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J. R. McNeill. *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620-1914.* New Approaches to the Americas Series. Cambridge: Cambridge University Press, 2010. 371 pp. $90.00 (cloth), ISBN 978-0-521-45286-1; $24.99 (paper), ISBN 978-0-521-45910-5.

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The Mosquito and the History of the Greater Caribbean

In *Mosquito Empires*, J. R. McNeill offers a sweeping account of the causes and consequences of mosquito-borne illnesses in the Caribbean from the earliest Spanish settlements through the completion of the Panama Canal. One of McNeill's great accomplishments is weaving together, often seamlessly and convincingly, environmental, medical, political, social, economic, and military history.

The early Spanish conquerors, settlers, and missionaries were the carriers of "crowd diseases," including small pox, dysentery, and influenza, which famously wreaked devastation on the Amerindian populations of the islands and mainland. After the conquests, the islands' populations plummeted, and save the major urban centers of Havana and Santo Domingo, the Caribbean was economically marginal for the next century. With the introduction of large-scale sugar production, as well as other commodities, enslaved Africans repopulated both major and minor islands. McNeill succinctly and elegantly explains that "it is among Atlantic history's crueler ironies that in their bodies, slaves brought new infections to the Americas–yellow fever, falciparum malaria, and hookworm among them–to which they also carried (inherited or acquired) resistance or immunity, which in turn raised the value of slaves against other forms of labor (such as European indentured servants or wage-earners). Differential immunity improved the economic logic of slavery and the slave trade, making it large geographically, longer chronologically, and more intensive than it would have been otherwise" (p. 46). Thus the stage was set for a story in which disease, and who succumbed and who survived, played a major role in the political fortunes of empires.

While avoiding biological determinism, McNeill makes a compelling and deeply sourced argument that yellow fever and malaria "governed the probabilities of success and failure in military expeditions and settlement schemes" (p. 2). It is this fact that explains how the sclerotic Spanish Empire managed to hold on to all the major islands and port cities of the Caribbean, except Jamaica, in the face of vastly superior military expeditions from England, France, and Holland. Furthermore, it is these same diseases, but especially the dreaded yellow fever, that facilitated successful revolutionary movements; British, French, and Spanish troops sent to repress colonial uprisings were more likely to be killed by transplanted mosquito-borne diseases than by rebel bullets. In a striking reversal of what had happened to the indigenous inhabitants in the first two centuries of European conquest, the locals, whether slaves in Sainte Domingue or white settlers of the southern colonies, benefited from acquired or inherited immunity.

Yellow fever, which is a virus transmitted from a single species of mosquito, had a greater difficulty making it across the ocean. Aboard ships that had anchored on the African coast for long periods, *Aedes aegypti* mosquitoes made temporary lodgings in clay lined water barrels, and quickly found new homes in the Caribbean urban and plantation spaces, where water storage facilities were abundant. Malaria, which is far less deadly, had an easier time crossing to the New World. It came with *Anopheles* species of mosquitoes, but also made the journey in the bloodstream of enslaved Africans; American mosquitoes

could then take up the job of transmitting the disease.

The sugar economy wrought major environmental changes that encouraged the development of welcoming sites for mosquito habitation. Sugar cane cultivation, along with unintended consequences, such as deforestation, invasive plant and animal species, and erosion, created puddles, wheel ruts, hoof prints, and also additional sources of nutrition for mosquitoes in the form of cows, horses, and pigs.

McNeill analyzes a sizeable number of settlement schemes and military operations and demonstrates how malaria and yellow fever shaped their success or failure. The Dutch conquest of northeast Brazil, and the short-lived occupation, and the British conquest of Jamaica both benefited from the absence of malaria or yellow fever. It is testament to the ways in which human activities shaped nature that until the late seventeenth century, when large numbers of Africans began to arrive, Brazil was considered to have had a salubrious climate.[1]

The rest of McNeill's case studies demonstrate that once yellow fever and malaria had established themselves, they proved to be stalwart if inadvertent defenders of the local inhabitants, whether Spanish garrison troops, African militiamen, Haitian revolutionaries, or late nineteenth-century Cuban *mambises*. The story of yellow fever and malaria's devastating impact on outsiders would become redundant, but McNeill is aware that the outcome of diseases is always shaped by a wider array of forces than mere biology; the health of the patients prior to contracting the disease, the level and quality of palliative care, and cultural attitudes toward the illness or the ill can exercise a strong influence on health outcomes. Two well-crafted examples of this are the failed settlement of Darien, Panama, (1698-99) by Scots and the even larger failed settlement of Kourou in French Guiana (1763-64) by the French from Europe, Canada, and Louisiana. In the case of the Scots, McNeill observes that many of the settlers were themselves the victims of years of bad harvests and hunger in their native land. Their weak condition would have made it less likely to survive a bout of malaria, much less of yellow fever. Many of the settlers of Kourou were refugees, from war-torn eastern France, from the recent expulsion from Canada. In addition to the problem of their overall health, McNeill speculates that a variety of illnesses, including yellow fever and possibly malaria, hit the settlers more or less simultaneously. As Suzanne Austin Alchon observed for Native Americans in Central Mexico, the presence of more than one highly debilitating disease in a susceptible population can create an epidemiological "perfect storm," and may go a long way to explaining the French mortality rate of 85-90 percent.[2]

Most historians of medicine quickly confront limitations to their ability to accurately reconstruct epidemiological events. Yellow fever, with its trademark black vomit, has proven easier for historians to identify using travel accounts and other documents. Malaria, by contrast, is difficult to distinguish from a host of other ailments that bring on fevers. McNeill respects the limits of what the historical record can reveal, while also reconstructing the imperial history of the Caribbean through the prism of the social history of medicine.

This book is well suited to undergraduate courses in the history of health, Atlantic world history, and, of course, Caribbean history. One of the most useful assets of the book for teaching is that McNeill's footnotes refer to the archival sources listed in secondary material, allowing the reader to have a better sense of how environmental and medical history is conducted. In the end, the book is heavily based on secondary literature, but like Shawn Miller's *Environmental History of Latin America* (2007), this book offers a scholarly but well-written narrative and analysis of a crucial theme in Latin American and Caribbean history.

Notes

[1]. Nineteenth-century Brazilian *higienistas* studied many of the so-called tropical diseases that were relative newcomers to the region. On Brazilian doctors' challenge to the notion of the tropics as inherently diseased, see Julyan G. Peard, *Race, Place, and Medicine: The Idea of the Tropics in Nineteenth-Century Brazilian Medicine* (Durham: Duke University Press, 1999), esp. chap. 3.

[2]. Suzanne Austin Alchon, *A Pest in the Land: New World Epidemics in a Global Perspective* (Albuquerque: University of New Mexico Press 2003), 79-82.

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