alluding to the mid-latitude route discovered by Argall the year before, Crashaw assured his audience that ships headed to Virginia did not pass through the torrid zone. The passage was easy and healthy because the route came “not neere the Sunne, nor vnder the Æquinoctiall line, to distemper our bodies.”\(^{62}\) Once they left England, he continued, the ships “keepe a faire course, betwixt the Sunne in the South on the left hand, and the Ice in the North on the right … And it is hard to name any other great voiage from this land, but the passage is subiect either to the vntemperate heate of the Sunne on the one side, or the danger of

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\(^{60}\) Crashaw, *A Sermon*, n.p. (image 20). The copy of the sermon on EEBO is not paginated.

\(^{61}\) Steele, *English Atlantic*, 50. In fairness to Crashaw, William Byrd sailed from England to Virginia in four weeks in 1688, but Steele considers this a feat that “would seldom be equaled.” Even a passage of seven or eight weeks was “very rare.” Ibid.

the Ice on the other side.”

Unlike trade routes to East Indies, Muscovy, and Danske, he argued, “onely this passage into Virginea … is in that true temper so faire, so safe, so secure, so easie, as though God himselfe had built a bridge for men to passe from England to Virginia.” Crashaw’s rhetoric worked to separate the route to Virginia from intemperate climates both to the north and south. By referring to the East Indies, Muscovy, and Danske routes, he implicitly invited investors to take advantage of what he claimed to be more secure shipping routes to Virginia.

Crashaw differentiated not only the sea route but also the land of Virginia itself from the tropics. He advised those who had questions about the Virginia climate to consult maps, charts, and patents for proof of its temperateness. They could also “aske and inquire of travellers by sea or land, if the land that lieth betweene the 34. and 45. degrees of Northerly latitude from the \(\text{Æquinoctiall line}, \) be not farre enough from the Torrida Zona, and from the distempering heate of the Sunne.” Indeed, although Virginia shared the same latitude with Spain, “yet it falles out (for reasons not yet fully discerned),” that its climate was in fact cooler than that of Spain and “rather of the same temper with the South of France, which is so temperate and indifferent, as if our owne were something neerer vnto it, we would be well content with it.”

In addition, the movement of people between Virginia and England proved the climate to be no obstacle to a flourishing colony in America. Referring to the ancient belief that skin color changed with latitude, Crashaw described how the skin of an Indian from Virginia “that was with

63 Ibid., n.p. (images 20-21).
64 Ibid., n.p. (image 21). Crashaw employed a bit of providential reasoning here, implying that if God had made something possible, it was incumbent upon people to take advantage of his goodness. If God builds a bridge to Virginia, the English were obligated to cross it.
65 Crashaw probably knew about the route Argall had found that went via Bermuda. His verbal opposition of the icy north and sun-scorched south implied the route to Virginia lay entirely through the temperate zone. But ships bound for Virginia continued to travel via the torrid zone for at least a decade after the Gates debacle. For example, in 1620 both John Rolfe and John Pory wrote letters to the company referring to newcomers who had arrived via the West Indian route. “John Rolfe. A Letter to Sir Edwin Sandys,” January 1619/1620, in Kingsbury, RVC, vol. III, 245; “John Pory. A Letter to Sir Edwin Sandys,” 12 June 1620, in ibid., 301.
67 Ibid. Marginal note: “The true position of Virginea.”
vs here in England … was so farre from a Moores or East or West Indians, that it was little more blacke or tawnie, then one of ours would be if he should goe naked in the South of England.”

If a native of America looked like a man from southern England, how could the Virginian climate pose a threat to English colonists? The testimony of the Indian’s body was trumped, however, by that of real English bodies: “And to that experience adde a better, namely of our brethren in Virginea, who some of them haue been there many yeeres, and doe not complaine of any alteration, caused by distemper of the Climate.”

For his part, Sir Thomas Gates received slightly more charitable treatment in a third pamphlet that appeared later in 1610, A true declaration of the estate of the colonie of Virginia, than he had been granted by either the author of “A True and Sincere declaration” or William Crashaw. Upon his return to England, the anonymous author related, Gates reported that he had skirted the torrid zone en route to Virginia, but did not enter it. He admitted that he took the fleet “to runne southerlie into the Tropique which they did, till they came to the height of foure and twentie,” sailing westward in 24° north latitude, just outside the Tropic of Cancer. He made this decision in consultation with Sir George Somers and Capt. Christopher Newport with “uniformitie of consent.” Gates denied, however that the route had caused any sickness among the crew or colonists. He pointed out that four of the ships arrived in Virginia without any one ill at all. Two others had men with sicknesses “somewhat hote”, but there were sick men aboard those vessels in London, so that the deaths of the men could not be blamed solely on his decision to travel through the tropics.

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71 Ibid., 252.
Warmth and Diversified Agriculture

In its efforts to counter charges of sickliness in the colony, the Virginia Company employed rhetoric that reinforced Virginia’s position in the temperate zone. In its publications of 1610 the company defended itself both against charges of mismanagement and defended Virginia’s climate against charges of sickliness by assigning blame to Sir Thomas Gates and his decision to sail to the colony via a tropical route. The company based its defense on the widespread belief that hot climates threatened the health of English bodies. It relied upon the association of hot climates with sickliness to contrast temperate Virginia with the torrid zone in an effort to convince investors and potential colonists that mortality in the Chesapeake was not caused by its climate.

Yet if the company distinguished Virginia from the torrid zone to make it seem healthy, it nevertheless associated the colony with climates that it described variously as “warm” and “hot” to encourage the production of specific agricultural commodities believed to thrive in hotter temperatures. The colony at Jamestown was originally designed in part to provide a base from which the English could search for precious metals and trade with Native Americans for minerals, dyestuffs, medicines, and other goods. Roiled by sickness, disorder, and conflict with the local Algonquian Indians, the colonists searched without success for commodities for a decade after their arrival in the Chesapeake. As early as 1612 colonist John Rolfe experimented with tobacco cultivation, eventually developing a hybrid of native Virginian and Spanish “Trinidado” tobaccos that the settlers began to produce in large quantities in 1616. Relieved at having found a commodity in high demand in England, the colonists fell to producing it with abandon.72

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But by 1620 the plant that saved Virginia had begun to worry the Virginia Company. Company treasurer Sir Edwin Sandys and many of the company’s officers and investors saw the colonists’ attachment to tobacco as an obstacle to the development of a diverse portfolio of agricultural commodities that would complement those already produced in England. Contemporaries reasoned that lands occupying similar latitudes had similar climates and were capable of producing the same commodities. For example, in the “Discourse of Western Planting” (1584), Richard Hakluyt had urged the English to attempt settlements in North America within an area between “Florida” (around 30° North latitude) and 67° North latitude (roughly the arctic circle). This vast expanse comprehended Old World lands “answerable in clymate[s]” from Barbary in the south to Muscovy in the north. Hakluyt argued that inhabiting, cultivating, and trading to American lands within this broad range of climates would provide the English access to “a greate parte of the commodities which the aforesaid Contries doo yelde us at a very dere hand with manifolde daungers.” 73 Because it was situated in the same latitude as the Mediterranean and parts of Asia, Virginia held promise as a site of diversified agriculture where colonists could produce silk, wine, flax, and other goods. Sandys had long advocated for an agricultural economy in Virginia, and upon taking power after the company was reorganized in 1618-1619, he instituted new policies such as the headright system and a dramatic increase in migration to further encourage the colonists’ turn to cultivation. 74 He hoped to make Virginia a producer of a diversified portfolio of commodities that could not be produced in England.

In its efforts to encourage diversified agriculture in the colony, the Virginia Company devoted particular attention to the production of silk. The English had assumed that Virginia was capable of producing silk from the very beginning of the colony. When the Roanoke colonists

73 Richard Hakluyt, “Discourse of Western Planting [1584]” in Quinn, NAW, vol. 3, 76.
discovered mulberry trees that hosted silkworms of great size in 1586-1587, their hopes to build an English silk industry were strengthened. For Thomas Hariot, the “scientific advisor” and chronicler of the Roanoke venture, the worms’ presence was both a sign that Virginia’s environment could support silk production and a confirmation of reasoning from latitude. “Seeing that the countrey doth naturally breede and nourish” the worms, he reasoned, “there is no doubt but that if art be added,” Virginia would rival Persia, Turkey, Italy, and Spain as a producer of silk.  

Two decades later the Virginia Company dangled the possibility of silk production as an inducement to investors. In a 1609 promotional tract, Robert Johnson advertised the presence of “Silke-worms, and plenty of Mulberie trees” in the infant colony. The Virginia Company directed colonists to produce silk from the beginning of the venture, instructing Sir Thomas Gates to see to “p[ro]vidinge the worme” in his instructions of 1609. By 1620 the company had sent French vigneron, workers skilled in the production of wine and silk, to teach the English how to produce silk. It also sent silkworm eggs, or “seed,” for their use.

According to the historian Charles Hatch, Jr., the colonists made good faith efforts to produce silk during the first decade. Their first attempts in 1607-09 had to be abandoned after the silk workers died. Colonists William Strachey and Ralph Hamor reported silk being produced

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78 John Bonoeil, A Treatise of the Art of Making Silke, or, Directions for Making Lodgings, and the Breeding, and Ordering of Silkworms, for the Planting of Mulberry Trees, and All Others Things Belonging to the Silke Art ... Set foorth for the benefit of the two renowned and most hopefull Sisters, Virginia and the Summer–Ilands (London, 1622), n.p. (image 5). Accessed via Early English Books Online (EEBO), May 24, 2012. In fact, contemporaries treated silk and wine as related products because they were so often cultivated together in southern Europe and the Mediterranean. On vigneron sent to Virginia as early as 1620, see also “A note of the shipping, men, prouisions, sent and prouidied for Virginia, by the right honorable, the Earle of Southampton, and the Company, this yeare, 1620” (London: 1620), n.p. Accessed via EEBO, June 6, 2012; Charles E. Hatch, Jr., “Mulberry Trees and Silkworms: Sericulture in Early Virginia,” The Virginia Magazine of History and Biography 65 (1957), 12.  
during the second decade of the seventeenth century, and Hatch considered the years 1612-1617 to have seen a “well organized effort” to produce silk in Virginia. When John Rolfe and Pocahontas traveled to England in 1616 (by which time the colonists were already producing tobacco with alacrity), they carried with them the colony’s first shipment of silk.

But the emergence of tobacco as Virginia’s principal crop placed the Virginia Company in a difficult position. While the company sold Virginian tobacco in England, Sandys and his faction feared the Virginia Company risked “disrepute” if it failed to bring to market the diverse commodities it had promised to produce in Virginia. The involvement of none other than King James I intensified pressure for the company to diversify agriculture in the colony. A passionate opponent of tobacco use, the king penned an attack on the substance in 1604, and in 1619 he banned its production in England. James’s opposition to tobacco was based in part on climatic considerations. He explained his ban on tobacco production as an attempt to ensure the health of the English because he regarded tobacco grown in England as “more crude, poysenous and dangerous for the bodies and healths of Our Subjects then that that comes from hotter Climates.” Not only would the prohibition benefit the English at home, but limiting production to Virginia and Bermuda would provide an economic boost to colonies whose southerly latitudes made them the “proper and naturall Climates for that plant.” Ultimately the king envisioned the production of tobacco in the colonies as merely temporary, an activity to be pursued only “vntill Our said Colonies may grow to yeeld better and more solide commodities.”

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80 Hatch, “Mulberry Trees and Silkworms,” 5-8; quotation, 9.
81 Ibid, 8.
82 Craven, Dissolution, 41.
replaced by other more valuable and acceptable crops, James was of course content to channel import duties on Virginian leaf to his own coffers.

In an attempt to persuade the colonists to produce silk, in 1620 and 1622 the Virginia Company published and shipped to Virginia sericulture manuals that blended exhortation with technical instruction on the tending of silkworms and the mulberry trees on which they fed. Written by John Bonoeil, the sericulturist to King James I, the manuals were specialized examples of the improving husbandry literature that had flourished among English landowners since the 1560s. Agricultural “improvement” was the ideological manifestation of agrarian capitalism in the early modern period. In an era when demographic growth existed in tension with enclosure, wage labor, and the spread of the market, advocates of improvement wrote husbandry manuals to legitimate personal profit and private property by charging landowners with a “moral duty to exploit more efficiently the riches of the natural world.” Writers of husbandry manuals thus conflated social status and morality, making it incumbent upon the small proportion of Englishmen wealthy enough to own land - some two percent of the population in the early seventeenth century - to maximize the productive potential of their properties.

throughout Britain, from the Channel Islands to Yorkshire, and especially centered in Gloucestershire. Its widespread adoption was an example of Britons actually following through on ideology that called on them to adopt new crops if they were profitable enough. As for James’s repeated prohibitions, “they had not the slightest effect” on domestic production. Joan Thirsk, ed. The Agrarian History of England and Wales, vol. IV, 1500-1640, (Cambridge: Cambridge University Press, 1967), 176-177; quote, 176.

85 John Bonoeil, Observations to be Followed, for the making of fit roomes, to keepe Silk-wormes in: As also, for the Best Manner of planting of Mulberry Trees, to feed them (London: 1620); idem, A Treatise of the Art of Making Silke, or, Directions for Making Lodgings, and the Breeding, and Ordering of Silkworms, for the Planting of Mulberry Trees, and All Others Things Belonging to the Silke Art ... Set fowrth for the benefit of the two renowned and most hopefull Sisters, Virginia and the Summer-Ilands (London, 1622).


Landowners who followed their prescriptions, the writers promised, could not only take pleasure in their profits, but would be satisfied in the knowledge that their efforts had contributed to an “universal improvement” of English life that advanced the “greater interests of the commonwealth.”

The sericulture manuals written for Virginia extended the notion of improvement from rural England across the Atlantic to North America. As were manuals written for English domestic audiences, the works of Bonoeil and his successors were especially aimed at Virginia’s landowners, urging them to maximize the productivity of their lands via agricultural diversification. In terms of its social structure, Virginia had a greater proportion of landowners and other social elites than in the English population in general. In 1625 the landowning gentry made up about 9% of the white men in the colony, a number far surpassing their proportion in early seventeenth-century England itself. Most of the rest of the white population were servants and wage laborers, and 70-80% of English migrants to Virginia during the seventeenth century went as indentured servants. The sericulture manuals were thus directed not at the agricultural laborers who constituted much of the population, but at their masters and employers. It was the planters who decided whether to grow tobacco or mulberry trees, not their dependents.

In exhorting them to grow diversified crops, the writers of the sericulture manuals played upon the planters’ pretensions to gentility. In England the gentry and their inferiors were linked by reciprocal obligations in which the landowner legitimated his social standing by providing for

McRae, “Husbandry Manuals,” 50.


his immediate dependents and doing occasional favors for employees, neighbors, and clients. In
turn his subordinates treated him with deference and obedience.92 The moral exhortation to
improve agricultural lands resonated with the obligations the gentry felt to aid their subordinates.
Just as the gentleman was responsible for providing for his family, so too was he distinguished
by an orderly, well-kept, and productive estate. In Virginia, where the early planters were
gentlemen or parvenus who aspired to gentility, such arguments imparted a moral element
intended to counter the hold of tobacco on the colonial economy.

Considerations of climate inflected the sericulture manuals in important ways. At the
heart of improving literature was a “conviction that everything [in the natural world] could and
should be employed and improved.”93 Writers of husbandry manuals in Europe thus argued that
local environmental conditions presented no barrier to agriculture or other economic
exploitation.94 Providence guaranteed that people could wring wealth from even the most
benighted place if only they would exert themselves in labor. Indeed, the agricultural reformer
Gabriel Plattes had written, “‘Nature is no niggard, but giveth riches to all that are
industrious.’”95 Considerations of climate likewise inflected the prescriptions for improving
agriculture that were written for the Virginia planters; in Virginia, the conscientious landowner
must produce not only what the land made possible, but what the climate made possible. And
what Virginia produced naturally was silk. Thus Bonoeil reminded the planters that not only did
Virginia boast native mulberry trees and silkworms, but also a “Clymate … more naturally

94 During the seventeenth century, the English brought popular husbandry manuals (not tailored to silk production)
with them to America. These were not, as far as I know, tailored to American conditions. The first such general
husbandry manual written specifically for American use that I am aware of was: An American, American
Husbandry (London: 1775).
95 Plattes quoted in Charles Webster, The Great Instauration: Science, Medicine and Reform 1626-1660 (London:
Duckworth, 1975), 357.
proper” for sericulture than the silk producing regions of France or Italy.\(^96\) Thirty years later Samuel Hartlib confirmed that “no part of the World is more proper for Silk then Al-sufficient-Virginia: In regard of the excellency of the temper of the Climate, which naturally produceth” mulberry trees and worms.\(^97\)

The sericulture manuals grounded their exhortations to produce silk in nuanced and sometimes contradictory exercises of latitudinal reasoning about Virginia’s climate. From John Bonoeil in 1622 to Samuel Hartlib in 1652, the writers equated Virginia’s climate to that of well-known silk producing regions in the Mediterranean and Asia that shared its latitude.\(^98\) For example, Bonoeil advised planters to house silkworms “after the manner as is practiced in Messina in Sicilie.” Like Sicily, he wrote, “the Country [is] hot, and all things for this purpose most fitting.”\(^99\) Its heat and naturally occurring mulberry trees would allow it to produce better silk than either France or Italy.\(^100\) And as in the Mediterranean, Virginia boasted native grapevines interspersed among its mulberry trees. He thus supplied improving planters who sought to maximize the output of their lands with information on how to how to plant peach and fig trees, “which in hot countries are commonly set amongst Vines, in Vineyards in the open

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\(^96\) Bonoeil, *Treatise*, 71.


\(^98\) The process started slowly. In fact, Bonoeil’s first effort, *Observations to be Followed, for the making of fit roomes, to keepe Silk-wormes in: As also, for the Best Manner of planting of Mulberry trees, to feed them* (1620), was a small pamphlet of twenty-eight pages that made virtually no mention of Virginia’s climate at all, a strange thing given the importance contemporaries placed on latitude for sericulture. At first glance the text appears to have been little more than a manual for silk producers in Europe, minimally repackaged for Virginia readers, save for a handful of clues: among its few references to Virginia are a subtitle indicating the pamphlet had been “Published by Authority for the benefit of the Noble Plantation in Virginia,” a promise to send a more substantial manual “purposely printed” for the use of Virginians in the near future, and list of commodities growing in Virginia and the prices they would fetch in England. Bonoeil’s conception of Virginia’s climate can only be assessed tangentially, in that his emphasis on the fragility of silkworms suggests he viewed the climate as moderate. He stressed that the worms were extremely sensitive to their surroundings. They were to be raised in containers that were “spacious, lightsome, pleasant, neate, and wholesome, farre from ill sents, damps, fogs, and humidities: warme in cold, and cold in hot weather.” The absence of specific information on the climate suggests that Bonoeil regarded Virginia as moderate in temperature and neither overwhelmingly hot nor cold. Bonoeil, *Observations*, 3, 4, 25-28.

\(^99\) Bonoeil, *Treatise*, 5.

\(^100\) Ibid., 71-72.
fields.” Likewise Edward Williams, in his 1650 treatise, *Virginia’s discovery of silke-worms*, depicted Virginia as eminently suited to producing Mediterranean crops such as wine, olives, and almonds.

Williams advocated for the settlement and production of silk in the southern part of the original Virginia patent between 31 and 37 degrees north latitude, roughly between St. Augustine and Jamestown. Precisely because this region was to the south of contemporary settlements in Virginia, Williams presented it as capable of producing crops found in subtropical and even tropical and subtropical regions such as sugar, in addition to the Mediterranean crops. Williams compared the region favorably to colonies at the furthest latitudinal reaches of the emerging English Atlantic. The climate of southern Virginia, he wrote, “dispences a moderate quality of heat and cold between the two violent extreams thereof in Barbadoes and New England.” He had little doubt that the place could produce even crops of hot climates such as sugar, cotton, ginger, and indigo. In southern Virginia “the Sunne, which in other Countreys makes his visit in Falmes [flames] and Droughts, heere casts his auspicious Beames, and by an innocent and complementall warmth” will bring these crops forth from “the bosome of this his particular favorite” land. Producing these warmer weather crops further northward in parts of Virginia currently settled by the English was possible, but would demand “a greater industry” from the planters. But “if wee consider the difference betwixt the two Climats of Barbadoes and Virginia, the immoderate heate of the first and the exact temper of the other, the labour though it may require as frequent handling, yet is by much lesse toylesome.” Williams thus located “Southern Virginia” along a climatic continuum that approached a hot, tropical Barbados. He

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101 Ibid., 2.
102 Edward Williams, *Virginia’s discovery of silke-worms, with their benefit* (London: 1650), A4.
103 Edward Williams, *Virginia: more especially the south part thereof, richly and truly valued* (London: 1650), B4.
104 Ibid., 19.
105 Ibid., 43.
clearly pointed out the difference between their respective climates; by predicting sugar would require more labor in southern Virginia than in Barbados, he effectively cast the potential colony as cooler than Barbados and warmer than Jamestown and regions to the northward.

Williams made his case for the suitability of southern Virginia for silk production by comparing it to France and Italy, pointing out significant changes in climate over rather short spans of latitude. Silk producers had long known that “the warmer the Region [in which silk was produced], by so much larger and stronger encrease and texture” was the resulting silk. Silk yields and quality gradually increased as one moved from north to south. France, “being of a colder temper,” produced less silk that its more southerly neighbor, Italy. Silk production varied by latitude within both countries. Northern France produced the smallest amounts of the substance, he reported, while Languedoc and “the warmer Provinces” produced more. Likewise Italy produced progressively more silk as one moved southward to Calabria at the tip of the Italian Peninsula. Yet Virginia’s climate made the southern region a far better site for sericulture than even “the happyest Region of Italy.” Italy was “subject to much inclemency of Winters” compared to Virginia, “our more temperate Maiden, where Snows and black Swans are alike Prodigies.”

Of course, bands of latitude extended around the world, and the sericulture writers likewise extended their latitudinal reasoning beyond the Atlantic to China. For Bonoeil and Williams, China offered the best model for Virginia to emulate, both because of its latitude and for what the writers considered the improving practices of its people. Bonoeil posited a “consanguinity betwixt China and Virginia” in that their shared latitudes offered an “agreement

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106 Ibid., 21.
107 Ibid., 33. If Williams sought to use southern Virginia’s latitude to promote a silk industry, he would have done better by himself to note that Jamestown itself sat in 37 degrees North latitude, roughly in line with Sicily. The part of Virginia he promoted stretched further southward for another six degrees, over four hundred miles.
betwixt the native Commodities of the one and the other Climate.” Not only did the two regions boast native mulberry trees, but they shared a common foodstuff in American maize.  

For Williams the association was even stronger, extending beyond silk to other natural productions. Where the Chinese produced flax, so too could the Virginians, “that wee may not lose the smallest circumstance of Parallell with Virginia.” Here Williams played on the meaning of parallel as both similarity and latitude. The two regions were similar even in the products of the sea. While he admitted that China might be a better fishing nation that either England or Virginia, fish were not “so circumscribed and limited to one part of the Ocean especially the same Climate or Latitude” that the catches taken up by Chinese fishermen might not materialize in Virginia as well.

Even in a climate similar to the “hotter” parts of the Mediterranean and regions to the southward, Virginia was located in the temperate zone and was not unacquainted with colder weather. The Virginia sericulturist should keep an auxiliary heat source in case his worms were threatened by cold. To this end Bonoeil advocated housing them in a “hot-house,” an enclosure fitted with a fireplace built into one wall. The fireplace was fed from outside the hot-house and heat from the fire radiated through the back wall of the fireplace into the hot-house. This design was “a meane to keep the house in a temperate and reasonable heate, as need and occasion requireth.” When the weather is cold, or moist,” Bonoeil specified actually keeping “some fire in the roome” with the worms. Williams related that the fragile silkworms required housing with windows “opening to all Angles to receive unsuspected infrigidations in

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109 Williams, Virginia, 16.
110 Ibid., 14.
111 Ibid., 7.
112 Ibid., 23.
extreamities of heat, and warming transpirations in immoderate colds.” Similarly he advised planters interested in viticulture to burn straw or dung around their grapevines “to prevent the Frost from benumbing, or absolutely destroying” them. They could protect the vines from “blasting” by the summer heat by cutting them later in the season. This precaution would make the vines come into bloom “at such time as the Sunne is ascended to his greatest degree of heat and fervor.”

While the sericulture manuals produced by Bonoeil in the early 1620s and the later manuals of the early 1650s shared characteristics – exquisite and finely graded latitudinal reasoning combined with appeals to Virginia planters to produce those crops that nature made possible in a given climate – they also reflected the different eras in which they were written. For example, in 1620 Bonoeil envisioned a full-blown silk industry in Virginia in which large areas of ground would be devoted to mulberry trees. He advised the planters to plant “whole Forrests and Woods” of trees composed of a minimum of 2,000-3,000 trees, “for here is no question of good profit in which must grow out of a sufficient number of trees.” Each tree must be limited to a height of no more than seven feet, and its branches must be continually pared to promote leaf growth. Ideally the trees were to be arranged in the form of a quincunx, a square formation composed of five trees. One tree sat at each corner of the square, and a fifth was to be planted in the center. Each tree was to be at least twenty-four feet from its neighbors to guarantee ample sunlight for development of the all-important leaves. Arranging the trees in this fashion would require large plots of land; a planter who planted Bonoeil’s minimum of 2,000 trees would need to set aside about nineteen acres for worm food. Planters with less land could employ an

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113 Williams, *Virginia’s discovery*, 10.
114 Ibid., 42.
115 Ibid., 43.
116 Bonoeil *Observations*, 13, 16.
117 Ibid., 12-13.
alternative arrangement of double rows of mulberry trees arranged in the form of a cross. The quadrants of negative space formed by the cross were to be one acre in size.\textsuperscript{118} At his specified distance of sixteen feet between each tree, the resulting plan would situate 676 trees on 4.3 acres; such a cross arrangement would squeeze 2,000 trees into just 12.7 acres.\textsuperscript{119}

The scale of the mulberry plots prescribed by Bonoeil demonstrates his hope that silk might substantially augment - if not replace - tobacco in the Virginia economy. At a time when a planter received a fifty-acre headright for each person he transported to the colony, large areas of land might be taken up by trees grown to support silkworms. The profit-minded planter owed it to himself to plant large numbers of trees, Bonoeil emphasized: “It is onely for women wantonly to keepe a few Silk-wormes, with a few Mulberry trees, more for pleasure, than for profit … So then, if you minde to be very rich indeed in this commodity, you must … alwayes still augment your Mulberry yard, adding thereto certain hundreds of trees yeerly.”\textsuperscript{120} Of course, there remained much empty space that could be put to use growing other crops between the mulberry trees, whether arranged in quincunxes or crosses; a planter might devote this space to tobacco and have the best of both worlds. If Bonoeil thought it was possible to cultivate tobacco plants in the space between the trees, however, he made no mention of it. Instead he advocated the planters maximize the output of their mulberry yards by planting corn, oats, peas, and grapevines between the trees.\textsuperscript{121}

By the 1650s the sericulture writers were less sanguine about the potential for a large silk industry in Virginia. After some thirty years of falling prices, many Virginia planters seemed as attached to tobacco as ever. Between 1620 and 1650 tobacco imports to Britain rose from

\textsuperscript{118} Ibid., 13-15.  
\textsuperscript{119} Calculations of the land area required for 2,000 trees in the quincunx and cross patterns are my own.  
\textsuperscript{120} Ibid., 16.  
\textsuperscript{121} Ibid., 14-15.
slightly more than 20,000 pounds per year to approximately 2,000,000 pounds per year. During the same period prices fell from eleven pence per pound to two pence per pound, while productivity increases permitted planters to profit while the lower prices extended the market for tobacco in Europe. First the Virginia company and then the colonial assembly had made efforts to limit tobacco production in the past – the company seeking diverse crops during the heady days of high prices in the 1620s and the burgesses attempting to limit production during periods of lower prices in 1629, 1632-1634, and 1639-1642 – but planters resisted attempts to force them to abandon a crop that remained profitable. Recognizing the entrenchment of tobacco among Virginia planters, the authors of sericulture manuals in the early 1650s offered ambitious but qualified encouragements for silk production.

A favorite rhetorical maneuver of the sericulture writers of the 1650s was to promote silk production as an economic activity that could be slotted into the existing economy with ease. As early as 1622, Bonoeil had argued that the presence of native mulberry trees and silkworms in Virginia would provide more and higher quality silk with less labor in that colony than in European countries such as France, where the trees had to be imported and grew only “with maine labour and toyle.” Later writers elaborated upon the idea of easy cultivation. For Edward Williams, the mere example of agriculture improved by cultivators in Virginia would beget ever more productive and labor saving innovations, “driv[ing] on hopefull designs with a lesse number of hands then is usually assigned to them” in what we might consider a seventeenth-century continuous improvement process. One possible innovation was to use

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122 McCusker and Menard, *Economy*, Figure 6.1, 121; 122-123.
Indian labor to grow the worms. Williams believed Indians would be amenable to the work because it involved so little labor “(a thing which they abhorre)” that even Indian women and children could participate.\footnote{126}{Ibid., 40.} The only labor for the colonists would be to organize the Indians in work gangs and - probably with Opechancanough’s 1644 attack on the English in mind - to monitor them for signs of treachery.\footnote{127}{Ibid., 39.} The Indians’ own “constant inconstancy” might even be relied upon to induce them to produce silk on their own for trade to the English for food, since silk came in season at a time when the Indians “hath wasted all his Bread-corne, at which time he usually retires into the Woods to seeke a thinne subsistence.”\footnote{128}{Ibid. In his zeal for encouraging winemaking, Edward Williams risked undermining his own characterization of Virginia as a “warm” country similar to the wine producing regions of the Mediterranean by equating working conditions in the colony to those of Virginia. Williams estimated that a man in Virginia could cultivate four acres of vines with the same amount of labor as he might grow four acres of hops if he were in England. He brushed aside potential objections on the basis of “the heat of the Countrey” in Virginia, asserting that “if the mid-dayes be hotter [than in England], the mornings are much colder.” With the physical temperature in the colony and mother country thus balanced, a man in Virginia could “without any extraordinary efforts of sweat and spirits, labour equally with those of England.” If he failed to do so, he was either “lame or idle.” Ibid., 32.} In 1652 Samuel Hartlib relayed to readers the suggestion of the English sericulturist Virginia Ferrar, of the Ferrar family of Virginia Company fame, that the worms could be simply left to grow on the trees rather than building houses for them. Her method required “no labour, cost, hazard, expence of time at all, a Boy onely to keep away the Birds from eating the Silkworms on the Trees.”\footnote{129}{Hartlib, \textit{The Reformed Virginian Silk-Worm}, n.p., (image 7).}

In addition to encouraging planters to produce silk, the sericulture writers sought to dissuade the colonists from producing tobacco, at least in close proximity to their silk worms. Bonoeil cautioned planters against hanging tobacco leaves in their worm houses, because it was “exceeding contrary and mortall” to the worms. So sensitive were the tiny spinners to tobacco that “euen the very breath of one that hath taken it, breathing upon them,” would kill them.\footnote{130}{Bonoeil, \textit{Treatise}, 10.} Samuel Hartlib believed silk would bring the industrious planter four times the profit of tobacco,
as well as the satisfaction of having produced not mere “smoak and vapour, but this a reall-royal-solid-rich-staple” commodity.\footnote{Hartlib The Reformed Virginian Silk-Worm, n.p., (image 7).}

Conclusion

Ultimately the continuing profitability of tobacco gave planters little incentive to expand into silk production. A small number of elite planters – foremost among them Governor William Berkeley and members of his council – experimented with sericulture into the 1670s, following their own whims or perhaps leading by example. But tobacco was entrenched among most of their fellow landowners. Despite the clear evidence of the planters’ industry in the form of exploding tobacco production, metropolitan and some colonial observers alike characterized the planters as idle, thus contributing to the eighteenth-century stereotype of the idle Virginia planter.\footnote{On planters’ reputations in England in the eighteenth century, see Michal J. Rozbicki, The Complete Colonial Gentleman: Cultural Legitimacy in Plantation America (Charlottesville: University Press of Virginia, 1998), ch.3.} Yet whereas the eighteenth-century gentleman planter was considered idle because of his reliance on slave labor, his seventeenth-century predecessor was idle because he failed to pursue diversified agriculture. When the planters devoted themselves to tobacco, they touched off a decades-long debate about how best to take advantage of Virginia’s climate. Critics from the Virginia Company itself to late seventeenth-century colonial administrators judged the planters’ attachment to tobacco at the expense of other crops to be a waste of the productive potential of Virginia’s warm climate. Throughout the seventeenth century they called for a diversified agriculture and chastised the planters for their failure to properly exploit the
agricultural potential of the land. Critics cast the planters’ neglect of diversified agriculture as a form of idleness.

Idleness is a common-place of Virginia history. The history of early Virginia is famous for its first colonists, many with pretensions to gentility, who expected tribute from Indians and easy wealth in the colony. In the early, uncertain years of the colony, observers lamented the planters’ failure to find any export commodity at all, and branded them as lazy. Prior to the adoption of tobacco, Sir Thomas Dale famously arrived at Jamestown in 1611 to find survivors bowling in the streets rather than producing their own food. Yet when Samuel Argall arrived to take up the governorship only six years later, he found the streets clogged with tobacco plants rather than indolent planters. Ironically, the indefatigable energy with which the planters produced tobacco was also cast as a form of idleness; whereas the earliest colonists had failed to produce any commodities at all, now they failed to produce the proper commodities. Throughout the century the colonists’ attachment to tobacco and their refusal to properly improve and exploit the land according to metropolitan prescriptions was blamed for all manner of defects in Virginian society, from its supposed incivility to its lack of roads, towns, and ports.

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133 The colonists’ failure to diversify beyond tobacco, to build towns according to metropolitan custom, to build churches, etc., was seen by metropolitan and some colonists alike as a moral failing. T. H. Breen, “Of Time and Nature: A Study of Persistent Values in Colonial Virginia,” in Puritans and Adventurers: Change and Persistence in Early America, ed. T. H. Breen (Oxford: Oxford University Press, 1980), 164-196; quotations from 167 and 169. 134 John C. Rainbolt, “The Absence of Towns in Seventeenth-Century Virginia,” The Journal of Southern History 35, no.3 (1969), 343-360. Some of the sources, such as William Bullock’s Virginia Impartially Valued (London: 1649), included other factors such as the structure of the colonial government, but tobacco was probably the most frequently identified source of Virginia’s various “failures.”
CHAPTER 5

Diverging Conceptions of Regional Climates in the Early Eighteenth Century

At the turn of the eighteenth century, observers in West Africa, the West Indies, and Virginia described the climate of each region in distinctly different fashion. Their differing descriptions reflected the distinct trajectories each region had taken over the preceding century in terms of its economic and social development. In his 1705 book on West Africa, *A new and accurate description of the coast of Guinea*, Willem Bosman reported that seasonal phenomena that tempered the climate had become so irregular as to effectively render the region uninhabitable to Europeans.¹ Across the Atlantic Sir Hans Sloane spent two years practicing medicine and conducting natural history investigations in Jamaica in 1687-1689. While contemporary physicians were beginning to advance a nascent medicine of hot climates in the tropical Atlantic, Sloane’s experience brought him to the conclusion that the diseases of the tropics were the same as those of temperate Europe.² Voicing his ideas in *A voyage to the islands*, published in 1707 and 1725, Sloane stood out from contemporary writers on the West Indies in that he treated the West Indies as having a temperate climate in which personal temperance guaranteed health.³ In these tropical regions, both Bosman and Sloane conceived of the relation between climate and health in terms of bodily change. Meanwhile in Virginia, the

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² Mark Harrison, *Medicine in an Age of Commerce and Empire: Britain and its Tropical Colonies, 1660-1830* (Oxford: Oxford University Press, 2010), 41, 46, 51
³ Sir Hans Sloane, *A voyage to the islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the natural history ... of the last of those islands; to which is prefix’d an introduction, wherein is an account of the inhabitants, air, waters, diseases, trade, &c. ...*, 2 vols. (London, 1707-1725).
planter, Robert Beverley, voiced the concerns of a rising creole elite, defending the climate of his native land against the aspersions of metropolitan observers.4

After the ecological transformation of the West Indian islands that attended the transition to slave-based sugar production beginning in the middle of the seventeenth century, the West Indies and West Africa came to share disease environments that were similarly deadly for English bodies previously unexposed to falciparum malaria and yellow fever. While the West Indies were marginally healthier than Africa, the two regions were essentially equally deadly to white newcomers.5 They differed, however, in their economic function and demographic character in an emerging British imperial system, and these differences affected how English observers characterized climates of the two regions. The identification of Africa as a place in which no permanent English habitation could be sustained derived from the impracticability of permanent settlement there. Three factors influenced such a judgment. First and foremost was a deadly disease environment. The historian K. G. Davies estimated that up to 60% of English personnel sent to the Royal African Company’s coastal forts between 1684 and 1732 died within the first year, and only about 10% of the total survived to return to England after their term of service had elapsed.6 There is little reason to suspect that mortality would have been any less severe earlier in the seventeenth century. Second, African political, military, and demographic strength precluded a robust English presence in Africa until the nineteenth century. During the early modern era, Europeans maintained trade factories on the African coast only at the sufferance of local leaders, to whom they paid a variety of tributes and taxes for the privilege of

conducting business. Third, in the emerging imperial system nominally directed from London, Africa’s most important commodity was labor in the form of slaves. Rather than supplying goods such as sugar or tobacco, Africa provided bodies, human “commodities” that produced other commodities in English plantation colonies on the western side of the Atlantic. A deadly place where they were outmatched by local powers, Africa came to be characterized by the English as an uninhabitable white man’s grave.

The Caribbean presented more favorable conditions for English settlement. Although its disease environment rivaled that of West Africa in its deadliness for English newcomers, it was here in islands like Barbados and Jamaica that the English oversaw a booming sugar economy that far surpassed the value of Virginian tobacco and other commodities produced in English colonies in the seventeenth century. Unlike in Africa, the English arrived in the West Indies to find the islands largely cleared of Native American populations, allowing them to establish the political dominance denied them in Africa. The slave populations that grew so precipitously in Barbados and Jamaica over the course of the seventeenth century did so in the context of English-dominated societies, in which the English developed and exercised various legal, military, and coercive powers aimed at keeping the physically and emotionally traumatized slaves in check. Even with similar disease environments and climates, then, the islands’ roles as sites of sugar production made English habitation a necessity. The English must be on hand to direct sugar production and guard the islands from rebellious slaves and competing European

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powers alike. These intertwined economic and demographic necessities influenced the English to characterize the tropical climate of the West Indies as one that was habitable to English bodies - after they had undergone bodily change.

While Virginia was far from the healthiest region in the seventeenth-century Atlantic, the English continued to migrate to the colony throughout the seventeenth century and into the eighteenth century. By 1700 the colony had “shifted decisively toward a majority of native-born inhabitants,” and had achieved white natural increase by the second decade of the eighteenth century. Although its tobacco economy was powered by slave labor, slaves made up less than a quarter of the Virginia population in 1720. The colonial economy was not a monoculture, but diversified, with farmers in the Southside and Eastern Shore producing provisions for intercolonial trade to the West Indies. Finally, Virginia was located not in the tropics, but in the temperate zone. For contemporaries climatic categories of temperate and torrid were difficult to transcend, a problem exploited by the Virginia Company in its 1609-1610 effort to differentiate Virginia from the tropics during the miscarriage of Sir Thomas Gates’s fleet. The planter and historian Robert Beverley thus illustrates how the climate of a colony in the temperate zone figured differently in culture and rhetoric because the survival of Europeans was not in doubt. For Beverley the climate was important not because it promised an early death for newcomers, but because of its consequences for colonial-metropolitan relations between striving planter elites such as himself and their metropolitan interlocutors.

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Willem Bosman and an “uninhabitable” West Africa

In Chapter 2 I described how early modern Englishmen understood the climate of West Africa through the lens of seasonality. During the sixteenth century the first English visitors to tropical Africa characterized its climate as temperate and habitable in the same ways their contemporaries represented tropical environments of the Americas and the West Indies. In Africa the English paid close attention to the succession of the seasons, documenting the regular annual variation in climatic phenomena that they believed made the tropics habitable, healthy, and cultivable. Over the course of the seventeenth century, however, the English noted a growing variability in seasonal phenomena in West Africa. They observed irregularity in the succession of the seasons and sensed wide diurnal variations in physical temperature, and they correlated it to the high disease mortality they experienced throughout the region. The connection between climate, seasonality, and morality demonstrates that the Englishmen in seventeenth-century West Africa interpreted the high disease mortality in terms of seasonal phenomena.

West Africa’s reputation as a white man’s grave was thus cemented by the early eighteenth century and exemplified in the writing of the Dutch West India Company (WIC) factor, Willem Bosman (1705). Although he was not English, Bosman’s book deserves cautious consideration in a study of English ideas of tropical climates in West Africa in the seventeenth century. It was one of only a handful of detailed narrative sources dedicated solely to Africa to be published in Europe during the seventeenth century and one of an even smaller number that appeared in English.11 Its publication in English in 1705, only two years after its initial

11 J. D. Fage, “Review: Seventeenth Century Gold Coast,” The Journal of African History 29 (1988), 326-328. I know of only two comparable books on Africa published in English during the seventeenth century: John Pory’s translation of Leo Africanus, A Geographical Historie of Africa (1600) and William Jobson’s The Golden Trade, or, A discovery of the River Gambra (1623). Among the principal seventeenth-century European sources for West Africa are Pieter de Marees, Beschryvinge ende historische verhael vant Gout koninckrijk van Gunea, anders de Gout-custe de Mina genaemt, liggende in het veel van Africa (Amsterdam: 1602); Olfert Dapper, Naukeurige Beschrijvinge de Afrikaensche Gewesten (Amsterdam: 1668); Villault, Nicolas, sieur de Bellefond, 17th cent,
appearance in Dutch, testified to demand in England for new information on West Africa as the transatlantic slave trade entered the century of its greatest growth and volume, a century in which Britain became the dominant slave trading nation.\(^1\) Not only would the book’s rarity have recommended it to English readers, but the English appreciated Bosman’s critique of the WIC as much as they were incensed at his portrayal of dissolution among employees of the English Royal African Company (RAC) on the coast.\(^2\) The book was certainly read by members of the RAC, one of whom complained in 1706 of Bosman’s “‘disingenuity [sic], partiality, and malice against the English.’”\(^3\)

My use of Bosman is not without methodological difficulties, but cautious treatment of his text is warranted. In a series of nine articles in the 1970s and 1980s, historian Albert van Dantzig undertook a systematic comparison of the Dutch original and the English translation of Bosman’s text. van Dantzig found the English version rife with inaccuracies, apparently introduced by a translator with insufficient knowledge of Dutch, and opined that “there is scarcely a page of the English translation which does not contain some misinterpretation of the original Dutch text.”\(^4\) He did a great service for Anglophone historians who lack knowledge of Dutch by publishing side-by-side comparisons of the two texts that highlight problematic

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\(^3\) van Dantzig, “Willem Bosman’s New and Accurate Description,” 105; fn.9, 108. As late as 1744, William Smith, a surveyor who measured RAC holdings in West Africa, was still peeved at Bosman’s description of the English as inveterate drunkards. The English did drink, he admitted, but at least they drank their spirits in a punch mixed with lime juice, water, brandy and sugar. Smith thought Bosman was a hypocrite, for the Dutch “seldom adulterate their Rum or Brandy … but drink it plain to Excess.” William Smith, *A New Voyage to Guinea* (London: 1744), 128.

portions of the English edition. Yet in my own consultation of van Dantzig’s corrections, I find the English text not substantively different from the Dutch original in terms of the environmental and medical matters with which this dissertation is concerned. Whatever his inadequacies as a translator, the unnamed Englishman who rendered the Dutch text into English did little to alter either Bosman’s description of the environment or his characterization of English who lived and died in Guinea.

Bosman carried the concept of seasonality to its logical, pessimistic limit, prefiguring the debate on acclimatization that began in the 1780s as commentators throughout Europe questioned whether it was possible to sustain permanent European populations in the tropics. During his fourteen years of service on the Guinea coast during the late seventeenth century, Bosman witnessed the seasons become less and less dependable, so that by the turn of the eighteenth century it was no longer possible to predict when they would occur. Without regular, “certeyne and ordinarie” seasons, he believed Africa had become inescapably deadly for the vast majority of Europeans who ventured there. While a few might survive the process of “seasoning,” most would perish, leaving a miniscule population of lucky survivors as the only Europeans who had truly “adapted” to the climate. Bosman challenged the ubiquitous notion that personal temperance in the non-naturals could protect against the diseases of hot climates. Although temperance remained important as a prophylactic practice, experience taught him that not even ironclad compliance with a temperate regimen could prevent disease or death among

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Europeans in Africa. Bosman thus carried the concept of seasonality to its logical, pessimistic limit. In his writing we see that the operation of the seasons that contemporaries believed made tropical Africa paradoxically made it almost inescapably deadly.

In Bosman’s reading, characteristics of the body took precedence over morality in determining whether Europeans could adapt to the climate of West Africa. In this sense Bosman was an early exemplar of eighteenth-century writers for whom Europeans had no effective way to adapt to the West African climate; writers that followed him argued that Europeans could not live in Africa because their bodies would not change to adjust to life there. Among the English, for example, the slave ship surgeon James Houstoun concluded in 1725 that avoiding the seasoning that took the lives of Royal African Company personnel on the coast was impossible. Although he described it as “nothing but a fever” caused by the change of climate from Britain to West Africa, the disease was “epidemically fatal.” Afflicting “all Europeans that come under the Torrid Zone,” this fever inevitably struck Britons in Africa. In 1734 the surgeon John Atkins contemplated carving out a safe space for sailors aboard their ships, but their own bodily processes undermined his intentions. Atkins complained that when sailors ventured ashore, they ate whatever they could get their hands on, “without any Enquiry how proper or wholesome for Food” it might be. Combined with the heat of the climate, their intemperate eating caused them to sicken and die. A surgeon might gain some measure of control over the sailors’ diet when they remained aboard ship, he noted, but even here it was impossible to keep them healthy in the hot climate. The heat facilitated the spread of dangerous “effluvia” that emanated from the sailors’ breath and sweat, befouling their living quarters with bodily emissions and creating aboard ship

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18 James Houstoun, *Some new and accurate observations geographical, natural and historical ... of the coast of Guinea* (London: 1725), 56.
19 Ibid.
the same conditions under which epidemics arose in Europe “in Summer-Time, when Stink and Putrefaction most abounds.”

For writers such as Houstoun and Atkins, English bodies would not change or otherwise adapt to the heat of the African climate, thereby precluding settlement there.

Willem Bosman first traveled to Guinea in 1688 in the service of the Dutch West India Company. Just sixteen years old when he arrived, he spent the next fourteen years in West Africa, climbing the ladder of the WIC organization until he was appointed Chief Merchant (essentially the second-in-command of all WIC employees based in Africa) in 1698. By 1701 he had become embroiled in “personal rivalries and petty quarrels” with other WIC employees on the coast and was removed from service. The following year he returned to Holland in “semi-disgrace” and set out to defend himself in print.

With his character called into question by the dispute with the WIC, Willem Bosman called upon the testimony of his own body to legitimate his account of life on the coast. He was far better suited to write an “accurate” account of life on the Guinea coast than his contemporaries because he had survived the tropical heats, rains, storms, and sicknesses for an astounding fourteen years. That he lasted so long is remarkable, especially considering he began his long tenure in Africa when he was only sixteen years old, an age at which Europeans are particularly susceptible to yellow fever. He thus began the book by laying out his bona fides to provide readers “an Opportunity to know the Qualifications of his Author.”

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21 Ibid., 4.
23 Ibid. van Dantzig is unsure of the exact nature of the dispute between Bosman and the WIC. In addition to his disputes with employees, Bosman was tainted by his association with the disgraced Director-General at Elmina, Jan Van Sevenhuysen, who was sacked for mismanagement in 1701. Bosman testified in the WIC’s investigation of Van Sevenhuysen but does not appear to have been the subject of an inquiry himself.
with the WIC had given him intimate knowledge of Guinea, he boasted, and there were “few or scarce places upon the Coast, where I have not stay’d for some time, and can now speak of with experience.”

Bosman argued that his experience – and thus his authority to speak on African matters – derived from changes that his body had undergone during his time in Africa. For example, he criticized other writers for exaggerating the heat of the climate for dramatic effect, “for it is become too customary for Men in their Relations rather to add than to diminish” their descriptions of foreign lands. The Gold Coast was not as hellishly hot as some would suggest; although it was located in 5 degrees north latitude, “from which you may easily infer, that we live in a scorching Air,” the climate was in fact “not so bad as is reported.”

“Several” lucky men who “have lived some Years here with me” could vouch for his contention that “he that hath lived here ten Years, and consequently his Body become opener [my emphasis] than in Holland, will not be apt to complain very much of the Heat.” Contemporary views of the body held it to be permeable to air. It maintained health by a process called transpiration, in which bad matter left the body via the skin. Authors such Thomas Aubrey attributed illness to improper transpiration that resulted from the change of climates. Those in cold climates had narrow pores, while those in hotter climates had broader pores. The latter facilitated sweating and the expulsion of putrid matter from the body. When Europeans came to the tropics, they often became sick because the heat and their intemperance built up impurities in the body but their pores remained narrowed. Unable to exit their bodies, the impurities caused them to sicken and

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26 Ibid., f.A2v.
27 Ibid., 104.
28 Ibid.
29 Ibid., 105.
30 On transpiration in an African source, see Thomas Aubrey, The sea-Surgeon, or the Guineaman’s vade mecum (London, 1729), 22-25. For the West Indies, see Thomas Trapham, A Discourse of the State of Health in the Island of Jamaica (London: 1679), chs. 7 & 10; Sloane, voyage, vol. 1, xxx, liv.
die. Here Bosman alluded to this theory of transpiration by remarking that over time his body had become “opener” than it was in Holland. He believed his body had been changed by his long residence in Africa, and only those who had undergone the same bodily changes could properly describe the heat. Finally, his statement no doubt can be explained by the fact that he would almost certainly have suffered malaria and possibly yellow fever during his tenure in Africa. Having survived these common killers of newcomers, he would have gained some measure of immunity to further bouts of malaria and lifelong immunity to yellow fever. Bosman's ability to withstand further bouts of these diseases stood in sharp contrast to the newcomers he undoubtedly would have seen arrive, sicken, and die in rapid succession.

He drew on the evidence of European bodies – those of veterans like himself and those of the many unfortunate newcomers who perished so quickly on the Guinea coast - to explain why so many Europeans became sick and died in Africa. Bosman cast a bleak forecast for the future of European presence in Africa, for he argued there was virtually no hope of Europeans ever successfully adapting to the African climate. Newcomers were often driven by physical discomfort to behave in ways that made them sicken and die. Europeans in Africa became ill most commonly because of the quick diurnal change from hot days to cool evenings. Bosman believed such a “sudden change” in physical temperature caused “several contrary Effects” in the body, “especially in those who are not accustomed to bear more Heat than Cold [my emphasis].”

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32 Bosman, A new and accurate description, 105.
that the bodies of newcomers effectively betrayed them. Impatient of the heat and “too hastily throwing off their Cloaths to cool too fast,” they became sick.\footnote{Ibid.}

Still other environmental conditions endangered Europeans no matter how long they had been in Africa. Deadly vapors formed in the mountains surrounding the Gold Coast during the “ill Season” of April through September. Each night the mountain valleys filled with a “thick, stinking and sulphurous Damp or Mist,” and each morning the Europeans stationed there awoke to find the fog had stolen across the land, covering the earth and enveloping the human inhabitants, so that “it is almost impossible to escape the Infection while we are fasting.”\footnote{Ibid. For Thomas Aubrey, the author of a medical manual for use in the slave trade, the nightly fogs were so dangerous that “many People drop down Dead suddenly only by exposing themselves to the said Fogs.” Aubrey, \textit{The Sea-Surgeon}, 23.} Here Bosman described seasonal phenomena that contributed to disease; the same nights that cooled the earth saw the formation of dangerous miasmas. Meanwhile the “pernicious Custom[s]” of the local Africans made the fogs even more dangerous. Bosman complained that the Africans further befouled the air by “laying their Fish for five or six Days to putrify before they eat it, and their easing their Bodies round their Houses, and all over their Towns.”\footnote{Bosman, \textit{A new and accurate description}, 105. At the Gold Coast in 1602, Pieter De Marees wrote that it was necessary to eat fish as soon as possible after catching them because the “heat of the Country” would rot them within half a day. At Cape Lopez the locals smoked their fish. Pieter De Marees, \textit{Description and Historical Account of the Gold Kingdom of Guinea} (1602), trans. Albert van Dantzig and Adam Jones (New York: Oxford University Press, 1987), 125, 240. According to Jean Barbot, the “Foules and Jaloffes” preserved fish by burying them in sand for a few days, then exposing them to the sun, and finally hanging them in their houses; the odors produced during this process were not pleasant: ”since the sand is not a very effective preservative, the extreme heat makes the fish go off, and they give out a stench so strong as to be unbearable to anyone except these people, especially at the height of a summer day. The sight of so many little fish half rotten and scattered everywhere on the sands makes one quite queasy.” P. E. H. Hair, Adam Jones, and Robin Law, eds., \textit{Barbot on Guinea: The Writings of Jean Barbot on West Africa 1678-1712}, vol.1, Hakluyt Society 2d ser., no.175 (London: Hakluyt Society, 1992) [hereafter Barbot 1688], 100-101. According to the historians David Gamble and P. E. H. Hair, the Nyoominka people of the River Gambia traded fresh and dried fish upriver at the time of Richard Jobson’s visit in the 1620s, although Jobson himself did not mention them. In addition, a native Cape Verdean trader named Francisco de Lemos Coelho, who traded between Senegal and Sierra Leone from the late 1640s to the early 1660s, described how people living on the Rio de Felam (a tributary of the Gambia) dried mullet in the sun and traded it up the Gambia. David P. Gamble and P. E. H. Hair, eds., \textit{The Discovery of the River Gambra} (1623) (London: Hakluyt Society, 1999), 69, 291-292.}

The mountain fogs combined with the putrid emissions from rotting fish and human
excrement to create such an “odious Mixture of noysome Stenches” that it was “next to impossibility, not only for new Comers, but those who have long continued here, to preserve themselves intirely from its Malign Effects.”\textsuperscript{36} In this case long residence in Africa offered no protection from disease; the bodies of Europeans with long experience in the country were indistinguishable from those of newcomers because both fell prey to the miasmas swirling about the African towns. Both sets of Europeans differed from the natives, who were “born in this Air, and bred up in the Stench, [thus] are not liable to be infected” with diseases arising from them.\textsuperscript{37} To link disease to such manifestations of air quality was to make avoiding the diseases characteristic of the Gold Coast virtually impossible.

Europeans who survived in Africa for as long as Bosman did found themselves changed in other ways. He found local medicinal plants were more effective than European remedies in curing some illnesses among Europeans on the coast. His judgment grew from the ancient belief that the diseases of a given country were best cured by simples native to that country.\textsuperscript{38} In Africa, where the Europeans’ “Constitution is in some measure changed here by the Climate,” it made sense that local drugs might work better than European remedies.\textsuperscript{39} Bosman had also come to prefer some African foods over European ones. One such was coconut oil. While it could be “a little nauseous” to newcomers, he wrote, “for him that is used to it” it made a satisfying and nutritious sauce. Bosman had developed a taste for it strong enough that he often preferred it to olive oil.\textsuperscript{40}

\textsuperscript{36} Ibid., 105-106.
\textsuperscript{37} Ibid., 108.
\textsuperscript{39} Ibid., 225.
\textsuperscript{40} Ibid., 285.
With his long experience in Africa, Bosman concluded that the climate was becoming less regular and thus less temperate. If the presence of regular seasons made an environment habitable, as outlined in Chapter 2, then irregular seasons made it less habitable. For Bosman, such irregular seasons made it virtually impossible for Europeans to adapt to the place. Over the previous decade he had observed a “great Alteration of the Weather” and of the seasons of winter and summer. The time of year at which the seasons were reckoned officially to begin no longer corresponded to when they actually arrived. Bosman divided the year into summer and winter seasons, with summer “accounted” to begin in September and winter to begin in March. The winter comprised two months each of rainy, misty, and windy weather. But the ten years that preceded the publication of his account, the actual sequence of the seasons had become disrupted. The summer, misty, and rainy seasons now varied by as much as a month from year to year. They had become “so confused and uncertain, that it is impossible to make any Calculation of them,” and Europeans on the coast had “in a manner left off reckoning them.” The seasons had not always been so variable. As Bosman remembered, “when I first came to the Coast, Summer and Winter succeeded alternately, exactly at a certain time.” This lack of certainty about the seasons suggested Africa was less than temperate and impacted the health of Europeans living there. São Thomé was a case in point. Located directly underneath the

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41 Ibid., 111.
42 Bosman’s conception of climate change in West Africa most likely did not correspond to actual change. While his time on the African coast corresponded to some of the coldest decades (1680-1730) of the Little Ice Age, the historical climatologist Jean Grove argues the effect of the Little Ice Age was most pronounced at higher latitudes and higher altitudes. I assume it would probably not have generated obvious change in lowland tropical Africa. Jean M. Grove, The Little Ice Age (London: Routledge, 1990), 1. While some evidence exists that “exceptionally intense warm phases” of the El Niño-Southern Oscillation (ENSO) cycle can block West Africa’s monsoon rains, the region appears to be largely unaffected by ENSO phenomena. Glenn R. McGregor and Simon Nieuwolt, Tropical Climatology, 2d ed. (Chichester: John Wiley & Sons, 1998), 108.
43 Ibid., 111.
44 Ibid.
45 Although he did note at the end of this paragraph that winter was still about six months long, which is to say he might have been soft-pedaling this point.
equator, it was “intollerably hot” year-round. Like the Gold Coast, it had hills and valleys that filled with a thick, foul mist. Yet in São Thomé, the vapors were always present, both in the cool night when they normally formed and “even in the hottest time of the Day.” Rather than burning off the vapors, Bosman theorized, the sun’s rays instead “condense and inflame the [vaporous] Air, and consequently render it very unwholesome.” In São Thomé the diurnal phenomena of fogs never disappeared, even in the presence of the intolerably hot sun. In this sense the island effectively lacked the short diurnal “seasons” because the fogs were omnipresent. Continually beset with sickly miasmas, São Thomé provided little assurance for those who hoped to escape sickness.

While he believed the seasons had become less predictable since his arrival in Guinea, Bosman also thought the weather had become less severe. Historically the coast had been subject to powerful storms. Bosman had read “in some old Papers of the Director Volkenburg” of a powerful tempest at Elmina in 1651 that produced “several strange Accidents.” The storm had mysteriously fused gold and silver without burning the bags in which the metals were stored, and it had broken swords that remained ensconced in their scabbards. He himself had experienced storms of terrifying fury, such as a lightning storm in Boutry in 1691 that downed “Hundreds or rather Thouseands” of trees. Yet while he and his comrades had been “formerly accustomed” to such violent weather, it “so seldom happens at present, that in the space of three or four Years we have not observed any thing extraordinary of that Nature to happen.”

46 Bosman, A new and accurate description, 414.
47 Ibid, 113. Bosman must have referred to an earlier director-general at Elmina. Context suggests the papers were stored at the fort in humid conditions, for by the time he read them they were “Worm-eaten” and difficult to read. Ibid.
48 Ibid.
49 Ibid., 114.
Bosman believed physical temperatures were also less severe in West Africa by the eighteenth century, although not so mild that the change from day to night was not accompanied by discomfort.50 Yet even with milder weather phenomena, diurnal seasonal change still threatened to cause illness, according to Bosman. The place used to be “so excessive in Summer-time, that we seemed to have Dog-days as well as in Europe.” Likewise the nights were so cold that “we were persuaded it froze.”51 Bosman was dubious at the claims of WIC clerks that the cold had frozen the ink in their inkwells, “the Truth of which I will not determine, but only hand it to you as I received it.”52 But while the temperature was more moderate when he wrote, the climate still featured drastic swings between hot and cold: “We have felt Nights so cold about September, that they made us shake.” Meanwhile the milder winters were “indeed cold,” and actually longer than they used to be, sometimes stretching to two-thirds of the year from their customary half-year.53 Drastic swings of temperature were likely to bring on illness, as was the irregularity of the seasons.

Bosman was dubious about the prospect of all Europeans warding off disease in Africa through personal temperance. He challenged those “who would fain perswade us that our Mens Sickness here is owing to their own Mismanagement,” arguing instead that “Experience convinces us of their Mistake, for we daily see the most temperate and regular Men seized with dangerous and too often Mortal Diseases.”54 His loss of faith in temperance was strikingly pessimistic, for writers had long advocated temperance as an important means to fight off disease in Africa. His mistrust of temperance did not mean that he approved of drunkenness, however.

50 He does not appear to have taken instrumental measurements of temperature.
51 Ibid. Bosman seems to be joking a bit here, implying that the Europeans had convinced themselves that it had frozen overnight.
52 Ibid., 115.
53 Ibid.
54 Ibid., 106.
Bosman singled out the English for a particularly reckless intemperance that he believed contributed to Africa’s reputation as a white man’s grave in Britain. The continual deaths suffered by the English contingent on the Gold Coast stemmed largely from their drinking. They downed oceans of punch made of brandy, water, lime juice, and sugar, “altogether an unwholesome mixture.” “‘Tis incredible how many are consumed by this damnable Liquor,” Bosman recounted, so that “for all the time I was upon the Coast … [English] Factors innumerable died yearly” from it.\(^55\) But he saw little hope for the health of the English in Africa to improve because they were so committed to what Bosman considered their culture of heavy drinking: “So that if the State of Health in Guinea be computed by the number of the English which dye here, certainly this Country must have a much more unhealthful Name in England, than with us; and to tell an English man that their Illness proceeds from their Debauches in this Liquor, would signifie just as much as to inform them that the excessive eating of Flesh (of which they are such great lovers) is very prejudicial to Human Bodies.”\(^56\)

Willem Bosman’s skepticism about the ability of Europeans to avoid sickness and death in Africa grew from a combination of seasonal and moral phenomena. His perception that the seasons had become highly irregular implied that disease would continue to ravage European visitors. Combined with the futility of altering the drinking habits of the English and others on the coast, he reasoned, the irregular seasons spelled doom for the vast majority who ventured traded to Africa.

\(^55\) Ibid., 49.
\(^56\) Ibid., 50.


Sir Hans Sloane and a Habitable West Indies

Unlike in Africa, where Bosman and his successors argued that English bodies could not adjust to hot climates, from the late seventeenth century writers on the West Indies made claims for English habitation based on the possibility of bodily change in a hot climate that affected virtually every aspect of life. In his 1679 book, A Discourse of the State of Health in the Island of Jamaica, the physician Thomas Trapham had described how the hot climate of the Caribbean contributed to an accelerated “activity of Nature” in the body, as a result of which “a sound health [is] oft precipitated into Distemper” and death.\(^\text{57}\) Trapham advised strict temperance in the non-naturals lest an English resident of the West Indies be betrayed by the reaction of his own body to immoderate intake of food and drink, “for Nature is not so yare [active or brisk] with her delinquents in the cold northern Tracts as between the Tropicks, where all motions being necessarily more quick, the punishment of all Intemperances afford less time for Repentance.”\(^\text{58}\) When Henry Warren wrote in 1740 on an “epidemic fever” that had raged in Barbados since 1733, he pointed out that it struck newcomers and sailors, whose blood was less “adust [burnt] than that of the Natives; or of those, whose Constitutions had been for many Years fitted and habituated to the Climate.”\(^\text{59}\) Warren’s reference to “Natives” of the island and others “habituated” to the climate signified English residents and visitors whose bodies, he believed, had changed in response to life in the tropics. In his judgment such people, most of whom had been born in temperate Europe, had in fact become “Natives of the Torrid Zone.”\(^\text{60}\) In 1766 the physician William Hillary described how the unremitting heat of the West Indies relaxed the “animal Fibres” of the body, “attenuated” the blood, and putrified bodily fluids, leading to

\(^{57}\) Trapham, Discourse, 4.
\(^{58}\) Ibid., 51.
\(^{60}\) Ibid., 13.
dangerous fevers. In addition, some of the English inhabitants of the island unwittingly harmed the health of future generations by tightly swaddling infants in the hot climate. Hillary opposed this practice because it left the bodies of the children “so relaxed and weakened … as to render them weak and sickly a great part of … their Life-time after.” As with the case of Henry Warren’s discussion of “Natives of the Torrid Zone,” implicit in Hillary’s judgment of swaddling babies was permanent English settlement on the island, in which English men and women produced English children, natives of Barbados. These physicians saw in the small “native” English populations of the islands evidence that European bodies changed in the heat and become acclimatized or adapted to life in the tropics.

Sir Hans Sloane was perhaps the warmest medical advocate for English habitation in the West Indies during the late seventeenth and eighteenth centuries. Yet in an intellectual context in which physicians relied upon bodily change to facilitate English habitation in the region, Sloane was an outlier. In his famous travelogue-cum-natural history, A voyage to the islands, published in 1707 and 1725, Sloane objected to the emerging medicine of hot climates. He opposed the notion of bodily change among the English in hot climates, rejected the notion of seasoning, and continued to treat diseases in the tropics as if they were diseases of the temperate zone. For Sloane, one maintained health in the hot climate of the West Indies by practicing temperance, just as right-living people did in England. Out of step with the prevailing direction of medical

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61 William Hillary, Observations on the changes of the air and the concomitant epidemical diseases, in the island of Barbadoes (London: 1766), vii.
62 Ibid., viii.
63 While the islands were indeed deadly for British newcomers, there were births among them. See Richard S. Dunn, Sugar and Slaves: The Rise of the Planter Class in the English West Indies, 1624-1713 (University of North Carolina Press, 1972), 301; Trevor Burnard, “A Failed Settler Society: Marriage and Demographic Failure in Early Jamaica,” Journal of Social History 28 (1994), 66, 70; idem, “‘The Countrie Continues Sickly’,” 59-61.
64 Sir Hans Sloane, A voyage to the islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the natural history ... of the last of those islands; to which is prefix’d an introduction, wherein is an account of the inhabitants, air, waters, diseases, trade, &c. ..., 2 vols. (London, 1707-1725).
thought in the Caribbean, Sloane’s work can be seen as hearkening back to earlier, sixteenth-century notions of the tropics as a “temperate” zone that required little action to adapt.

A leading scientific figure from the late seventeenth century through his death in 1753, Sloane would go on to become King’s Physician in Ordinary to king George II, president of the Royal Society, and a noted collector of books, manuscripts, and natural history objects who bequeathed his collection to form part of the core holdings of the British Museum. In 1687 he traveled to Jamaica in the entourage of the newly appointed colonial governor, Christopher Monck, second duke of Albemarle. In two busy years on the island, Sloane served as Albemarle’s personal physician while gathering the physical objects, local knowledge, and personal observations of Jamaican nature and culture that constituted the basis of *A voyage to the islands*.

At a time when English readers of Willem Bosman learned that tropical Africa was becoming effectively uninhabitable to Europeans, Sloane found evidence in the workings of disease and the seasons in Jamaica to argue that the tropics were in fact temperate and that the entire world was habitable to Europeans. And while West Indian colonists and physicians were developing notions of the tropics as a distinct disease environment with its own characteristic illnesses, Sloane’s experience treating disease in Jamaica convinced him that the diseases of the tropics were exactly the same as the diseases of the temperate zone. Furthermore he rejected the idea of seasoning, a key medical concept that persisted into the nineteenth century. Because early modern environmental and medical theory held disease to vary by latitude and that movement from one climate to the next provoked characteristic illnesses in travelers, Sloane’s

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rejection of distinct diseases of hot climates and of seasoning in effect denied any meaningful climatic difference between the tropics and the temperate regions of the earth. His findings convinced him to proclaim the entire world to be temperate and habitable. Finally, Sloane conveyed a distinct local conception of the island’s environment rooted in seasonal phenomena. He described how Jamaicans referred to discrete rain showers as “seasons,” weather events that made the earth cultivable regardless of the time of year in which they happened to fall. In Sloane, then, can be seen a reflection of colonial culture articulated via a local conception of seasonality. I have argued throughout this dissertation that various manipulations of the concept of seasonality were central to arguments for a habitable tropics; the Jamaicans’ reference to rains that occurred at any time of the year as life-giving “seasons” demonstrates the continuing importance of the link between seasonality and habitability for English conceptions of the tropics in the late seventeenth century.

For Sloane, the bodies and morals of the colonists evinced the essential temperateness of the West Indian tropics. His observations of diseases that struck the English in the tropics and what he identified as the continuing efficacy of European drugs in hot climates convinced him that, in important ways, the tropical climate was similar to temperate climates to the northward and southward. Of seasoning he would grudgingly admit only that Europeans sometimes suffered a rash upon changing climates. The rash itself was benign, he believed, evidence that the body was conforming to its new climate rather than suffering from it. If the diseases of the temperate zone were the same as those of the torrid zone, so too were the causes of disease: Sloane emphasized the roots of disease in both regions lay in the intemperance of the sick, rather than the intemperateness of the climate.
By the late seventeenth century, both the climate and English residents of the West Indies had poor reputations among metropolitan Britons. They saw the climate as profoundly different from that of the temperate zone, while they considered the colonists immoral. Criticism of the West Indian climate appeared in a variety of metropolitan publications in the 1690s, from disputes over taxation and trade policy between Britain and the West Indies to material published solely for pleasure reading. Common to such writings, whatever the subject, were attacks on the colonies and their inhabitants that combined climatic and moral criticism. In one late-century pamphlet volley with Barbadian planter Sir Edward Littleton, Simon Clement contrasted the “Luxuriant way of Living” the great West Indian planters with the hard lot of the sailors, “sick of Calentures, Belly-achs, Agues, or sometimes more Contagious Distempers in those Parts,” who toiled to bring sugar to England. In 1698 the popular writer Ned Ward described Jamaica as “Sickly as an Hospital, as Dangerous as the Plague, as Hot as Hell, and as Wicked as the Devil.”

As had many writers before him, Hans Sloane declared the Jamaican climate temperate because of its seasonal characteristics. It had a winter and summer, and because of its latitude, the length of its days varied only a little over the course of the year. In a phrase reminiscent of

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68 Simon Clement, *A Discourse of the duties on merchandize, more particularly of that on sugars* (London: 1695), 11, 16. On calentures as a disease specific to hot climates, see Chapter 4, fn.45, above.


George Best, Sloane described how “the heat of the day is qualified by the length of the nights, which here is about twelve hours long all the year round.”\textsuperscript{71} Occasional rains and breezes from both the sea and land helped cool the island from its otherwise “extraordinary” heat. Topography influenced local climatic conditions, because the island’s mountains and highlands were cooler than the valleys and savannahs. Sloane compared the Jamaican climate favorably to some place in Europe, declaring that “I never found more heat here than as in some Valleys near Montpelier where the situation of the Hills in their neighbourhood occasioned excessive heat.”\textsuperscript{72} Thus despite its location in the torrid zone, Sloane argued that the island was temperate: “Although this place be situated in the Torrid Zone, yet the Air of it may very well be affirm’d temperate.”\textsuperscript{73}

Sloane’s conviction that the torrid zone was temperate was informed by his observation of the workings of medicinal plants. During the sixteenth and seventeenth centuries, many Europeans believed the simples (drugs composed of a single herbal, vegetable, floral, or other plant ingredient) of a given region or country were best suited to cure diseases of that place.\textsuperscript{74} While European simples often became useless elsewhere, specimens from outside Europe flourished when transplanted to gardens in Chelsea, Leyden, and Uppsala, although the change from “their native Soil, and a warmer Sun,” sometimes altered characteristics such as the color of a plant’s flowers.\textsuperscript{75} Yet while many European simples failed in Jamaica, some did retain their efficacy there, and it was precisely their continuing potency that helped to convince Sloane that

\begin{footnotesize}
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\item[71] Sloane, \textit{voyage}, vol. 1, viii.
\item[72] Ibid., viii-ix. Sloane completed part of his medical studies at Montpelier.
\item[73] Ibid., viii.
\end{itemize}
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the diseases of Jamaica were the same as those of temperate Europe. Sloane treated diseases in Jamaica in the same manner he would have treated them in England and found his cures effective. Prior to departing for Jamaica, he wrote, “I was told that the Diseases of this place were all different from what they are in Europe, and [are] to be treated in a differing Method.” Sloane appears to have doubted such a claim from the very beginning of his time in the tropics, for although he was “very uneasie, lest by ignorance I should kill instead of curing,” he nevertheless persisted in using European therapies on his patients. He was relieved to find that the cures he “had known effectual in Europe … I found to have great success on the Diseases” of Jamaica.76

During his stay he treated several people with an “epidemic fever” that left its sufferers very weak after only a few days’ illness. “At first” Sloane had believed such weakness would be common “to all Diseases here, by reason of the hot Climate.” With more experience he came to see “all other Diseases accompanied with the same Symptoms as if in Europe.” Sloane reasoned that the weakness accompanying this fever marked it off as a distinct disease in its own right. The weakness was likely “peculiar to this Fever” he reasoned, “and such uncommon Symptoms now and then attend Epidemic Diseases every where.”77

The similarity of its diseases to those of Europe and the efficacy of European drugs in Jamaica demonstrated to Sloane that the entire world was temperate and habitable. In almost all cases, “any Person who has seen many sick People, will find the same Diseases here as in Europe, and the same Method of Cure … For my own part I never saw a Disease in Jamaica, which I had not met with in Europe, and that in People who had never been in either Indies,

76 Ibid., xc.
77 Ibid., xcvii.
excepting one or two.”78 Because its diseases and their cures were the same as those of Europe, in effect Sloane argued that the torrid zone was no different from the temperate zone, whatever the particularities or excesses of its climate.

The tropical climate did affect the body, Sloane believed, but did not change it permanently. To the extent that it contributed to illness, it did so in the “seasonal” change from hot days to cold nights. Heated for so long during the day, the air remained hot until well into the night. Ultimately, however, it cooled and “grows towards morning very cold.” Such a change “must of necessity check insensible Transpiration, and so may be the cause of many Diseases.”

In contemporary medical theory the body was permeable via the skin. Changing temperatures altered the diameter of the pores; a body moving from hot to cold quickly experienced a virtual obstruction of the pores. With no way to expel bad matter, the body fell sick.79

Sloane also rejected the notion of seasoning, that characteristic disease suffered by many who ventured from temperate Europe into the tropics. As he noted, contemporaries believed that “every New-comer before they be accustomed to the Climate and Constitution of the Air in Jamaica, are said to have an acute Disease, which is thought to be very dangerous, and that after this is over, their Bodies are made more fit to live there, with less hazard than before; and this is not only thought so in that Island [Jamaica], but in Guinea, and all over the remote Eastern parts of the World.”80 Upon setting sail for Jamaica, some of Sloane’s fellow passengers referred to seasoning when they asked him what medicines they should take “to prevent their being Sick at Sea, and receiving injury thereby, and by the change of the several Climates we were to pass through [my emphasis].”81 A conservative in terms of therapeutics (he also disapproved of

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78 Ibid., xc.
79 Ibid., xxx.
80 Ibid., xcix.
81 Ibid., i.
bleeding), Sloane thought it ill-advised for them to take anything unless they were actually sick. But just as they had expected, the passengers who accompanied him to Jamaica came down with a rash along the spine, an uncomfortable outbreak of pustules, “when we came into hot Weather.” Sloane did not judge the rash to be serious; rather it appeared to him a sign that the climate was helping to cleanse the body. So beneficial did he judge this condition that he tried to advance it rather than cure it: “I thought this Distemper was the greatest advantage … it being a great Purger of the Blood …, and therefore … I usually gave something to forward the eruptions.” Thus for Sloane changing climates was not dangerous. He reasoned that “the alteration of the Climate” stimulated the outbreak “by putting the Blood into a brisker motion, and perhaps putting into it some fiery Particles Nature threw out this way.”

Arriving at Jamaica, he treated victims of an “epidemic fever” that some on the island considered to be “what is call’d the Seasoning.” Sloane disagreed. It was clearly not seasoning, he reasoned, because it struck both newcomers and people long resident in Jamaica. Many of the newcomers who had arrived with him were as yet unaffected by any disease, he noted, giving the lie to notions of diseases that struck all new arrivals. “If there be any such thing as Seasoning,” Sloane thought, it could only have been the rash that struck passengers on the ship and continued to trouble them on the island. Change of climates caused the rash, “the alteration from cold to heat being by degrees done by the way, and that Symptom appearing on increase of the heat.” By judging this minor rash to result from the change of climates “by degrees,” Sloane negated the possibility of a drastic sickness associated with changing climates. A drastic and dangerous

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82 Ibid., xciv.
83 Ibid.
84 Ibid., cxiv-xcv.
85 Ibid., cxviii.
86 Ibid. Few longtime residents of Jamaica had the rash.
87 Ibid.
seasoning arising from the change of climates was not possible because of the length of time it took to arrive in the Indies “by degrees.”

Sloane’s observation that diseases of the tropics could be treated with European drugs and his contention that seasoning was merely a harmless (and ultimately beneficial) rash suggested that medicine could be practiced in the tropics in the same way it was practiced in England. If this were the case, then the tropics were in fact temperate. Sloane published dozens of brief “case studies” of patients he had treated while in Jamaica, describing their symptoms and the outcomes of his diagnoses and treatments. Throughout the case studies, Sloane treated personal temperance – especially in drink – as the single most important way to maintain health in both Jamaica and England. Diseases that stemmed from intemperance in drink worked in the same way in the torrid zone as they did elsewhere. For example, a Colonel Walker, “upon drinking,” was wracked with “Rheumatic and Gouty” pains. Sloane cured him with bleeding and opiates. Yet Walker returned to England, where “he fell into a Relapse, with the same Symptoms,” and later died of consumption. In his discussion of Walker’s illness, Sloane equated the disease environments of England and the West Indies. Walker’s disease was exacerbated by drink, if not caused by it, and it struck him in both the torrid zone and temperate Britain. It could therefore not be related to the climate.

No man was a better poster child for the dangers of intemperance than Christophe Monck, second duke of Albemarle and governor of Jamaica. In England, Albemarle was known for his dissolution. Prior to his appointment as governor of Jamaica, courtiers gossiped

88 Ibid.
89 Ibid., xciv.
about his prospects in the tropical heat. In April 1686 Sir Benjamin Bathurst of the Royal Africa Company wrote to Hender Molesworth, lieutenant governor of Jamaica, informing him of Albemarle’s appointment. It was rumored that the duke had lobbied hard for the appointment as a means to climb out of debt, but Bathurst doubted the wisdom of Albemarle’s living in the tropics. “Most people wonder at his pretending to [the post],” Bathurst gushed, “& do Believe y’ hot Country will not sute wth his way of Liveing, unlesse he alters It.” Albemarle’s dissolute lifestyle was well known, and Bathurst’s comment indicates that contemporaries foresaw trouble for an intemperate man like him in the hot climate of Jamaica.

Albemarle’s medical troubles began before leaving for Jamaica. In general the duke spent his nights, Sloane wrote, “being merry wt his friends whence he eat very little … [and] drinking great draughts of Lambeth ale,” a practice that had secured him what Sloane termed a “habitual Jaundice if I may call it Soe.” Referring to the duke’s jaundice as “habitual” was no accident, for Sloane placed the responsibility for it squarely upon the duke’s lifestyle. Thirty-three years old in 1686, Albemarle practiced no regimen, “loves a Sedentary life & hates exercise, as well as physick,” his physician lamented. Prior to departing for Jamaica, the duke was attended by several physicians who prescribed “temperance & keeping good houres,” warning that “the voyage he intended for Jamaica it being a very hott place could not in probability agree with his body.”

During the passage to Jamaica in the fall of 1687, Sloane worked to repair the damage done by Albemarle’s appetites. Through a course of bleedings (an extraordinary measure for Sloane, who had a professional aversion to the practice) and medicines, he managed to keep the

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91 Sir Benjamin Bathurst to Hender Molesworth, 25 April 1686, British Library, Manuscript Reading Room, Loan MSS 57/83.
93 Ibid.
duke in reasonable health during the voyage. Arriving at Jamaica Sloane discontinued the bleedings and the duke continued in good health for several months, despite his carousing. With the election of a new assembly in 1688, however, the duke found “too much company” with whom to drink among the assembled planters and came down with painful welts on one leg and a swelling in the other. Sloane feared the combination of bleeding and the duke’s intemperance had given him dropsy. Rejecting Sloane’s warning, Albemarle argued instead that his swollen leg was a form of seasoning to the climate. Appealing to local medical wisdom, he “made believe by some about him [my emphasis] that this Swelling was not at all of that nature but … that it was customary on every distemper here to be troubl’d wt such leggs for a while which afterwards prov’d beneficiall rather than otherwise.” Sloane clearly opposed the advice of those “about” the duke and did not believe he would emerge from his bout of swelling better than he had entered it.

After yet another party Albemarle became very ill and complained of stomach pain. The duke refused Sloane’s therapy of glisters and suppositories and instead insisted that Dr. Thomas Trapham be called in to attend him, “as one who understood the Countrey [local] diseases having liv’d there severall years.” Given Sloane’s dawning belief that all diseases of the tropics did not differ from those of the temperate zone, the two doctors quickly disagreed on Albemarle’s diagnosis and course of treatment. Sloane feared Albemarle had the dry belly-ache, a disease characteristic of the West Indies that threatened paralysis and death in its sufferers. Trapham disagreed and called for a treatment of “a graine of bird pepper whole in a potch’d egg[,] affirming parrats to flye to this as to a naturall remedy & that it was very necessary for every one to take it in this climate.” The duke ate the egg but continued to deteriorate. Sloane and

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94 Ibid., f.283.
95 Ibid. There is a pepper “counted very good against the Belly-ach” in Sloane, A voyage, vol. 1, 240.
Trapham tried various therapies, disagreeing all the while, but to no avail. On Trapham’s advice
the duke traveled to the neighboring community of Liguanea (east of Port Royal) for a “change
of air” but returned no better. Sloane reported that he died after a final bout of drinking when he
“made merry on occasion of the newes of the prince of Wales his birth, and was taken ill.”

In recording Albemarle’s case history, Sloane undoubtedly sought to shield himself from
accusations of malpractice in the death of a duke and governor of an English colony. Throughout
the history Sloane emphasized Albemarle’s intemperance, the difficulty of convincing him to
adhere to a proper regimen, his being seduced away from Sloane’s care by Jamaican friends, and
Trapham’s insistence on ineffectual therapies. Seen from another angle, however, Sloane’s post-
mortem reflects his conviction that intemperance, and not the hot climate, was the cause of
Albemarle’s death. Sloane made no pronouncement with respect to the root cause of the duke’s
sicknesses – his unhealthy lifestyle and apparent alcohol abuse - that would not have met with
approval among physicians. Sloane’s account of Albemarle’s illness reflects the crucial role of
temperance in early modern understandings of health. To blame Albemarle’s drinking for his
death was entirely in keeping with early modern medical culture and would not stand out as a
dodge. In addition, Sloane made no mention of climatic phenomena in the duke’s case history.

As I demonstrated in Chapters 2 and 3, contemporary writers on both the West Indies and Africa
at this time believed that drinking in hot climates was unhealthy. By not discussing the heat in
the context of his medical case histories, and by noting how Albemarle was sick in England as
well as in the West Indies, Sloane evinced a belief that health was maintained in the tropics in
the same way as it was in the temperate zone, by a temperate regimen. Sloane’s stance contrasted
with those of Thomas Trapham, the most celebrated of Jamaican physicians, who prescribed

96 “Medical account,” f.284.
Dow (Salem: Marine Research Society, 1927), 68; Barbot 1688, vol.II, 399-400.
remedies that he declared were beneficial precisely for those who lived in hot climates. Trapham’s remedy of bird pepper in a poached egg is the only mention of the hot climate in Sloane’s account of Albemarle’s death. That Trapham would base a remedy on the climate sets Sloane further apart from his contemporaries in his medical and climatic thinking.

By the eighteenth century British observers believed there was a profound difference between the climates of the tropics and the temperate zone, manifested most prominently by Europeans’ susceptibility to deadly fevers and other diseases in the tropics. They conceived of tropical disease in light of the contemporary Hippocratic revival in medical thought and conceptions of the body that posited the bodies of Europeans were capable of adapting to life in the hot tropics through a combination of bodily and behavioral change. Sir Hans Sloane stands out as the last of the writers who believed that the body did not change in the tropics. He marks the end of an era after which, despite the continuing belief in seasoning, Europeans became increasingly pessimistic about their ability to adapt to the tropics until the advent of tropical medicine.

Robert Beverley and Temperate Virginia

Virginia differed drastically from West Africa and the West Indies at the turn of the eighteenth century. During the last quarter of the seventeenth century the tobacco colony underwent a social and economic transformation. From the 1660s immigration from England to Virginia began to taper off, as potential immigrants remained at home or sought better poor men’s countries in the new colonies in Pennsylvania, Carolina, and elsewhere. During the 1670s, Virginia’s tobacco planters drastically accelerated the transition to slave labor underway among

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98 Such a profound difference was voiced as early as 1679 by Thomas Trapham in his Discourse.
the colonial elite since at least the 1630s. Benefitting most from these changes was an emerging native born elite. Whereas only continued immigration sustained the English populations of contemporary Africa and the Caribbean, by the 1690s the Virginia colonists’ birthrate had come to exceed their deathrate. The product of the rising birthrate, the creole elite was possessed of both English and Virginian identities that it voiced in part in historical writing on the colony. When in 1705 the planter Robert Beverley published his history of Virginia, The History and Present State of Virginia, he wrote at precisely the time when members of the Virginian planter elite were shifting from seeing themselves as “first and foremost English and then Virginians” to thinking as Virginians first and English second. Beverley’s defense of the colony’s climate in the book reflected both the creole elite’s conception of Virginia as temperate and habitable and its sensitivity to metropolitan criticism in a wider empire.

Robert Beverley himself was a member of the new creole elite. Beverley was born to a well-placed Virginia family in 1667-1668. His father, Major Robert Beverley, had served as clerk of the colonial assembly. His half-brother, William, would serve four terms as speaker of the House of Burgesses during the early eighteenth century. Educated in England, Robert the younger followed in their footsteps, serving in various capacities as a justice of the peace, member of the burgesses, and clerk of the assembly. He married Ursula Byrd, the sister of

100 T. H. Breen, “Of Time and Nature: A Study of Persistent Values in Colonial Virginia,” in Puritans and Adventurers: Change and Persistence in Early America, ed. T. H. Breen (Oxford: Oxford University Press, 1980), 164-196; Jack P. Greene, Pursuits of Happiness: The Social Development of Early Modern British Colonies and the Formation of American Culture (Chapel Hill: University of North Carolina Press, 1988), ch. 4; Horn, Adapting, 433. Horn describes the colonists’ shared identities nicely, arguing that the local aspects of Virginian culture were engrafted to a dominant English culture present throughout the English Atlantic: such local aspects “complemented, and were embraced by, the overarching context of English national culture, allowing individuals to locate themselves as Virginians … and also as English subjects”; Horn, Adapting, 433.
planter William Byrd I, and at his death owned some 8,800 acres of land, including a plantation called Beverley Park in King and Queen County on the Middle Peninsula.\(^{102}\)

In 1705 Beverley published *The History and Present State of Virginia*, a vigorous assertion of the shared English and Virginian identities of the creole elite. In a manner similar to the sericulture manuals examined in Chapter 4, in which metropolitans criticized the colonists for their failure to properly exploit Virginia’s warm climate, Beverley took his fellow colonists task for their failure to properly improve what he believed to be a fertile land. The colonists were “keenly aware of the physical and environmental distinctiveness of the region” that helped make the Virginia so fertile.\(^{103}\) So too were the English. Yet as historian Jack P. Greene notes, the calls of elite colonists for improvement stemmed as much from a craving for metropolitan approval as they did from a desire for material progress in America: “Stung by metropolitan condescension about the Chesapeake’s almost wholly unsavory reputation in England, members of the new creole elite self-consciously set about trying to make the area more recognizably English and threw themselves into its ‘improvement’.\(^{104}\) Beverley expressed this sentiment not only in his calls for improvement, but also in his vigorous defense of the climate and condemnation of its metropolitan critics. In both the book’s structure and content, he claimed for creoles the authority to judge Virginia’s environment and society.


\(^{103}\) Horn, *Adapting*, 433.

\(^{104}\) Greene, *Pursuits*, 85. c.f. Lemay’s *Dictionary of National Biography* entry, in which he argues Beverley wrote the history as an expression of a hatred for “English authorities” learned at the knee of his father, who had been ousted from public service by the colonial privy council in 1678; “Beverley, Robert (1667/8–1722),” J. A. Leo Lemay in *Oxford Dictionary of National Biography*.
In order to legitimate his account, Beverley identified himself as “a Native and Inhabitant” of Virginia and, most famously, as an Indian.\(^{105}\) Throughout the preface he counterpoised ornamentation and fantasy on one hand to plainness and truth on the other, contrasting himself with travel writers and purveyors of gaudy “Poetical Stories” that stimulated skepticism in readers. French authors, with their “Hyperbole and Romance,” received particular scorn from this native of an English colony. For his part, Beverley claimed to write not only as a plainspoken Englishman, but as a Virginian. And if he were Virginian, Beverley was also something else, even more plainspoken: “I am an Indian, and don’t pretend to be exact in my Language: But I hope the Plainness of my Dress, will give [the reader] the kinder Impressions of my Honesty.”\(^{106}\)

Beverley’s self-identification as an Indian is well-known among historians as an expression of a “self-consciously American” identity.\(^{107}\) I argue that Beverley’s self-identification applied as readily to the topic of Virginia’s natural environment as it did to that of the political, historical, or other topics he addressed in the book. In *The History and Present State of Virginia*, he not only criticized the actions of assorted royal governors, but also scorned earlier depictions of Virginian *nature* as fundamentally inaccurate.

Beverley structured the book in four parts, treating 1) Virginia’s [political] history; 2) its “Natural Productions … suited to Trade and Improvement”; 3) the local Indian society; 4) and a final section on colonial society, government, and “the Improvements of the Land.”\(^{108}\) Beverley devoted a chapter specifically to the climate, but placed it in a somewhat unusual location within

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\(^{105}\) Beverley, *History*, title page.
\(^{106}\) Ibid., 9.
\(^{108}\) Beverley, *History*, title page.
the book. He chose not to include it within the second part of the book that dealt with Virginia’s natural productions, which contained chapters on the colony’s boundaries and coasts, waters and soil, and fish, and game. Had Beverley addressed the climate in this section he would have conformed to long-established convention in natural history writing that linked climate to water and soil quality, mirroring the Hippocratic emphasis on airs, waters, and places in determining the character and healthiness of a given land. Rather he inserted the chapter on the climate in the midst of the fourth section of the book that treated colonial society. In this final section, entitled “Of the Husbandry, and Improvements of Virginia,” the climate appeared alongside chapters on the people, buildings, food and drink, clothing, diseases, recreations, and “the Natural Product of Virginia, and the Advantages of their Husbandry.”

How to understand this unorthodox structure? As befitting the book’s title, Beverley wrote to describe both the “history and the present state” of Virginia. The first chapter told the political history of the colony before moving on to its present state and subjects more traditionally associated with natural history and geographical writing in the later chapters. His most detailed discussion of environmental matters (excluding the climate) appeared in the second section of the book, which purported to describe Virginia’s “Unimprov’d State” prior to the arrival of the Europeans. By writing first about the most basic, fundamental elements of the environment in that section and following it with sections on the Native Americans and then contemporary Virginian society, Beverley suggested a historical development from a primeval, “unimprov’d” Virginia populated by Native Americans to a civilized, improved Virginia

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111 Whereas specialized natural history writers would likely discuss the climate at the beginning of the text, Beverley did not get around to it until the nineteenth of his twenty-two chapters.
dominated by the English. By discussing climate in the chapter on colonial society, government, agriculture, and culture, Beverley naturalized the English to it.

According to Beverley the Virginia climate was eminently livable. In a chapter entitled, “Of the Temperature of the Climate, and the Inconveniencies attending it,” he described it as hot but temperate. Its “Natural Temperature” was “hot and moist” owing to the lowlands and marshes where the first colonists had settled in the seventeenth century. Nevertheless it was well placed for farming, sharing its latitude with some of the most fertile places in the world, in a “very happy Situation, between the extreams of Heat and Cold, but inclining rather to the first.”

In such a paradise, the climate posed few problems. Indeed, by referring to it a climate of “Inconveniencies and Annoyances,” Beverley downplayed them. For Beverley the worst problem with the Virginia climate was neither its heat nor humidity, but rather the criticism of British travelers. “That which makes this Country most unfortunate,” he opined, “is, that it must submit to receive all its Character from the Mouths not only of unfit, but very unequal Judges.” Among them were English merchants, ignorant and stubborn sojourners, temporary visitors to Virginia who “make no distinction between a cold, and a hot Country.” They “wisely go sweltering about in their thick Cloaths all the Summer, because they used to do so in their Northern Climate,” Beverley sneered, “and then unfairly complain of the heat of the Country.” Already overheated, they were also “Guilty of great intemperance,” gorging themselves on the “delicious Fruits” proffered them by the “exceeding Generosity” of their Virginian hosts. They invariably became sick, “and then unjustly complain of the unhealthiness of the Country.”

These were strong denunciations of the merchants’ own intemperance. It was not the climate that

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112 Beverley, History, 296.
113 Ibid., 299.
114 Ibid., 297.
was intemperate – nor the colonists, he implied by omission – but rather the English who complained so loudly.

Visiting sailors were no better than the merchants who employed them. They, too, became sick when they collected tobacco in the summer. The crews of merchant ships calling at Virginia rolled bales of tobacco from inland farms down to the ships waiting at the river sides. Rolling the bales with their hands gave them splinters that irritated them and “provokes ‘em to curse the Country.” Heated by “such Exercise, and a bright Sun … they imprudently fall to drinking” the cold water and cider provided by their Virginian hosts. They “greedily devour all the green Fruit, and unripe Trash they can meet with,” and fell ill of a variety of ailments. And then, an outraged Beverley complained, “to spare their own Indiscretion, they in their Tarpawlin Language, cry, God D-------- the Country.” Beverley’s effort to discredit these critics of Virginia’s climate drew on the well-established notion that temperance preserved health. The merchants and sailors were thus responsible for their sicknesses, just as they would be in England, for “if People will be persuadew to be Temperate, and take due care of themselves, I believe it is as healthy a Country, as any under Heaven.”

More serious diseases also arose from the moral failing of intemperance, characterized by Beverley as “a wilful and foolish indulging themselves in those Pleasures, which in a warm and fruitful Country, Nature lavishes upon Mankind for their Happiness, not for their Destruction.” Beverley pointed out precisely the kinds of behaviors that were condemned by writers on Africa and the West Indies. These included taking clothes off when overheated and exposing the body

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115 Ibid., 297.
116 Ibid. In terms of intemperance, Beverley was not as concerned with intemperance in alcoholic drinks per se as he was with intemperance in alcoholic drinks that were not yet ready to be consumed and were thus corrupt and unwholesome. He viewed disease as arising from intemperance, yes, but he spent most of his time on the subject criticizing intemperance in food and non-alcoholic drinks rather than liquors.
117 Ibid., 298.
118 Ibid.
119 Ibid. 305.
to cool night air, falling asleep on the ground uncovered at night, and other offenses. Like Sloane, he opposed the notion of seasoning, arguing that whenever newcomers came down with a disease, “he unfairly calls [it] a Seasoning, be it Fever, Ague, or any thing else, that his own folly, or excesses bring upon him.”

If the aspersions of ignorant merchants and sailors was Virginia’s biggest problem, then its other problems amounted only to, as the chapter’s title indicated, “Annoyances and Inconveniencies,” mere nuisances that could be overcome by human action. These were thunder, heat, and vermin. Beverley wrote in a way that minimized the effects of even these nuisances. “I confess, in the hottest part of Summer,” he averred, there was much thunder, but it was “of such advantage to the cooling and refining of the Air, that it is oftener wish’d for, than fear’d.” Here Beverley turned a negative phenomenon into a positive one that helped temper the summer heat. As for the heat itself, it was “very seldom troublesome.” Only in cases of perfect calm, without breezes of any sort, was it very hot, “which only happens perhaps two or three times in a year, and lasts but a few Hours at a time.” Virginians bothered by the heat could always avail themselves of their cool rooms, arbors, and grottoes. Also obnoxious were the colony’s several species of vermin, among them frogs, snakes, mosquitos, chinches, and seedticks or redworms. Yet the frogs that inhabited the lowland swamps “do no hurt, except by the noise of

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120 Ibid., 305-307. What is interesting is that in the West Indies and Caribbean, writers usually implicated alcohol in such misdeeds. People slept out on the ground uncovered not because they were hot, but because they were drunk or otherwise warmed with drink. Beverley made virtually no mention of intemperance in alcohol in his book.
121 Ibid., 306.
122 Ibid., 299.
123 Ibid, 299. By listing the heat second in his roster of Virginian nuisances, Beverley may have been demoting it rhetorically.
124 Ibid.
their croaking Notes,” and could be avoided by moving upland “where the land is high and dry.”

Virginia’s rattlesnakes were indeed deadly, but no one was bitten by them “unless you offer to disturb it, and thereby provoke it to bite in its own defence.” To die by rattlesnake bite was thus akin to becoming sick through intemperance, the fault of the person bitten, a point Beverley reinforced when he added, “but it never fails to give you fair warning, by making a noise with its Rattle, which may be heard at a convenient distance.”

Much like the rattlesnakes, seedticks and redworms “keep out of your way, if you will keep out of theirs” by staying clear of cattle paths and rotten wood, respectively.

As had earlier commentators, Beverley remarked upon Virginia’s failure to develop towns and other characteristics of improved regions. Virginia’s very fertility and paradisiacal qualities were the source of its backwardness in this respect. He described the Virginian society and economy as progressing, although not quickly enough. The people were no longer subject to the “dangers incident to Infant Settlements” and were improving in quality, as were their buildings. His discussion of colonial society reflected the improvement of the environment undertaken by the colonists. For example, while Virginians’ most common recreations were hunting and fishing the colony’s abundant game, Beverley began the chapter by extolling such man-made alterations of nature as “the Plantations, Orchards, and Gardens [that] constantly

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126 Beverley, History, 300. The same applied to mosquitos, which were “stronger, and continue longer there [in Virginia], by reason of the warm Sun, than in England” where they were referred to as gnats. By comparing American mosquitos to English gnats, I believe he attempted to equate the climate of the two places, thereby implying American temperateness. Ibid.

127 Ibid.

128 Ibid.

129 Ibid., 302-303.

130 Ibid., 287.
afford ‘em fragrant and delightful Walks.” Yet the Virginians were lazy, choosing to import manufactures like linen and woolen cloth, hats, leather, and other goods rather than make them from the abundance of materials at home. Indeed, “the very Furs that their Hats are made of, perhaps go first from thence.” Ultimately, Beverley concluded, “I should be asham’d to publish this slothful Indolence of my Countrymen, but that I hope it will rouse them out of their Lethargy, and excite them to make the most of all those happy Advantages which Nature has given them.”

Only at the end of the chapter did Beverley discuss the seasons of this temperate land directly, and then his attention was more on the winter than summer. As with Virginia’s other nuisances, he judged its extremes to be balanced by unexpected benefits. It had hard frosts, but these made for “the pleasantest Shooting [of wildfowl] in the World.” Its summer rains were powerful, but were also capable of reversing a drought after a single rainfall. And while Beverley had heard “that this Country is reproacht with suddain, and dangerous changes of Weather,” he argued that any violent swings of temperature were blocked by icy mountains to the northwest. During the spring, these mountains supplied Virginia with “cool and pleasant Breezes, which serve to refresh the Air, and correct those Excesses of Heat, which the Situation wou’d otherwise make that Country liable to.”

Beverley’s treatment of climatic matters in his book reflected his membership in a self-conscious creole elite. A man who considered himself at the same time an Englishman and a Virginian, he wrote to both defend the land of his nativity from metropolitan criticism and to

131 Ibid., 308.
132 Ibid., 295.
133 Ibid., 319.
134 Ibid., 303.
135 Ibid., 303-304.
136 Ibid., 304.
urge his fellow planters to devote more energy to improving the colony. At the heart of his analysis was the relationship between environmental and moral matters.

Conclusion

By the early eighteenth century, commentators voiced conceptions of the climates of West Africa, the West Indies, and Virginia that reflected the different economic and social development the regions had undergone over the course of the seventeenth century. Willem Bosman detected alarming variations in the seasons of West Africa that signified its unsuitability for English habitation. So dangerous had the climate become that temperance, the traditional guarantor of health in hot climates, could no longer shield European visitors from disease. Only chance bodily change over which they had no control could preserve a lucky few, like Bosman himself, from almost certain death. In the West Indies, Sir Hans Sloane stood in contrast to his fellow physicians who were creating a nascent medicine of hot climates, grounded in the notion that the tropical climate worked change in English bodies, in the second half of the seventeenth century. Sloane’s belief that the diseases of the tropics were the same as those of the temperate zone denied the possibility of bodily change for the English. In medical terms, then, the West Indian climate was similar to that of England and required no adaptation on the part of travelers and colonists except the same temperance in the nonnaturals that should practice at home. And in Virginia, Robert Beverley wrote as a representative of an emerging creole elite, confidently and defending the climate of his native land from metropolitan criticism. Whereas the climates of Africa and the Caribbean presented grave danger to English visitors, Beverley’s Virginia threatened little more than discomfort to those who used common sense in their dress and eating
habits. By casting Virginia’s critics as merely ignorant, Beverley delegitimized their complaints while equating temperate Virginia to temperate England.
CONCLUSION

In this dissertation I have argued that the English conceived of the hot climates of the seventeenth-century Atlantic world through interrelated ideas of seasonality and morality. From the sixteenth-century writings of Spanish travelers such as Oviedo and Acosta, and their own countrymen like George Best, they adopted the notion that the change of seasons, rather than moderate temperatures, constituted the true hallmark of habitable, “temperate” climates. In the torrid zone, annual rainy seasons cooled and watered parched lands, making possible life in equatorial lands that would otherwise be too hot and dry to sustain life. Seasonal phenomena included not just conditions that occurred in relation to the earth’s annual circuit around the sun, such as summer and winter or wet and dry seasons, but also phenomena of shorter duration. Cool nights followed upon hot days in the torrid zone, and breezes helped to mitigate the heat of the tropical sun. The connection between seasonality and habitability manifested itself in language on the island of Jamaica, where residents in the late seventeenth century used the word “season” to refer to short, discrete periods of rain that supported agriculture.

From their earliest experiences in the hot climates of the Atlantic in the 1550s, the English fell victim to diseases endemic to the tropics. They interpreted their grievous losses to malaria, yellow fever, and other diseases as deriving in part from the effect of seasonal conditions. Over the course of the seventeenth century, travelers to West Africa identified the beginning of the wet season, when mosquito populations bloomed, as particularly deadly for Europeans.¹ Some considered the change from hot days to relatively cool nights to take place too suddenly; unaccustomed to bearing such extremes of physical temperature, bodies formed in the

temperate zone fell prey to illness.\textsuperscript{2} In this sense the very seasons that made the climate temperate and thus habitable also made it deadly.

The English believed personal behavior exacerbated the effects of seasonal phenomena in causing disease in the tropics. While European medical culture generally held that intemperance in the non-naturals caused disease, in the hot climates of the Atlantic world, the English believed it magnified the effect of seasonal changes on the body and vice versa. In no case was this more apparent than in the consumption of alcohol. The English consistently pointed to intemperance in alcohol as a source of illness and death.\textsuperscript{3} Evidence suggests some Englishmen in the West Indies and West Africa consumed alcohol in larger quantities than normal because they believed it would strengthen bodies enervated by the heat.\textsuperscript{4} Thus Richard Jobson warned in 1623 that the English in the Gambia drank quantities of alcohol so great that, were they in England, “would certainly burne out our harts.”\textsuperscript{5} Rather than risk such a fate, Jobson prescribed drinking smaller amounts of alcohol in the cool of the morning and evening.\textsuperscript{6} During his visit to Jamaica in the late 1680s, Sir Hans Sloane reported that indentured servants and poor freemen, intoxicated with rum punch, passed out and “lie sometimes whole nights expos’d to the injuries of the Air,” causing consumptions and other illnesses.\textsuperscript{7} Whereas Jobson feared the hot climate stimulated the English to drink too much alcohol, Sloane saw alcohol as causing them to leave themselves exposed to harmful influences in the night air.

\begin{footnotes}
\item[6] Ibid., 42.
\item[7] Sir Hans Sloane, \textit{A voyage to the islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the natural history ... of the last of those islands; to which is prefix'd an introduction, wherein is an account of the inhabitants, air, waters, diseases, trade, &c. ...}, vol.1 (London, 1707), xxix-xxx.
\end{footnotes}
In this conclusion I offer further observations on the relationship between seasonal phenomena and behavior – between temperateness and temperance - for the English experience of hot climates in the seventeenth century Atlantic. First, contemporaries’ focus upon intemperance in hot climates exemplifies the fact that during the early modern era, environmental ideas were inextricable from moral ideas. The condemnation of intemperance extended to other forms of immoral behavior unrelated to the consumption of distilled liquors. For example, Richard Ligon believed that indentured servants in mid-seventeenth-century Barbados became ill when forced by negligent masters to sleep through the night in rain-soaked clothes. As he observed, “if they put off their cloaths, the cold of the night will strike into them,” and they risked catching a cold.\(^8\) The heat of the climate ensured that those who caught colds were in poor shape indeed, for “a cold taken there, is harder to be recovered, than in England, by how much the body is infeebled by the great toyl, and the Sun’s heat.”\(^9\) He contrasted the conduct of negligent masters with the planter Colonel Thomas Waldron, whom Ligon praised for providing his servants with additional garments in which to sleep to counter the cool nights in the torrid zone.\(^10\) Ligon thus demonstrates how the climate of Barbados demanded specific behaviors from its new residents.

In temperate Virginia, a different kind of behavior exacerbated the effects of the climate. The Virginia Company and the agricultural reformers of the 1650s considered the colonists’ strong attachment to tobacco production at the expense of potentially more lucrative crops to be exceptionally poor judgment. From the vantage point of London, the planters’ refusal to cultivate a diverse portfolio of commodities seemed a form of idleness, a neglect of the economic potential of a land in a climate warmer than that of England. The drive for agricultural...

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\(^8\) Ligon, *True & Exact History*, 44.
\(^9\) Ibid., 45.
\(^10\) Ibid., 44-45.
improvement current among English landowners and merchants was made more urgent by their conception of a warm climate in Virginia that was believed capable of supporting all manner of valuable crops. When the Virginia Company, Bonoeil, and King James I himself looked to America, they could not help but see it through a moral lens. They considered the land and climate of Virginia to be a field upon which English moral principles were to be enacted. Although the planters busily produced ever growing amounts of tobacco during the seventeenth century, observers considered their industry to be wasted on the wrong crop, a form of idleness that betrayed the promise of Virginia’s climate.

Second, the experiences of the English in West Africa, the West Indies, and Virginia during the seventeenth century suggests that scholars can conceive of the encounter with hot climates as a story of the persistence of the ancient idea of an uninhabitable tropics into the modern era. In the larger scope of European overseas expansion, the tropics were considered uninhabitable until the Portuguese exploration of the African coast in the fifteenth century. From that point on, a small but growing number of European mariners, merchants, clergymen, and government officials understood that the change of seasons supported life in the torrid zone. But these cognoscenti battled common knowledge of a hellish tropics in their efforts to promote overseas ventures. This sequence was true of the English, whose promoted their earliest ventures into the torrid zone with published texts that explained how it was possible that the region could support life. Yet even though the torrid zone was known to be temperate and thus habitable, many English remained unconvinced throughout the seventeenth century. Knowledge of the toll disease took on their countrymen in hot climates intensified this fear for the English throughout the Atlantic world, reinforcing the notion of an uninhabitable tropics.
The fear of an uninhabitable tropics motivated the Virginia Company’s effort in 1610 to blame the deaths of seaman and colonists of the ill-fated “third supply” on Sir Thomas Gates’ decision to sail through the tropics on his way to the Virginia. It appears in the work of F. Hanson, whose 1683 compilation of Jamaican laws was ostensibly published to assure English readers that the colony was well governed, lest the fear of disorder “discourage some from adventuring themselves or their fortunes thither.”¹¹ Yet the detailed description of the working of the Jamaican climate that prefaced the book’s legal material clearly points to the difficulty of convincing potential migrants that Jamaica was effectively habitable. Hanson condemned the ignorance of “some who were never were abroad [who] think all places beyond the Sea much alike, so that having heard of sicknesses and seasonings for new comers in places lately setled they are apt to impute it without any reason to Jamaica,” because it was “reputed very hot.”¹² By the turn of the eighteenth century, then, the tropics were considered paradoxically both habitable and deadly; habitable, yes, but just barely. Ultimately the ancient idea of an uninhabitable tropics survived through the seventeenth century and informed English response to the hot climates of the Atlantic world.

Third, ideas such as these both tied together and distinguished West Africa, the West Indies, and Virginia. These three regions of the emerging English Atlantic world linked by the plantation economies in Virginia and the Caribbean and the slave labor provided by Africa. The development of these economic links over the course of the seventeenth century gave the three regions similar disease environments as well, as the English imported African slaves, deadly microbes, and their mosquito vectors to the Chesapeake and the West Indies. But although these regions were similar in that they occupied locations in the hot climates of the Atlantic and

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¹¹ Hanson, Laws of Jamaica, b6.
¹² Ibid., d2-d3.
experienced shocking disease mortality, characterizations of their climates differed sharply at the end of the seventeenth century. By 1705 Africa was considered a white man’s grave. As reported by Willem Bosman, its increasingly erratic seasons contributed to disease, and personal temperance proved powerless to prevent sickness on the coast. If the English experience of hot climates in the Atlantic world was characterized by the persistence of ancient ideas of an uninhabitable tropics, then the near certainty that a given person who served in trade factories on the coast would die confirmed that, for all practical purposes, Africa was uninhabitable. In addition to this demographic reality, the relative strength of local African polities vis-à-vis the English and Africa’s role as a supplier of human commodities in the emerging British imperial system probably encouraged contemporaries to treat it as virtually uninhabitable. The miniscule English populations on the coast attracted little notice, and the deaths of so many factors and soldiers at Cormantin, Cape Coast Castle, and elsewhere was the cost of doing business.

Across the Atlantic the West Indian disease environment rivaled that of Africa in virulence, but the islands continued to attract English settlers during the seventeenth century and for most of the eighteenth century because they were the sites of sugar production. The presence of an English creole population that exercised political power in Barbados and Jamaica proved that, however dangerous their climates were, the English colonies in the Caribbean were habitable. In addition, medical thought provided a way to rationalize a decision to migrate to the West Indies. Throughout the seventeenth century, as I argued in Chapter 3, the English attributed disease mortality in the Caribbean to a combination of personal intemperance in the hot climate. Young people seeking adventure and nursing hopes of wealth in the Caribbean might brush off fears of its deadly climate by consoling themselves that temperance would help keep them alive,

whether they remained temperate once they arrived in the islands or not. While even creole planters would argue against the possibility of colonizing tropical regions with European populations in the 1780s, such was not the case in 1700.\textsuperscript{14}

Despite its high mortality in the seventeenth century, Virginia was in no danger of being regarded as uninhabitable. It attracted large numbers of migrants between the 1630s and the 1680s, and by the last quarter of the century it had achieved white natural increase. Diseases that contemporaries believed arose from the climate ultimately proved powerless to stop the growth of a native born English population in Virginia. The English proved they could survive in Virginia because they could reproduce there, and the birth of generations of whites made them “native” to the region. The ability of white populations to grow in that country set it apart from its fellow plantation societies in the West Indies and the English trade factories of Guinea. By this means Virginia proved it was temperate and habitable.

Finally, Virginia’s location within the temperate zone obviated a characterization as uninhabitable. An important theme of this dissertation is the persistence of ancient ideas in the early modern mind, in this case the arbitrary distinction between the torrid zone and the temperate zone to the north. Ancient ideas about the uninhabitability of the torrid zone dogged English colonization of the West Indies and English trade to Africa throughout the seventeenth century, and I have described how the Virginia Company fought back against metropolitan criticism of the colony’s climate because it feared for future migration. But as I noted in Chapter 1, the ancient classification of the temperate zone as habitable and the torrid zone as uninhabitable was a crucial concept in the early modern understanding of the climate. Because

\textsuperscript{14} Mark Harrison, “‘The Tender Frame of Man’: Disease, Climate, and Racial Difference in India and the West Indies, 1760-1860,” \textit{Bulletin of the History of Medicine} 70 (1996), 79.
Virginia was located within the torrid zone, it was probably easier for contemporaries to accept it as habitable despite its poor reputation for disease.

Recognizing the interrelationship between the seasons and morality among the English in the seventeenth-century Atlantic suggests several possibilities for future research. Studies of how Europeans other than the English viewed the intersection of seasonality and morality will provide greater context for the European encounter with the tropics as a whole. By the time the Portuguese pilot Antoniades Pinteado advised Thomas Wyndham to avoid the sickly season on the West African coast in 1553, the Portuguese had been sailing, trading, and slaving in the tropical Atlantic for over a century, and both the Spanish and the Portuguese had occupied the tropical regions of the Americas for some sixty years. How did the Portuguese and Spanish come to understand the relationship between seasonality and temperateness in tropical regions as they ventured out into the Atlantic from the fourteenth century? Likewise how did they relate morality to the climate and its seasons? In 1665 Spaniards trading with the English at Jamaica marveled at the English colonists’ consumption of strong liquors, “ye great quantity [of drink that] they charged them selves with, & ye little observations of times & seasons,” and expressed surprise to Sir Thomas Modyford that his subjects “were not all dead.”15 How had they come to learn this lesson in the preceding century and a half?

If the tropics were constructed culturally, so too were the temperate zones. What was the relationship between ideas of seasonality in tropical climates and the identity of England as a temperate country during the sixteenth- and seventeenth centuries? As the literary scholar Richard Helgerson has pointed out, chorography – the literary genre that described and celebrated the unique aspects of particular localities that made up a nation – developed

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contemporaneously with the beginning of English overseas expansion and the travel writing that supported it. Both travel writers and chorographers voiced English identities, the former by directing the attention of readers to the world beyond England’s shores and the latter by directing it inward at the localities that together made up the nation.\textsuperscript{16} Chorographers considered the climate and weather when characterizing both countries and the counties that composed them.\textsuperscript{17} William Camden, the most famous of English chorographers, described the climate of England with reference to its seasons in much the same way his contemporaries described climates of the torrid zone. According to Camden, England’s summers and frequent rains helped to warm an island in the northerly latitudes, while its winters were not particularly harsh.\textsuperscript{18} He described Somerset in such seasonal terms as well.\textsuperscript{19} Did the experience of seasonal phenomena in the hot climates in the Atlantic world influence the conception of England itself as temperate?

This dissertation has argued for the significance of climatic ideas in the seventeenth-century English Atlantic world. For the English the climate carried with it economic and moral implications. Promoters of overseas expansion refuted ancient ideas of an uninhabitable torrid zone to tamp down climatic anxieties that threatened to inhibit participation in overseas ventures. Ideas about the fecundity of hot climates and the types of crops that could be cultivated at different latitudes dictated what metropolitan observers and officials on the ground in the colonies believed to be acceptable ways to exploit lands in hot climates. Precepts of temperance at the heart of contemporary medicine intensified in hot climates, as the English reacted to their encounter with tropical disease by prescribing strict adherence to moderation in food, drink, and

\textsuperscript{18} William Camden, \textit{Britain, or A chorographcall description of the most flourishing kingdomes, England, Scotland, and Ireland, and the ilands adioyning, out of the depth of antiquitie} (London: 1610), 2. The book appeared originally in Latin in 1586.
\textsuperscript{19} Ibid., 220.
other bodily practices. The climate shaped the English experience of the Atlantic world in ways both ideational and material.
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