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# The Sanitary Lens: A Study of 19th Century Public Health in British Colonial India and Australia

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The Sanitary Lens:

A Study of 19th Century Public Health in British Colonial India and Australia

by

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# Introduction

Sanitation and public health became concerns of modern states as they formed in the 18th and 19th centuries. Medical professionals and those concerned with the social implications of unsanitary conditions pushed for improved sanitary infrastructure. These ideas dispersed from Great Britain through colonization and subsequent emigration. Sanitation and public health traveled to imperial peripheries both as tools of colonization and methods of development in overseas colonies. How changing ideas about health and sanitation in the metropole spread overseas was contingent on the colonial contexts. These ideas influenced the sanitary and health processes of colonization. Colonialism informed how subsequent changes and processes in sanitation would reflect back onto shifts in medical and scientific study, in and out of colonial spaces. Through a focus on the British colonies of India and Australia, this paper seeks to establish sanitation and public health as aspects of colonial and imperial history that are crucial to the understanding of both the processes of colonialism and its greater legacies.

Although both India and Australia were British colonies, they were conquered and governed according to very different systems of colonization. For the British nationals, India was seen as a collection of military colonies and a territory for trade and expansion; England, Great Britain, and the Isles as a whole remained the cultural and political homeland. Australia, in contrast, was conquered as a settler colony and British subjects sought to *make* the land largely reflective of their English origin. These two locations are drawn together as colonies outside of the European continent that share foreign and tropical environments. Concerns over health and disease in India and Australia were often combined in medical discourse and publications under the shared category of overseas colonies. Sections in the *British Medical Journal* titled “India and the Colonies” were subtitled by location, providing a cropped view into what was deemed

from the metropole as interesting or prevalent at the moment.<sup>1</sup> The histories of imperial colonization at both sites varied, but concern for the establishment of medical and sanitary infrastructure was both an early and lasting endeavor in both India and Australia. Specific colonial processes informed highly distinct policies of public health and sanitation. Their distinctions and lasting legacies are obscured when they are uncritically lumped together within the British Empire.

### *Historiography*

The study of sanitation and medicine, often tied together as public health, is not a new focus in colonial historiography.<sup>2</sup> These topics are often framed as an aspect of the colonization process, rather than as a lens through which colonialism itself might be understood. The 19th century was a period of great change throughout India and Australia, as well as in the larger understanding of sanitation and health. A comparative approach to these histories and this past sheds light on how colonization influenced developments in science and medicine. This approach also shows how sanitation and public health in turn shaped distinct processes of

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<sup>1</sup> “India And The Colonies.” *The British Medical Journal* 1, no. 1484 (1889): 1326–27.

<sup>2</sup> Anderson, Warwick. “Excremental Colonialism: Public Health and the Poetics of Pollution.” *Critical Inquiry* 21, no. 3 (1995): 640–69; Bhattacharya, Nandini. “Disease and Colonial Enclaves.” In *Contagion and Enclaves: Tropical Medicine in Colonial India*, 1–17. Liverpool University Press, 2012; Brasier, Angeline and James Dunk. “Incarceration, Migration, Dispossession, and Discovery: Medicine in Colonial Australia.” *Health and History* 19, no. 2 (2017): 1; Campinho, Regina. “Hoping for Catastrophe.” *Traditional Dwellings and Settlements Review* 30, no. 2 (2019): 33–46; Curtin, Philip D. “Medical Knowledge and Urban Planning in Colonial Tropical Africa.” In *The Social Basis of Health and Healing in Africa*, edited by Steven Feierman and John M. Janzen, 235–55. Berkeley: University of California Press, 1992; Hobbins, Peter. “Tending the Body Politic: Health Governance, Benevolence, and Betterment in Sydney, 1835–55.” *Health and History* 19, no. 2 (2017): 90–115; Lewis, Milton J. “Medicine in Colonial Australia, 1788–1900.” *Medical Journal of Australia* 201, no. S1 (July 2014); McFarlane, Colin. “Governing the Contaminated City: Infrastructure and Sanitation in Colonial and Post-Colonial Bombay.” *International Journal of Urban and Regional Research* 32, no. 2 (June 2008): 415–35; Prashad, Vijay. “The Technology of Sanitation in Colonial Delhi.” *Modern Asian Studies* 35, no. 1 (2001): 113–55; Raftery, Judith. “Keeping Healthy in Nineteenth-Century Australia.” *Health and History* 1, no. 4 (1999): 274–97; Starr, Fiona. “The ‘Sidney Slaughter House’: Convict Experience of Medical Care at the General ‘Rum’ Hospital, Sydney, 1816–1848.” *Health and History* 19, no. 2 (2017): 60–89; Swanson, Maynard W. “The Sanitation Syndrome: Bubonic Plague and Urban Native Policy in the Cape Colony, 1900–1909.” *The Journal of African History* 18, no. 3 (1977): 387–410.

colonization. Sanitation and health in other colonies, from South Africa to China, have been studied in historical contexts. The analysis of colonialism through a study of sanitation, however, is not often a broad focus.

The close relationship between conceptions of race—and the racism that permeated the colonial process—and sanitation was identified by historian Maynard Swanson as the “sanitation syndrome” in the 1970s.<sup>3</sup> He posited that the application of the societal metaphor of disease was crucial to the racialization of colonial spaces and policies of segregation in South Africa long before the Apartheid era. While Swanson examined the sanitation syndrome as a result of the 19th century plague pandemic in South Africa, I argue that its foundations are also evident in the British colonial occupation of India, and can be seen earlier. The medical discourse surrounding race coalesced with Darwinian theories of evolution as Social Darwinism by the middle of the 19th century, but attitudes towards the diseases that primarily affected the British stationed in Indian colonies were already prevalent in the 18th century.<sup>4</sup>

Racialization in the American colonies within the Philippines, and the conceptualization of the American body versus the Filipino body, was distinctly marked by discourse surrounding excrement. Historian Warwick Anderson illustrates a twofold conversation in the 20th century found in the colonies that functioned as a tool for demonizing the “other.” One discussion among American colonists featured derogatory discourse regarding the Filipino population and their practices of waste disposal, and another concerned the goal to obtain waste for pathologists and other medical scientists to study.<sup>5</sup> The investigations of disease on an increasingly anatomical level was gaining ground in medical communities globally following the acceptance of 19th

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<sup>3</sup> Swanson, “The Sanitation Syndrome,” 387.

<sup>4</sup> Chaudhuri, Nupur. “Memsahibs and their servants in nineteenth-century India [1].” *Women's History Review* 3, no. 4 (1994): 549-562; Roychowdhury, Iti, and Amanpreet Randhawa. “Manifestations of Social Darwinism in Colonial Reflections: A Study of the Writings of Sahibs, Memsahibs and Others.” *Desire and Deceit: India in the Europeans' Gaze* (2015): 99.

<sup>5</sup> Anderson, “Excremental Colonialism,” 641.

century discoveries connected to germ theory. American physicians worked in tandem with colonial administrators to maintain their position at the forefront of new scientific developments. At the start of the 20th century, the colonial government in the Philippines sought to limit sanitary transgressions within colonial spaces, through the establishment of physical and social boundaries, similar to—and informed by—the sanitary segregation implemented during the previous century in India.<sup>6</sup>

Analysis of long-standing practices of quarantine used as a colonial tool for the Portuguese during the 1894 outbreak of the plague in Macau is provided in Regina Campinho's aptly titled "Hoping for Catastrophe." In the decades before the outbreak, Portuguese officials began organizing infrastructural improvement of the urban environment, failing to address the implications of economic and social issues that affected the living conditions of the Chinese. Inspired by the English agenda of sanitation, the monarchy enacted legislative measures that aimed to regulate, improve, and advance methods of mobility and hygiene within the colony.<sup>7</sup> The efforts of the Portuguese monarchy to improve sanitation were not intended to improve the conditions of these "filthy" areas within the urban space, but to remove those who they saw as the cause of the filth—the working poor, primarily Chinese—from the view of the urban elite.<sup>8</sup> The primacy of concern for the social perception of space through the improvement of sanitary conditions is especially prevalent to the developments seen through the 19th century in both Australia and India.

Historians continue to debate whether Western medicine and its sparse application in 19th century Indian colonies entailed conscious and systematic neglect, or whether the neglect of

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<sup>6</sup> Anderson, "Excremental Colonialism," 668.

<sup>7</sup> Campinho, "Hoping for Catastrophe," 38.

<sup>8</sup> *Ibid.*, 45.

poorer and primarily Indian communities stemmed from the larger decentralized Raj system.<sup>9</sup> In Australia, historiography is often dominated by a narrative of criminal populations and their experiences facing the challenging conditions of the continent. This view has been challenged by historians critical of how this narrative fails to consider the free settler population, which outnumbered the convicts by the middle of the 19th century.<sup>10</sup> The process of free settler colonialism afforded the population a greater degree of agency than is implied by a penal system, accounting for the social movements that improved sanitation and public health in the latter half of the century.

### *Sources and Methods*

This paper focuses on colonial spaces through the lens of sanitation and medicine as it was understood and practiced in British spheres of influence. The primary sources from which I have drawn come, for the most part, from journals and newspapers published within the metropole. The lack of agency afforded to the Indian population is evident in the British narrative that dominates, excluding other perspectives beyond anecdotal observations. The colonial sections of the *British Medical Journal* yield sanitary and medical discoveries and discourse, while other topics were sourced from newspapers or, in one case, transcribed from an address given to an international medical conference.

While these sources were read in the colonies, indicating the diffusion of knowledge between these spaces, the primary sources from Great Britain suggest the continuous perception of the colonies as territories operating under the direction of the empire, rather than as spaces that might support their own perspectives. The political progression towards independence from the Crown is evident in some of the movements that improved sanitation and medicine, but the

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<sup>9</sup> Bhattacharya, "Disease and Colonial Enclaves," 5..

<sup>10</sup> Brasier and Dunk, "Incarceration, Migration, Dispossession, and Discovery."

operation of these spaces as colonies, dependent on the governance of the Crown, dictated the infrastructure that addressed sanitary concerns through my period of focus. Additionally, these sources—specifically those concerning Australia—do not shed much light on indigenous people in sanitary contexts and as a result, my findings yield very little insight regarding indigenous perspectives. In the discussions of India, the watershed of germ theory and increased anatomization in Social Darwinism is increasingly evident, primarily through the use of language reflecting race theory. The active colonization of both spaces relegated their presence within journals and papers to a distinct section apart from the rest of Britain and Europe, regardless of their congruences with British society or medical practices.

### *Variations in Colonization and Colonialisms*

Colonialism is a set of practices, theories, and histories that are as diverse as the world regions and populations involved. The human histories of colonialism and processes of colonization can be traced back to Ancient Greece and its colonies within the Mediterranean, and throughout societies in the Near East along the Nile.<sup>11</sup> Regardless of how inherent the concept of colonialism might appear to be within human societies, the colonial organizations of European powers between the sixteenth and twentieth centuries are characterized by modern technologies and processes engineered to enhance and maximize economic and political outcomes across the globe.<sup>12</sup> Expanded maritime exploration and technologies of communication marked a new age of colonization dominated by European empires that spanned the globe.

Scholars have long distinguished between various forms of colonization, identifying settler colonialism as the result of populations emigrating to permanently reside in colonial

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<sup>11</sup> Malkin, Irad. *Religion and Colonization in Ancient Greece*. Studies in Greek and Roman Religion, v. 3. Leiden ; New York: Brill, 1987.

<sup>12</sup> Stuchtey, Benedikt. "Colonialism and Imperialism, 1450-1950." (2011).



territories, as is evident in North America, between Canada and the United States, South Africa, and Australia.<sup>13</sup> To differentiate between settler colonization and colonial endeavors focused on economic or physical exploitation, the term “exploitative colonialism” has been coined.<sup>14</sup> While appropriate, the exploitative nature of all colonization makes it a somewhat arbitrary term that fails to adequately differentiate between distinct colonial processes. It implies that there is a form of colonization that is *not* exploitative, which is objectionable, especially in the context of the often extreme exploitation experienced by indigenous populations in settler colonies. Therefore, in order to clarify the colonial contexts for the purposes of this paper, I define three distinct forms of colonization: trade, territorial, and settler.

*Trade* colonialism takes the traditional place of *exploitation* colonialism to refer to colonial projects that were focused largely—if not solely—on profiting through commerce. The establishment of colonies with the primary intention of exporting goods and labor from the 18th century reflected emerging mercantile theories and practices. These motivations inspired early modern European states and companies to establish broad trade colonies such as those in Southeast Asia and parts of the African continent. The primary motivation was profit, with little regard or consideration for the existing native population beyond their possible contributions to the outcome. The explicit exploitation of resources and fiscal outcomes that flowed out of trade colonies was the project of commercial companies, rather than states. Trade colonies did not, for the most part, include a focus on missions of civilization. The governance of these trade colonies by a company rather than a state or political organization is largely what differentiates these colonial spaces from what is here referred to as territorial colonialism.

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<sup>13</sup> Veracini, Lorenzo. “‘Settler colonialism’: Career of a concept.” *The Journal of Imperial and Commonwealth History* 41, no. 2 (2013): 313-333.

<sup>14</sup> This is a term that has been used in the literature—and within informal avenues of colonial study—though an origin or concise definition within a specific work remains ambiguous. There is a habit of referring to non-settler colonial processes as a normative “colonialism,” which fails to capture certain patterns and outcomes.

Territorial colonialism refers to the processes through which a colonizing power establishes political control over a territory and the indigenous population. The original British territories in India were thus trade colonies of the East India Company (EIC). Further expansion into the subcontinent and the subsequent transition of power to the British Crown, along with the establishment of the Raj system, made India into a region of territorial colonies. The political complexities of the Raj system, the vast linguistic and ethnic differences in the land that became India, and the role of European mercantilism within the geographic location of the territory all played essential roles in the political and economic colonial process over the course of two centuries. There was not, however, an explicit goal to establish British settlements or extend the British domestic sphere into the Indian subcontinent. The few social spaces that were reminiscent of those in Britain were highly segregated and exclusive to Europeans and a select Indian elite.

Settler colonialism in contrast is a process that involves the migration of settlers from the imperial metropole to the territory that it is colonizing. This form of colonization was at times the original intent—as was the case in Eastern North America—but in other contexts was the result of a shift in colonial and imperial motives. Settler colonialism is not inherently ethnically or religiously homogeneous, but the immigration of a non-native population establishes another degree of power and dominance over the land and indigenous population. In other words, regardless of the complicated dynamics among colonists and immigrants of various origins, the indigenous population was usually considered to be the bottom social tier. The rejection of indigenous people as citizens or equals is another facet of this colonialism, as was their often genocidal removal to facilitate the growth of settler colonial territories. In the context of Australian colonial history, the further differentiation between settler colonialism and penal colonialism is also relevant. The colonies initially formed by the British in Australia were not

engineered through settler colonialism. Instead, a population of convicts was sent to the Australian continent and is an irrefutable and influential part of the history of Australia, and the medical and sanitary lens that is at the core of this study. Although the foundations of Australian settlement were in penal colonies where convicts fulfilled sentences of labor, it did ultimately become a land of settler colonies. Nevertheless, as is explored in this paper, sanitation and public health on the continent were shaped by both the processes of settler colonialism and the period during which the territory functioned as a site for British penal colonies.

While there is an identifiable timeline that marks the beginning of contact and the process of colonization in Australia, “there is no universalizing or generalizing story of colonization that can be told for the Australian continent and there are few local studies.”<sup>15</sup> The colonization of this space, in both the process of settler colonization as it differed from colonizations with origins in trade and in its history specific to the people and land, becomes difficult to simplify. The attributes of Indigenous Australian cultures and societies on the continent, while not uniform, marked it as a distinctly different process than that of, say, India.<sup>16</sup> The formation of small colonies that had limited and sporadic contact with the social and political metropole of the British Empire meant an uneven development of relations between the Indigenous Australian population and settlers, of the land and growing urban sites, and the ways in which certain spaces were governed. Staking claim to portions of land, the establishment of a colony, and the process of defending each piece as it was marked and grew was a typical process of such settler colonies.

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<sup>15</sup> Macdonald, Gaynor. “Colonizing Processes, the Reach of the State and Ontological Violence: Historicizing Aboriginal Australian Experience.” *Anthropologica* 52, no. 1 (2010): 50.

<sup>16</sup> Macdonald, “Colonizing Processes, the Reach of the State and Ontological Violence,” 49–66; There is no succinct agreement on a term that “best” identifies the Indigenous Australian population, because there is not a uniformity of one people. Aboriginal, Indigenous, First Nation, and Native Australian are all terms I have found in the literature. The generalized nature of my work leaves out a direct identification of specific Indigenous Australian groups. I use Indigenous Australian, but acknowledge that there are those who would prefer to be identified in another way.

Broad conflicts and a pattern of genocidal removals of Indigenous Australian populations seen on the continent were also familiar to other settler colonial processes globally.

While there are contrasts between these forms of colonialism, it should be noted that they did overlap in their practices and are not mutually exclusive. Even if the complexities of colonial history make it difficult to draw clear distinctions, especially as some territories experienced multiple colonialisms simultaneously or over time, the primary differences were key factors in the sanitary and medical developments under British colonial rule.

### *Placing India and Australia*

The colonization of India was a complex venture lasting multiple centuries and involving many different organizations. Initially begun in 1757 as an economic investment of a private company, by the middle of the 19th century the British Crown took control of the land held by the EIC and embarked on a period of further expansion through the subcontinent. As a colony of the state, the political upheaval of the previous system marked an opportunity to launch new initiatives and expand the responsibilities of local administration. Sanitation and medical services, in particular, saw significant expansion through the last decades of the 19th century. European enclaves within British territories were segregated on the basis of class, the ruled apart from the rulers, and increasingly on the basis of the perceived threat to European health posed by Indian populations. The use of “hill stations,” settlements at high altitudes thought to prevent illness found in the lowlands, were built as concerns were raised for British troops that failed to fully recover from cholera and other illnesses.<sup>17</sup> Sanitary segregation was increasingly utilized towards the end of the century, forcefully separating populations afflicted by leprosy or various

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<sup>17</sup> Bhattacharya, “Disease and Colonial Enclaves,” 10-11.

infections.<sup>18</sup> The growing field of tropical medicine and solidifying theories of racial difference were highly influential in a colonial space where Europeans represented a very small minority of the population.

Establishing the first European colonies on the Australian Continent in 1788, Britain sent a collection of convicts to the Eastern coast. The colonization of Australia by free settlers increased substantially in the 19th century, especially after the end of the penal system and the discovery of gold in the 1850s. The initial foundation of Australian settlements relied on the labor and presence of convicts in penal colonies, and as their contracts ended, the newly freed colonists formed communities and held land rights within the growing settler/colonial economy. As the population was founded with penal origins, so was the system of health care. Hospitals were primarily considered spaces for convicts and members of the military, while the emerging—but rapidly expanding—population of free settlers relied on privately funded or self-reliant forms of care. Sanitation was further complicated by the fact that the typical systems employed in the metropole failed to suffice in the Crown's new country. The sanitation and health systems developed in Australia were built over a shorter period of time compared to those in both India and European cities but were organized with the intention to create a healthy country for white settlers comparable to the British metropole.

### *The Advent of Germ Theory*

For England and much of Europe, the 19th century was a period of scientific exploration that forever changed long-standing conceptions of health and the body. Until the end of the 19th century, humors and miasma—air particulates, often associated with the olfactory sense—were

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<sup>18</sup> Mushtaq, Muhammad Umair. "Public Health in British India: A Brief Account of the History of Medical Services and Disease Prevention in Colonial India." *Indian Journal of Community Medicine* 34, no. 1 (January 2009): 7.

understood as the primary cause of illness and were the first considerations of medicine and sanitation.<sup>19</sup> The humoral theory was also pivotal to the general European view of the tropics and the use of hill stations.<sup>20</sup> Equatorial regions featured heat and humidity unfamiliar to most Europeans. The identification of the “tropics” as a medically distinct region was not an invention of the Victorian era, but study of the relationship between climate, place, and deadly diseases grew in urgency during the latter part of the century.<sup>21</sup> On the grounds of humoral theory, the dangers of tropical air and water were solidified into a malevolent climate. The “discovery” of the tropics in the Atlantic centuries before was an initial site for the invention of “tropical races,” thought to be immune to tropical diseases and more suited to life in the climate based on an alternate balance of humors.<sup>22</sup> India was established as the tropics firmly by the 1850s, and there was a subsequent shift away from the tropics as facilitating disease, towards their environments being inherently diseased.<sup>23</sup>

Increased use of the microscope to view water, blood, and tissue revolutionized the view of the human body and disease, anatomizing the body on a level beyond the scope of the naked eye.<sup>24</sup> The discovery of pathogens that caused disease first in animals and then in people further divided populations according to conceptions of racial difference and buttressed the separation of Europeans from people native to tropical regions.<sup>25</sup> Environmental determinism, an idea that considered the environment as an indicative factor in life outcomes, helped to instantiate

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<sup>19</sup> Dennis, Richard. “Victoria Street in Theory and Practice: Scenes from the Governmentality of Nineteenth-Century London.” In *London and Beyond*, edited by Matthew Davies and James A. Galloway, 287–316. Essays in Honour of Derek Keene. University of London Press, 2012, 297; Tullett, William. *Smell in Eighteenth-Century England: A Social Sense*. First edition. The Past and Present Book Series. Oxford: Oxford University Press, 2019, 79.

<sup>20</sup> Arnold, David. “The Place of ‘the Tropics’ in Western Medical Ideas since 1750.” *Tropical Medicine and International Health* 2, no. 4 (April 1997): 307; Curtin, “Medical Knowledge and Urban Planning in Tropical Africa,” 238.

<sup>21</sup> Arnold, “The Place of ‘the Tropics’ in Western Medical Ideas since 1750,” 307.

<sup>22</sup> *Ibid.*, 308.

<sup>23</sup> *Ibid.*

<sup>24</sup> Cunningham, Andrew. “Transforming Plague: The Laboratory and the Identity of Infectious Disease.” In *The Laboratory Revolution in Medicine*, 209–44. Cambridge University Press, 1992.

<sup>25</sup> Arnold, “The Place of ‘the Tropics’ in Western Medical Ideas since 1750,” 308.

distinctions based on health and sanitation that pervaded society across socioeconomic and racial lines. The discovery of germs and the presence of diseases like malaria in the blood could have resulted in the acknowledgment of equal susceptibility to infection for all humans, thereby undermining the association between race and disease. Instead, colonial scientists chose to reinterpret asymptomatic populations—the indigenous population with malaria already present in their blood—as “reservoirs of disease.”<sup>26</sup>

While these ideas were investigated and increasingly accepted by the end of the century, initial discoveries of germs and microorganisms were not the sole foundation of the distinction between Europeans and Indians. Disease was largely considered a moral issue, pertaining to both a 19th-century social metaphor and to conceptions of “civilizing” missions.<sup>27</sup> Tropical diseases were seen as yet another facet of the uncivilized world that were pervasive due to a lack of civil organization that might mitigate them.<sup>28</sup> The environmental determinism of health as an indicator of class or potential was applied in the colonial Indian setting to provide services and privileges to Europeans, before the economically or politically elite Indian population—if at all. In Australia, the discovery of the germ and the correlation between dirty water and disease in the metropole were equally important to the colonial process and the formation of health services. Environmental determinism applied there as well; the land was known as rough and wild, with varied environments, thought to require and foster a hardier population.

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<sup>26</sup> Harrison, Mark. “Introduction.” In *Climates & Constitutions: Health, Race, Environment and British Imperialism in India 1600 - 1850*, 1–24. New Delhi: Oxford Univ. Press, 1999, 22.

<sup>27</sup> Dossa, Shiraz. “Slicing up ‘Development’: Colonialism, Political Theory, Ethics.” *Third World Quarterly* 28, no. 5 (2007): 887–99; Helle, Horst J. “Exchanges of Threats: The Opium Wars.” In *China: Promise or Threat?: A Comparison of Cultures*, 14–23. Brill, 2017; Singh, Anjana. “Early Modern European Mercantilism and Indian Ocean Trade.” In *Empires of the Sea: Maritime Power Networks in World History*, edited by Rolf Strootman, Floris van den Eijnde, and Roy van Wijk, 245–62. Brill, 2020.

<sup>28</sup> Arnold, “The Place of ‘the Tropics’ in Western Medical Ideas since 1750,” 305.

## *Organization*

In the sections that follow, the analysis is divided regionally, focusing first on the British metropole, followed by India, and then Australia. Starting in England, the British metropole was a key site of evolving medical and social conceptions of sanitation and health. As the cultural center of the British population, sanitary improvements in the metropole inspired reforms that colonial governments attempted to implement in vastly different geographical settings.

Moving into India, I provide a review of the colonial process through which the British asserted territorial control over the subcontinent. Because of the heavy and continuous military presence required to maintain control over India's diverse populations, the colonial establishment of health and sanitation initially largely served to benefit the health of British troops. Based on humoral theories of health and environmental determinism, sanitary segregation was a tool of both colonial medicine and the colonial government. The development of tropical medicine was a later manifestation of the discovery of germs, and of medical discourse that succeeded in differentiating the indigenous population from Europeans on a biological basis. Through analysis of British medical journals and previous works that correlated sanitation with colonialism, the importance of health and how it was viewed by the British in the Indian context is examined.

The analysis then turns to Australia and begins with a similar review of its colonial history. The initial health systems in penal Australia considered convicts and the military as resources of human capital, similar in many ways to how health was approached in India. The increase in the free population over the course of the 19th century initiated a transition away from criminal hospitals toward a public system of health provision. The Australian gold rush and expansion of frontier settlements led to a perception of Australian bodies as particularly hardy, separating them from the general population of the metropole. Both sanitation and public health



for settlers, with little to no consideration of Indigenous Australians, were viewed in British medical discourse as foreign issues. Increased political organization on the continent, along with social initiatives promoting health and sanitation reforms, distinguished Australian sanitation and surgery from the practices of the metropole.

In reviewing the histories of colonial spaces through a sanitary lens, it becomes clear that colonialism, medical theory and practice, and the foundations of biological distinctions of race are intrinsically related. There was no direct flow of influence; these processes informed and impacted each other continually through the 19th and well into the 20th centuries. Major discoveries in the British metropole were brought to the colonies, and the work accomplished in colonial outposts was brought back to England. This dynamic exchange of ideas and practices between the metropole and the periphery occurred through the discourse surrounding medical practices, colonial advances, or through the presence of military and trading seamen that returned home. The dynamic union of sanitation, medicine, public health, and the colonial goals of the British government as they produced different outcomes and processes between the colonies of India and Australia can be seen using historical study through the view of a sanitary lens.

## Sanitation and Health in 19th Century England

The 19th century saw many changes in the streets and infrastructure of England and the colonies of the British Empire. In the first decades of the century, there was a great emphasis on the improvement of London and other large cities in Great Britain. These improvement initiatives focused on urban concerns like the congestion of population in public areas, the possible improvements to the organization of business and financial sectors, efficient spatial usage, and—important to this paper—improvements in sanitation, public health, and their infrastructure.<sup>29</sup> Surveys and maps beginning in 1831 led to surprising results regarding the health of those living in the poorest areas: they were in relatively good health. Those within higher classes, and especially those performing this research, were working off of a common understanding of diseases and poor health being spread by miasma, or air particulates, found in bad smells that heavily permeated these poor neighborhoods.<sup>30</sup>

Physicians were incredibly wary of waste, and its pollution of the air (which they then called “bad air” as far back as the sixteenth century), in the nineteenth century; they became more aware of its danger as germ theory progressed into the twentieth century.<sup>31</sup> The cause of the so-called “bad air” was waste, most frequently disposed of simply out into the street, or into pits that festered within neighborhoods. A historic health regimen that aimed to reduce the effects of polluted air was the inhalation of “sweet smells,” such as flowers. While the rudimentary science of correlation led to this practice, it was not until the middle of the 1800s that a scientific basis was established for public sanitation.<sup>32</sup> Along with an emerging science of waste removal, there

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<sup>29</sup>Dennis, “Victoria Street in Theory and Practice.”

<sup>30</sup> *Ibid.*, 297.

<sup>31</sup> Anderson, “Excremental Colonialism,” 642.

<sup>32</sup> Doty, Alvah H. “Modern Sanitation.” *The North American Review* 196, no. 684 (1912): 675; Yeoh, Brenda S.A. “Urban Sanitation, Health and Water Supply in Late Nineteenth and Early Twentieth Century Colonial Singapore.” *South East Asia Research* 1, no. 2 (September 1993): 146.

was a clearer understanding of the importance of pure water to growing towns and cities.<sup>33</sup>

Getting water from local streams and open sources that were susceptible to pollution from waste in the streets was no longer acceptable, and the separation of sewage and other forms of drainage became important to those trying to improve water quality.

One of the most crucial artifacts in the historical study of health in London is the map included in a report published by physician John Snow.<sup>34</sup> The study that produced the map, beginning in the year 1818 and continuing through the 1850s, involved the mapping of cholera outbreaks as they emerged, identifying the patterns of origin and spread. The report established a connection between an outbreak of cholera and a specific pump from which many of the afflicted sourced water for all manners of household uses. The sources of fresh water used daily were provided and maintained by water “companies” belonging to each neighborhood or district, not one comprehensive organization, so the disparities were noticeable when studied in the form of maps. Cholera was a fear of populations worldwide, and Snow’s identification of its origin through water differed from past notions of it coming solely from the fermentation of waste. The smells that emerged from waste, thought to cause disease, were established as a result of this process of fermentation. The regulation of water and sewage was pushed into the domain of governmental, rather than private, responsibility.

The connection between “bad” water and cholera marked the beginning of a new era, not only in the knowledge of water-borne diseases (which became more important as a contradiction to the miasma theory) but also as a facet of the argument over the public responsibility for water sources. The poorly organized systems of waste disposal within London, replicated in English colonies worldwide, were detrimental to the supply of clean water. Flooding led to the pollution

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<sup>33</sup> Yeoh, “Urban Sanitation, Health and Water Supply,” 143.

<sup>34</sup> “A Map Taken from a Report by Dr. John Snow.”

of groundwater, and public concerns over the safety of rivers, streams, and wells were observed by those of upper society concerned with the public sphere; in 1842 a Metropolitan Improvement Society was established.<sup>35</sup> The improvement of water and its accessibility was as much an issue of physical health as it was of societal well-being. The issue of water's purity as a concern of necessity evolved into a more social issue with conceptions of environmental determinism, positing a connection between the environment in which an individual was raised and their outcomes in life. Water was increasingly viewed as a resource that was disproportionately protected and maintained between neighborhoods with different statuses throughout the city.

The pollution of drinking water was still a concern for higher society, but they were able to maintain private water sources and fund the maintenance of wells and pumps. Wells, both public and private, faced problems with the decomposition of waste that had been buried. Cesspits were the primary form of dry waste disposal; these pits were the dumping locations of both household and human waste, and were not securely constructed to be watertight.<sup>36</sup> The "pail-system," which later became the slightly more sanitary "two-pail system," consisted of pails that were left out to be collected in a vessel that was later emptied into a common cesspit or cesspool. The poor construction of the majority of these pits meant heavy permeation of the waste matter into the soil and the surrounding water supplies (like wells). This imperfect system was carried over from England to colonial sites like Sydney in Australia.

Due to the understanding of health as it related to the sanitary infrastructure of cities and towns, the practices that led to the development of these two areas were initially connected, much in the ways that they still are today. The perception of illness as directly tied to the air and

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<sup>35</sup> Dennis, "Victoria Street in Theory and Practice," 288.

<sup>36</sup> Wong, Anna. "Colonial Sanitation, Urban Planning and Social Reform in Sydney, New South Wales 1788 - 1857." *Australasian Historical Archaeology* 17 (1999): 60.

its smell marked the sanitary conditions of streets, along with both public and private spaces, a medical concern.

Miasma and foul smells would fade in medical and sanitary importance, but their initial prevalence at the start of the 18th century would greatly influence both medical theory and its development in overseas colonies. The anatomical study of the human body brought the olfactory sense into focus, as a physical offense to the barriers of the internal body and its health.<sup>37</sup> The development of the Germ Theory in the last decades of the 19th century was offered as an opposition to the prevalence of miasma as a factor of disease. The lack of immediate acceptance and pursuance of the Germ Theory meant that miasma and odors continued to play roles in the developing sciences and medical studies centered in the tropical environments of overseas colonies, informing the European experience and their specific locations of settlement.

### *Germ Theory and the Microscope*

As miasma and scent-specific conceptions of illness maintained dominance, prominent works at the end of the 20th century marked a new concern for the medical and scientific communities of Europe. The microscope allowed for a more specific and localized view of the human body and its components, such as the microorganisms that worked within it. Snow's map and his work that traced cholera outbreaks to their source, while not concluding what specific germ caused the illness, was a first instance of epidemiology. This revolution in science and medicine did not immediately find its place in either field, but its importance to the development of the sciences of both medicine and sanitation, and the relationship between them, was especially heightened at

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<sup>37</sup> Tullett, *Smell in Eighteenth-Century England*.

the close of the 19th century. Furthermore, examination of “tropical” diseases were integrated into the medical environment of colonial India and Africa through the discovery of malarial and choleric pathogens within the blood of the indigenous populations. To ignore the prevalence of the germ and the microscopic study of anatomy would leave a large portion of this history unfounded.

The “germ” is a term used for both the particles in the air that were known as “miasma,” and increasingly for the newly discovered pathogenic microorganisms. Professor Louis Pasteur and physician Robert Koch were two competing figures that contributed greatly to the discovery of specific disease-causing pathogens.<sup>38</sup> Decades after his discovery of microorganism fermentation—a cause of illness—and in an address given to the International Medical Congress in London (1881), Prof. Pasteur reviewed his work on pathologies and vaccinations. He highlights the growing recognition of the germ in the wider medical community of which he was a part:

It is through this inquiry that new and highly important principles have been introduced into science concerning the virus or contagious quality of transmissible disease...I cannot conclude, gentlemen, without expressing the great pleasure I feel at the thought that it is as a member of an international medical congress assembled in England that I make known the most recent results of vaccination upon a disease more terrible, perhaps, for domestic animals than small-pox is for man.<sup>39</sup>

Though the germ was still in the process of gaining acceptance in medical practices and the modern conceptualization of disease in the blood and body, this passage helps us to recognize that the work on the germ and its presence in conversations of disease was an increasingly

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<sup>38</sup> Cunningham, “Transforming Plague: The Laboratory and the Identity of Infectious Disease.”

<sup>39</sup> Prof. Pasteur. “On the Germ Theory.” *Science* 2, no. 62 (1881): 422.

prevalent part of medicine. Pasteur's address to his peers highlights the community within which these medical experiments were recognized, and the theaters of the globe in which they took place.

The application of their work to the development of the germ theory was accompanied by the work done in medical communities globally. Pasteur and Koch worked within a larger field dominated by European conceptions of medicine. The experimentation and discoveries that added to a larger body of medical knowledge were completed not only in Europe, but in the colonial sites of India and Australia. Diseases like Malaria were subjects of medical study in the colonies, where it was most prominent. Vaccines and antitoxins were the result of this work, but they were not always accessible or sought after; fear and dislike of the process are evident in this passage which heralds the refusal of a British doctor to follow a vaccine mandate:

The Vaccination Commission, he said, agreed that it was possible to guard against smallpox by sanitation. In a foreign country, where vaccination was unknown, he had himself stamped out a smallpox epidemic, so that he had some reason for his contentions... There [Germany] it was carried out on the principle of the purest science, with no chance of disease resulting; but here... he never vaccinated a child without the greatest revulsion.<sup>40</sup>

Germ theory and new ideas that came out of the microbiological revolution were not immediately accepted. It was, for the majority of the global population, the goal of habitual prevention outside of vaccinations that was performed from a medical and sanitary view.<sup>41</sup>

Although the concept of the germ and its applications to the vaccination and other medicines did not immediately take hold across the entire population, it formed a school of

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<sup>40</sup> "Vaccination." *The Times*. February 15, 1898. The Times Digital Archive.

<sup>41</sup> Lewis, "Medicine in Colonial Australia, 1788-1900," 57.

thought that served to anatomize medicine further. The discourse of blood and pathology, though initially applied to the diseases present in livestock and other domestic species, made its way into the conversations had when discussing diseases that were thought of as “native” to other regions, such as the tropics and East Asia. The populations of Europeans that suffered from diseases such as cholera and malaria further incentivized a more extensive pursuit of knowledge for these diseases. Koch, having claimed to discover the pathogenic cause of cholera, performed much of his work within India and Egypt. Cholera was identified so thoroughly with these regions that its study was increasingly performed there, especially in the Indian subcontinent.<sup>42</sup> The investigation of illnesses within these geographies and within the *people* indigenous to them was a further repercussion of the European medical community investigating the germ.

While the discovery of the germ is further contextualized in later sections, it is important to note that it had a great impact on the conceptualization of diseases in the colonies and their populations from within the metropole. This transition in the study of disease and its bodily presence fit into the already prevalent ideas of illness as a moral issue, of societal metaphors that connected the presence of disease to an indication of larger problems within a population.<sup>43</sup> In the British metropole, this discovery lessened the moral pressures of disease, and promoted ideas of vaccination and the pursuit of disease eradication among all classes and populations. In colonial spheres, it was not applied in such an egalitarian fashion. The anatomical position of the body in relation to disease was a perspective that might have rendered all bodies *human*, but the application of this science, together with pseudo-scientific theories of racial difference, instead racialized bodies, diseases, and the spaces within which they interacted.

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<sup>42</sup> Harrison, Mark. “A Question of Locality: The Identity of Cholera in British India, 1860-1890.” In *Warm Climates and Western Medicine: The Emergence of Tropical Medicine, 1500 - 1900*, edited by David Arnold, 2. ed. Clío Medica 35. Amsterdam: Rodopi, 2003.

<sup>43</sup> Swanson, “The Sanitation Syndrome,” 387.



# British India

## *Processes of Colonization*

Before the colonization of India by the British, the region that is now India was ruled by the Mughal Empire (1526-1858).<sup>44</sup> The Mughal empire was formed in a piecemeal fashion, comparable to the fragmentation of Europe in the Early Modern period, but that fragmentation slowly gave way to the unification of most of the Indian subcontinent. The British used the historical fragmentation in their pursuit of colonial territory, forming connections with elites not entirely satisfied with Mughal methods. While the Mughal empire remained powerful throughout the seventeenth century, its peak was reached in the early eighteenth century, and a period of decline ensued after the death of Emperor Aurangzeb in 1707. Over the next century and a half, the further fragmentation of the Mughal empire meant that it functioned only in name.; In the absence of a centralized administration, and with repeated invasion of the territory by other powers, the empire splintered back into mini-states led by locally powerful princes. By this time, the British East India Company, operating as a privatized economic endeavor, began to infiltrate (or something like that) in the subcontinent.

Delhi was the site of many conflicts in the eighteenth century. As the Mughal empire began to weaken, the Sikhs of Northern India, Hindu warrior kingdoms, Muslim adventurers, and the armies of Persia and Afghan tribes fought over access to the wealth of the city.<sup>45</sup> Taking advantage of the conflicts between local powers, the EIC claimed the territory of Bengal between 1757 and 1765. Bengal was a rich territory, known for its production of woven goods and rice.

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<sup>44</sup> Bayly, C. A. *The Birth of the Modern World, 1780-1914: Global Connections and Comparisons*. The Blackwell History of the World. Malden, MA: Blackwell Pub, 2004, 30.

<sup>45</sup> Bayly, *The Birth of the Modern World, 1780-1914*, 90.

The EIC's establishment as an independent power, rather than as a trading partner of a local prince, marked the beginning of private military rule in what later became formalized as India. Continued conflicts between Iranian Safavids, Persia, and local Indian regimes further weakened any defense against Britain that might have otherwise been possible.<sup>46</sup>

British-Indian fiscal states operated with the intention of raising revenue, not only to continue territorial expansion, but also to pay for the wars and debts accrued by the British Empire globally. The initial overthrow of the ruling Bengal state occurred during the Battle of Plassey, ending in 1757, and the EIC installed a rival candidate that would allow the company to function as the "master" of Bengal. The company began taxing the population and trade activities, even forming its own legal system for taxation; this system would be adopted and maintained by the British State after the company lost power. The armies hired to aid in the expansion of the British territories in India also participated in the conflicts that ravaged South and Southeast Asia. Indian troops employed by the British fought in the First Opium War, aiding in the success of the British and their continued increase of wealth through newly opened markets in China.

At the time of the First Opium War, India was not yet held by the Crown but was still in the name of private enterprise. By the 1850s, the EIC had control over vast territories on the subcontinent. While the employment of Indian soldiers continued, general unrest increased through the middle of the nineteenth century. Discontent regarding taxes, terms of annexation, and rumors of religious pollution stemming from the non-consensual greasing of cartridges with pig fat, was pervasive and disincentivizing among Indian soldier populations. These concerns inspired the Great Mutiny of India (1857), an uptake of arms by Indian soldiers against the EIC. This conflict resulted in the defeat of the Indian army, the banishment of the last Mughal

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<sup>46</sup> Bayly, *The Birth of the Modern World, 1780-1914*, 91.

emperor to Birma, and further consolidation of land and wealth by the EIC. With this gain, the British Empire took India from the EIC, and India officially became a colony of the state.

While the invasion of the Indian subcontinent began at the end of the eighteenth century, the Crown's rule over British India in conjunction with the Raj system was not officially established until the year 1858. The Indian Rebellion of 1857 meant both a transition of power from the EIC to the British Crown and the final year of the Mughal Empire. The British utilized many tactics in their long pursuit of Indian territories, but one of the most formative methods of control was the employment of Indian troops. The wealth already maintained by the British, and the EIC, meant there was an advantage of incentive in the formation and maintenance of these Indian armies; the British paid well and in gold. These armies, in turn, aided the formation of British fiscal states within the territory, operating with little political control initially, but maintaining a system of profitable taxation. Expanded fiscal states controlled by military presence marked the tentative start of the colonial rule of India by the Great British Empire.

As the EIC moved through the subcontinent, local rulers and existing princes of minor states were integrated into the system of EIC rule, with advisors placed by the EIC to guide them. The EIC had primarily been concerned with revenue and profit, and not with the installation of direct rule. When the territory held by the EIC was formally handed over to the crown, the British Raj system was established as the system of direct rule in India. The incentives of the Raj were still guided by revenue, and the social and political orders were largely preserved from the organization of the Mughal Empire. The rule of India as an overseas colonial empire fostered both the entrenchment of the British within India and the continued exclusion and subordination of local populations. There were Muslim nobles and other elite groups, along

with those at the heads of princely states, that saw British policies as favorable and sought further integration into the British Empire.

It was during this time that a broad conversation regarding “the state” and its responsibility to its population began expanding. While changes and improvements in resource delegation were not universal, the percentage of those receiving education increased, and a rudimentary understanding of public education began to take hold, especially among European and “Western” political states. Increased levels of education also raised the quality and capabilities of bureaucrats and officers, further expanding the possibilities of the state itself. In Europe and in settler colonies, the distinction between classes applied widely across populations. Still accounting for ethnic and increasingly racial factors in class distinctions, wealth and land holdings were influential to the agency that might be afforded to an individual. In the territorial colonization of India, class distinctions were more drastically identified between Europeans and Indians, with wealth and land holdings being a secondary factor.

Within this period the concept of public health began to take hold, gaining importance in the colonies as well as in the metropole. Sanitation in conjunction with government intervention and class lines became a growing area of interest and responsibility of the state, especially within colonial spaces. Debate over subject status in relation to economic class, ethnic boundaries, and modern racial distinctions was a prominent feature of 19th century colonies. In governmental and societal organizations, sanitation remained a primary concern that was simultaneously underrepresented in broad debates. Access to water and health services grew as state responsibilities but were not universally provided to different subject populations. The focus of sanitary and health-related reforms centered around the maritime presence of British seamen and military troops, with a large majority of Europeans in India seeing their time on the subcontinent

as a temporary sojourn or part-time stay.<sup>47</sup> The health and safety of subjects that frequently traveled between the metropole and colonies as a concern of political states and empires developed during the same period as modern conceptions of germs, disease, and the study of “tropical medicine,” a crucial facet of the sanitary history of Colonial India.

### *Sanitation and Health as a Colonial Establishment in India*

The arrival and organization of the EIC as a colonial power also marked the arrival of European medical officers into Indian territory. The company had both civil and medical services established in the territories it claimed, and an official medical department in Bengal can be dated back to 1764.<sup>48</sup> The goal of British expansion and economic subjugation throughout the subcontinent meant military presence and strength was of high importance to both the EIC and later, the Crown. The concerns of health and sanitation were thus primarily focused on British soldiers stationed in India. This concern remained a priority well into the 19th century, as Europeans structured their own commercial, military, and social spaces within the previously established communities of what we now know as India.<sup>49</sup>

Tropical sanitation, hygiene, and medicine were concepts that were held in high regard for those within colonial and maritime space from the 16th century onwards, due to the constant threat of illness and its consequences for both individual life and successful administration. The establishment of political and economic centers of power for the British colonizers in India were dependent on their ability to not only maintain a physical presence in the form of a strong military, but also on the promise of medical safety for figures in the government, economy, and their families. While it was not a strict goal within India that settlements would be established

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<sup>47</sup> Dutta, Manikarnika. “Cholera, British Seamen and Maritime Anxieties in Calcutta, c.1830s–1890s; ‘The William Bynum Prize Essay.’” *Medical History* 65, no. 4 (October 2021): 314.

<sup>48</sup> Mushtaq, “Public Health in British India,” 6.

<sup>49</sup> Bhattacharya, “Disease and Colonial Enclaves,” 1.

and then increasingly populated by a civilian European population, the neighborhoods and hill stations organized for Europeans were a primary medical concern. The British focus on health in India was oriented towards European illness, and the transmission of disease back to the metropole. There is significant evidence showing that proper sanitation *limited* the rates of mortality and morbidity of the European population, even as deaths with similar causes remained high for the Indian population.<sup>50</sup>

Sanitary systems were not comprehensive or uniform across India or the heavily colonized portions of South Asia. Sanitation services were provided primarily for Europeans within these colonial states, and for Indians who belonged to the elite classes, while the greater Indian population was largely ignored.<sup>51</sup> From the end of the nineteenth century to the beginning of the twentieth, the death rates between the Europeans and the Indian population differed substantially (14 per thousand and 32.7 per thousand respectively).<sup>52</sup> This development solved one of the problems colonial powers had previously faced in the tropical South Asian region as they sought to further their domination. As sanitary practices were unevenly applied between primarily European and primarily Indian dwellings, the provision of health services were also unevenly applied.

Calcutta and Madras were the sites of the first colonial medical institutions in India beginning in the 17th century, with the Madras General Hospital opening in 1679—the first hospital in India. The Calcutta Medical College was established in 1835, as a response to the increased need of medical professionals and personnel in the growing industry of health in India.<sup>53</sup> By 1880, the Imperial government was in control of approximately 1200 public hospitals

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<sup>50</sup> Bhattacharya, “Disease and Colonial Enclaves,” 3.

<sup>51</sup> *Ibid.*, 5.

<sup>52</sup> Yeoh, “Urban Sanitation, Health and Water Supply in Late Nineteenth and Early Twentieth Century Colonial Singapore,” 145.

<sup>53</sup> Mushtaq, “Public Health in British India,” 7.

and dispensaries. Under the presidencies of Bengal, Madras, and Bombay, the medical departments that would later merge into the Indian Medical Services (IMS) were established in 1785.<sup>54</sup> The personnel in IMS were known as officers, further representing the level of militarization present within the colonies. The Governor General of India, Lord Cornwallis, issued an order in 1788 that stipulated a minimum of 2 years served in the army before medical officers were allowed to join civil services.<sup>55</sup>

IMS officers were largely Europeans, or of European origin, who were recommended and then selected within England and sent to the colonies. It was not until 1835—with the opening of Calcutta Medical College—that IMS permitted the admission of Indians as well as Europeans. There were still disparities between positions held by Indians versus Europeans, as Indian graduates were primarily selected to serve in the Subordinate Military Medical Services, or assisting roles.<sup>56</sup> Discrimination in professional and social spheres was an established inhibitor of mobility for Indian populations, including the educated and wealthy elite. Increasingly racialized identifications by Europeans, and a pervasive fear of illness misplaced *into* the Indian population, served as a justification for segregating Indians from Europeans in the realm of health and medicine. Race and its development as a topic in late 19th century medical discourse played a large role in the presence and application of health and sanitation in British Indian colonies.

In Mumbai, previously known and hereafter referred to as Bombay, two prominent studies and subsequent reports on its sanitary state made evident new ideas of both sanitation and public health. The social reforms happening globally as far as the role of government in health were making their way into the colonial government of British India. Henry Conybeare and

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<sup>54</sup> Mushtaq, “Public Health in British India,” 6.

<sup>55</sup> Mushtaq, “Public Health in British India,” 7.

<sup>56</sup> *Ibid.*

Andrew Leith, in 1852 and 1864 respectively, submitted reports to the Board of Conservancy in Bombay that aimed to address and stress the inadequacies of sanitation in *both* the European and Native quarters of the city.<sup>57</sup> These reports reflected a notion of sanitation as an administrative issue, and public health as a study and practice was identified as the solution to this issue. These reports represent the increasingly general understanding of health as a public issue, rather than a private one, even in colonial spheres.

The last years of the 1850s and into the 1860s were a period of increasing interest in sanitation. As the medical establishment of the Indian colonies originated with the presence of maritime and military operators, sanitation was equally focused on the health of British troops.<sup>58</sup> Concern with the health of British servicemen was at the forefront of public health in India, reflecting the conversations being had in England surrounding the appropriate role of the government in health policy. This excerpt, taken from an 1868 publication of the *British Medical Journal*, illustrates both the shifting involvement of the government in public health and the British Indian colonies, and the extension of medical studies within colonial spheres:

OUR Indian letters, by this week's mail, announce that Mr. Maine has introduced into the Legislative Council of India a bill modeled on our English Contagious Diseases Act. The evidence on which this enactment has been founded has, we believe, for some time been collected in the India Office. A native Zemindar of the Madras Presidency has offered a prize of 500 rupees for the best medical work in Tamil—a sign of the times.<sup>59</sup>

The offering of a monetary prize for medical work shows its increasing importance, beyond the consideration of military health. Political and individual interest increased, broadening the regard for the medical profession in colonial India.

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<sup>57</sup> McFarlane, "Governing the Contaminated City," 4.

<sup>58</sup> Mushtaq, "Public Health in British India," 8.

<sup>59</sup> "A Contagious Diseases Act For India." *The British Medical Journal* 1, no. 383 (1868): 433.



Another consideration of health—both public and private—and sanitation in the Indian colonies was its role in the growth of biomedical sciences. The discovery of germs, of disease on an anatomical level, debased the idea that disease was specifically rooted to the climate while maintaining a regional influence. The specific study of *tropical medicine* greatly informed the construction of colonial health in the second half of the 19th century. While the formal establishment of tropical medicine was at the close of the century, the information gathered and applied through the century were pivotal to the emerging ideas of tropical disease. Both tropical medicine and the ingrained concern for British troop health and mortality rates informed decisions to prioritize sanitary segregation, and the development of racialized medicine in colonies on a global scale. The Rebellion of 1857 marked a new era for political organization in British India, as administrative responsibilities were transferred to the Crown.<sup>60</sup> Sanitation was one of these responsibilities, and the organization of reforms spanned from infrastructure to hygienic practices and policies.

The reforms initiated by the rebellion and the subsequent adoption of India into a formally British system of colonies resulted in a wave of reports and studies done in all realms of government, including those of health and sanitation.<sup>61</sup> This did not mean there was an overhaul that led to increased sanitation and improved health; it is evident in Sir Pherozesha Mehta's critique of the “cheapness” of the Empire and its empty promise to the poor population of Delhi.<sup>62</sup> A darker factor of strategic sanitation in India, in accordance with medicinal discoveries of European medical practitioners, was the use of plantation enclaves as sites of experimentation.<sup>63</sup> The colonial attitude of European medicine positioned plantations, mines, and

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<sup>60</sup> Prashad, Vijay. “The Technology of Sanitation in Colonial Delhi.” *Modern Asian Studies* 35, no. 1 (2001): 113.

<sup>61</sup> Broich, John. “Engineering the Empire: British Water Supply Systems and Colonial Societies, 1850–1900.” *Journal of British Studies* 46, no. 2 (April 2007): 346–65.

<sup>62</sup> Prashad, “The Technology of Sanitation in Colonial Delhi,” 115.

<sup>63</sup> Bhattacharya, “Disease and Colonial Enclaves,” 17.

other hubs of Indian populations under the control of an overseer as sites that would exemplify the collective health of the indigenous population. Experiments were organized to discern, from a biomedical lens, how the health of indigenous masses were affected by the diseases that so concerned the British.<sup>64</sup> The growing distinction between European bodies and other non-European populations resulted in a medicalized discourse of race, which was analyzed and applied from the anatomical level of blood and beyond. Joining ideas of Social Darwinism and environmental determinism, sanitation and medicine played a substantial role in the manufacture of biological races.

### *Race Building in Relation to Sanitation*

The expansion of *tropical* medicine as a study was used to distinguish tropical diseases as those “inherent” to the tropics. Much of the language regarding the body in this medical discourse identifies European bodies as distinctly separate from the bodies of those native to colonial territories. In larger scientific discourse, the 19th century was a period of discovery and investigation founded on racist understandings of bodies foreign to those initiating the study. In the discovery of a microscopic presence of illness and the influence of the germ, the initial understanding of disease within the blood meant certain groups were seen as “reservoirs of disease.” This racist interpretation of germ theory differentiated between bodies native to one place or another, who then posed a danger to the health of those within whom such viruses were *not* present—namely Europeans.

By the last decades of the 19th century, race had evolved into a framework of indigeneity, skin color, phrenology, and the anatomical predisposition and presence of disease. While some of these sciences are now recognized as pseudosciences or as having been improperly understood

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<sup>64</sup> Bhattacharya, “Disease and Colonial Enclaves,” 17.

and applied, their influence on the view of bodies across social and geographical bounds in the colonial period were immense. The discovery of the pathogenic microorganism marked a beginning of the era of vaccination and new forms of disease prevention, but it also increased misinformed views of Indian and other non-European bodies as hosts of disease. This facet of 19th century medicine had significant implications for medical and sanitary practices well into the 20th century, racializing spaces across continents. Practices of sanitary segregation and the separation of health solutions on the basis of racial distinctions were increasingly used by the end of the century, in a wide range of colonial spaces.

### Sanitary Segregation

As differences between Europeans and Indians were established along manufactured racial lines, further distinctions rose in relation to sanitation. The colonial government organized segregated neighborhoods on a basis of preserving European health. In the hopes of distancing the European population from those viewed as natural hosts of disease, colonial enclaves were increasingly closed to the Indian population, with exceptions made for those in service positions and some elites.<sup>65</sup> The medical and scientific discourse surrounding disease and how to best prevent its spread to European populations and neighborhoods was instrumental to the development of both segregated neighborhoods and the aforementioned “hill stations” in which the British military sought refuge. These hill stations effectively demonstrate the importance not of geography, but of the weather and perceived environment onto which earlier European medical discourse placed such a heavy emphasis.<sup>66</sup>

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<sup>65</sup> Bhattacharya, “Disease and Colonial Enclaves,” 11.

<sup>66</sup> Arnold, “The Place of ‘the Tropics’ in Western Medical Ideas since 1750,” 305.

The sanitary reforms enacted after the formal turn over of power to the Crown and the Rebellion of 1857 reflect the growing separation between the Indian and European population on a basis of disease and race. For the “civilian” population of Europeans, including merchants and government officials not directly involved in military activities, residential areas were placed in spaces that boasted better ventilation so as to avoid contamination of the “odors” of Indian habitations.<sup>67</sup> Humoral theory, miasma, and germ theory overlapped as motives of sanitary segregation. Concerns for contact and contamination through “odors” were joined with a fear of the pathogen. The increased social concept of race and the racism that permeated the motive of separation between Europeans and Indians was another factor in this segregation. The “sanitation syndrome” of the racialization of colonial spaces resulted from an application of the societal metaphor of disease and epidemiology towards the end of the 19th century.<sup>68</sup>

This colonial segregation has been recognized as the “Indian precedent,” and was applied through European colonies across continents.<sup>69</sup> The sanitary and health-related motives of segregation on a racial level was not limited to 19th century colonial spaces, and has been reflected in segregationary discourse within more governments and communities than just the British. The established European spaces were distinctive, consciously, within colonial spheres. They varied from Indian neighborhoods in their architecture, organization, and in the “amenities” that were afforded to their residents.<sup>70</sup> Entrance to European, increasingly recognized as “white,” spaces was limited for much of the Indian population. It was often only permitted on the grounds of employment or specific permission, and was limited to specific hours, acting as a neighborhood-specific curfew for the population. Hill stations were a segregated space within

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<sup>67</sup> Curtin, “Medical Knowledge and Urban Planning in Tropical Africa,” 236.

<sup>68</sup> Swanson, “The Sanitation Syndrome,” 387.

<sup>69</sup> Curtin, “Medical Knowledge and Urban Planning in Tropical Africa.”

<sup>70</sup> Bhattacharya, “Disease and Colonial Enclaves,” 8.

colonial territories, but they also marked a geographical distinction between those who were “governors,” and those who were being “governed.”<sup>71</sup>

### *Hill Stations*

Hill stations were employed in a similar way to quarantines and sanatoriums. They offered a location for respite against conditions that were thought to be inflicted on troops by their contact with people and environments that fostered disease and ailments. The location of these “health depots” were, unsurprisingly, as high up from valleys and bodies of water as the British could build them. Even then, the barracks were engineered on two levels, to maximize the distance between the diseases thought to inhabit the lower levels and the land itself.<sup>72</sup> This practice was a reflection not only of the miasma thought to permeate the air and render soldiers diseased, but an older conceptualization of health that had to do with the *humors* of the body. The humoral distinctions between hot, cold, wet, and dry marked the low valleys as particularly vulnerable to the permeation of disease.<sup>73</sup>

The outcome of times spent at hill stations were not conclusively in favor of the practice, and further promoted the idea that India’s climate itself was inherently promoting disease in British troops. The *British Medical Journal* published doubts on the effectiveness of their use toward the end of the 19th century, before the germ theory and further medical discoveries fully marked hill stations as an ineffective practice:

...much disappointment has been expressed that many of the most severe cases are not completely cured, because similar cases when sent to England have completely recovered; but then the residence in the cold climate of Europe has extended over one or

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<sup>71</sup> Curtin, “Medical Knowledge and Urban Planning in Colonial Tropical Africa,” 236.

<sup>72</sup> “A Hill Residence For European Troops In India.” *The British Medical Journal* 2, no. 602 (1872): 43–44.

<sup>73</sup> Curtin, “Medical Knowledge and Urban Planning in Colonial Tropical Africa,” 235.

two years, whilst it was only for a short period, and that the most unhealthy, that the climate of the hills was tried.<sup>74</sup>

While the results of periods spent healing in the hill stations were not universally credited with full recovery, their role in the post-1857 sanitary reforms—resulting in a decrease in the death rates of British troops stationed in the colonies—kept this practice within the general sanitary recommendations of sites from India to certain spaces in Africa, which experienced similar diseases and environments.<sup>75</sup>

### *Tropical and Colonial Medicine in India*

In the age of maritime exploration, the realm of the “tropics” was distinguished as the equatorial band that heralded warm weather and abundance. At the same time, the introduction of European sailors to the region of the tropics also introduced new diseases to their populations. Cholera was the disease most associated with the deaths of Europeans in their maritime and colonial pursuits between Europe and Southeast Asia.<sup>76</sup> In the context of British seamen, it can once again be seen how the British medical community elevated the health concerns of one population above another—in this case the seamen below the population of the British metropole. Their role as a bridge between two hemispheres, one villainized in more contexts than just that of health, was further identified as negative through the dispersion of “tropical” diseases through the ports of Britain.

Medical language and social relegation of the people of India as “reservoirs of disease” grew, and the discovery of certain illnesses including . . . and their impacts on British health also marked the region itself as home to disease. The concept of “asiatic cholera,” or of cholera and

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<sup>74</sup> “A Hill Residence For European Troops In India,” 44.

<sup>75</sup> Curtin, “Medical Knowledge and Urban Planning in Colonial Tropical Africa,” 236.

<sup>76</sup> Dutta, “Cholera, British Seamen and Maritime Anxieties in Calcutta, c.1830s–1890s,” 313.

malaria as being “native” to the Indian subcontinent greatly informed the views those in the metropole had of the land and its inhabitants.<sup>77</sup> The mindset of specifically “tropical” disease meant that their spread into non-tropical spheres marked them as invaders, and this distinction was applied further to people indigenous to these spaces as they made their ways into both the European spaces of colonial enclaves, and increasingly into the metropole as well.<sup>78</sup> That tropical medicine was distinguished from other studies of communicable or water-borne diseases further illustrates the “othering” of the region, the people, and the diseases perceived as inherent to them both.

As the British Empire expanded into the Indian subcontinent, the establishment of colonies and European domestic spaces heightened concerns with sanitation and health within the urban spaces of India. The application of Western medicine into the health systems of Indian colonies was twofold. The formation of hospitals and medical learning institutions provided relatively broad access to the newly developed Indian public health care, among Europeans and Indians alike—though not equally. The conception of Western medicine in India, from the perspective of the English, was unsurprisingly savioristic, as seen in the Rudyard Kipling quote used within a *British Medical Journal* publication:

Take up the White Man's burden — The savage wars of peace,

Fill full the mouth of famine, — And bid the sickness cease<sup>79</sup>

This quote reflected the notion that Western medicine was both a saving grace to the people of India and a science that comes solely from the European world. It fails to acknowledge the work done both within the Indian subcontinent and by the Indian medical professionals. Additionally,

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<sup>77</sup> Harrison, “A Question of Locality,” 151; Prashad, “The Technology of Sanitation in Colonial Delhi,” 149; Swanson, “The Sanitation Syndrome,” 391.

<sup>78</sup> Arnold, “The Place of ‘the Tropics’ in Western Medical Ideas since 1750,” 306.

<sup>79</sup> “Western Medicine In India.” *The British Medical Journal* 1, no. 1993 (1899): 613.

the idea that Western medicine was ending the medical suffering of the Indian population, that it was “built on the bed-rock of pure, irrefutable science... a boon which is offered to all, rich and poor... without irreverence” is a conception of public health in India that failed to reflect the reality.<sup>80</sup>

In actuality, the situation of public health for the greater Indian population was far from the ideal of mercifully supplying and applying Western medical knowledge to relieve suffering. The British medical community conducted experiments on Indian bodies to learn how the diseases that inhibited the ability of Europeans to comfortably settle in South Asia could be treated, and with the goal of improving the health of workers from a distinctly economic standpoint.<sup>81</sup> This practice primarily took place on plantations—due to their extreme degrees of segregation—though experimentation was rampant at mining sites, jails, and within army barracks as well (for similar reasons), and because they were able to study the diseases without the intervention of “polite society.” The practice of medical experimentation, and observation of diseases to track their spread through indigenous populations, was promoted in the medical community as well as financially supported by government grants and through entrepreneurial patronage.

While the understanding and study of tropical diseases had adverse and lasting impacts on the social and political organization of Indian colonies, it was not until the very end of the 19th century that there was official discourse regarding a “war” on tropical diseases.<sup>82</sup> It was in 1899 that the London School of Tropical Medicine was founded, but the centuries of knowledge regarding diseases and afflictions correlated with travel to and through the tropics were no less important than the studies and teachings performed in the 20th century. The germ and

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<sup>80</sup> “Western Medicine In India,” 613.

<sup>81</sup> Bhattacharya, “Disease and Colonial Enclaves,” 17.

<sup>82</sup> Arnold, “The Place of ‘the Tropics’ in Western Medical Ideas since 1750,” 304.



anatomization were integrated into previous bodies of thought, and bolstered previous claims of tropical distinctions from other regions. The information gathered in the 19th century was particularly informative to this new school of medicine. The “highly professionalized and politically influential scientific specialty” solidified, at this crucial turning point in the history of British imperialism.

# British Australia

## *Processes of Colonization*

The presence and tradition of the indigenous people of Australia is widely known as one of the oldest in the world. When Europeans first came into contact with the Indigenous Australian communities, the predominant way of life was a hunter-gatherer lifestyle.<sup>83</sup> Little hierarchical organization was visible on the scale of imperial states among the small communities.<sup>84</sup> The hunter-gatherer lifestyle, asserted by the British as an irresponsible and inadequate use of the land, was used as a colonial rationale for the conquest and colonization of the continent—this argument is familiar to the settler colonial histories of the Americas and Africa. The semi-nomadic nature of the Indigenous Australian population held little weight in the eyes of the British; establishment of land claims and built infrastructure of “permanent” settlements solidified a view of having a right to the land.<sup>85</sup>

It was in 1606 that a Dutch explorer became the first European to land in Australia, although the Dutch never formally claimed any of the land they “discovered.” The tradition of Dutch exploration through the 17th century was not only crucial to the establishment of European colonies throughout the Indian Ocean and into Eastern Asia, but also for the original European efforts to map the Australian continent. It was not until over a century later, in 1788 that the British established claim and colonies on Australia’s Eastern coast. The original method

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<sup>83</sup> Brock, Peggy, and Tom Gara, eds. *Colonialism and Its Aftermath: A History of Aboriginal South Australia*. Mile End, South Australia: Wakefield Press, 2017; Keen, Ian. “Foragers or farmers: Dark Emu and the controversy over Aboriginal agriculture.” In *Anthropological forum*, vol. 31, no. 1, pp. 106-128. Routledge, 2021.

<sup>84</sup>Brock and Gara, *Colonialism and Its Aftermath*.

<sup>85</sup> “The Blacks.” (1838, November 14). *The Sydney Herald*, 3; Genger, Peter. “The British Colonization of Australia: An Exposé of the Models, Impacts and Pertinent Questions.” *Peace and Conflict Studies*, 2018, 6; Grewcock, Michael. “Settler-Colonial Violence, Primitive Accumulation and Australia’s Genocide.” *State Crime Journal* 7, no. 2 (October 1, 2018); Macdonald, “Colonizing Processes, the Reach of the State and Ontological Violence,” 52-53.

of British settlement and exploration was through the foundation of penal colonies, to which those punished in Britain with “transportation” would be—as the name suggests—transported to work in the colonies of the new territory. Penal colonies were the primary form of European expansion through the end of the 18th and into the 19th-century, but with increased investment in Australian territory the process of colonization through settlement rapidly increased after the 1830s.<sup>86</sup> The period of the Australian gold rush that followed led to a “boom” in the 1850s.<sup>87</sup>

The end of the 18th century saw increasing rates of transportation to the Australian continent, along with a small population of free emigrants.<sup>88</sup> While the majority of the colonies initially established were penal, the idea of the continent as overwhelmingly occupied by violent criminals is an inaccurate understanding of Australian history. The intent of transportation was the completion of a sentence and a subsequent investment in the colonial process of agriculture and urban development. The pardoning—or fulfillment of sentences—of prisoners could occur within a year of arrival to the colonies, though a term of 5-7 years was generally standard.<sup>89</sup> The population of convicts was increasingly surpassed by settlers, who became the dominant population over both convicts and Indigenous Australian people by the middle of the 19th century. Immigrants from Europe and East Asia—mostly interested in the Australian gold rush beginning in 1851—settled increasingly through the second half of the century.

The society of 19th century Australia was similar to that of most other European and Westernized societies—in both metropolises and colonies—of the era. Hard work held a high social value, and the classes and class structures were similar to those in Europe as well as North

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<sup>86</sup> Lester, Alan, and Nikita Vanderbyl. “The Restructuring of the British Empire and the Colonization of Australia, 1832–8.” *History Workshop Journal* 90 (February 25, 2021): 165–88.

<sup>87</sup> Lewis, “Medicine in Colonial Australia, 1788-1900,” 5; Macdonald, “Colonizing Processes, the Reach of the State and Ontological Violence,” 54.

<sup>88</sup> Brasier and Dunk, “Incarceration, Migration, Dispossession, and Discovery.”

<sup>89</sup> Lewis, Frank. “The Cost of Convict Transportation from Britain to Australia, 1796-1810.” *The Economic History Review* 41, no. 4 (1988): 507–24.

America. Families settled the lands at an increasingly rapid rate through the 19th century, and the urban sites that rose in prominence did so through the development of industry and export, the continent. Simultaneously, as the settler population grew, so too did their efforts to further expel the Indigenous Australian population. The political view of expansion into the Australian continent, and the subsequent—and extremely violent—efforts to remove Indigenous Australians, were opposed by religious and humanitarian groups; it should be stated, however, that the groups ideologically aligned with evangelical humanism were more interested in the colonially-familiar idea of “civilizing” through the promotion and indoctrination of Christian ideals.<sup>90</sup> The rejection of removal acts and practices was not, for the most part, inspired by an egalitarian concern for the rights of Indigenous Australians and their presence on the land.

The violence perpetrated by European settlers against the Indigenous Australian population did not begin in the 19th century. However, the rapid growth in the number of settlers and the expansion of land claims heightened the settler violence against the Indigenous Australian communities. As free settlers began increasing their rates of immigration into Australia, and as convicts finished their sentences and earned their freedom, domestic claims on land for the purposes of settler agriculture heightened genocidal violence. Australia in its entirety was officially designated a British colony in 1827, further amplifying political, social, and physical claims on the land, and the violence employed by the settlers. Struggles between Indigenous Australians and settlers continued.

These developments in the colonization and settlement of Australia came after a period of broad changes associated with the ending of the global slave trade. Questions of political agency and a diversion of funds into new ventures identified Australia increasingly as a point of

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<sup>90</sup> Grewcock, “Settler-Colonial Violence, Primitive Accumulation and Australia’s Genocide,” 227.

interest.<sup>91</sup> As more money and people flowed into the Australian territories, and as communication between the continent and the metropole became faster, the processes of development saw many similar shifts towards the middle of the 19th century. Sanitation and public health were not exceptions, becoming more important as the settler population increased.<sup>92</sup> The issue of disease, the sense of fortitude in conceptions of settler health, Australia's own relationship to medical conceptions of race, and its medical developments as a British space so far from the metropole were all facets of the 19th century evolutions of Australian health and sanitation.

### *Public Health as an Extension of Penal Systems*

As part of the transportation system, those sentenced to transportation were sent to colonies with both convicts and free settlers, working until their sentence was served. Convicts performed varied jobs, ranging from the shepherding of pastoral animals, to the building of progressively larger settlements. The population of convicts far outnumbered the free population, well into the 19th century, and their health was considered from multiple perspectives. As convicts, they were relegated to a lower caste in both the metropole and the colonies, and the poor treatment of their bodies and health through the rough voyages to the southern continent was an acknowledged facet of their punishment.<sup>93</sup> Their health has been historicized as a concern primarily as those who were needed to work within a system structured around the improvement of a separate, free population.

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<sup>91</sup> Lester and Vanderbyl, "The Restructuring of the British Empire and the Colonization of Australia, 1832–8," 165.

<sup>92</sup> Brasier and Dunk, "Incarceration, Migration, Dispossession, and Discovery;" Wong, "Colonial Sanitation, Urban Planning and Social Reform in Sydney, New South Wales 1788 - 1857."

<sup>93</sup> Starr, "The 'Sidney Slaughter House,'" 62.

The provision of care to convicts and criminals was an initial affair of the British government; in both the metropole and penal colonies, therapeutic practices and the frequency and quality of the medical treatment available transitioned.<sup>94</sup> There are, as with any area of historical discourse, conflicting opinions regarding the quality and affordability of healthcare for convicts in the British penal system, overseas or domestically. While many have posited convict medicine as a tool only for the maintenance of a working population, others have recognized its practice as following standard English traditions of medical practice.<sup>95</sup> Further arguments have been made that the work done by surgeons for the convicts aboard ships was pivotal to the evolution of medical standards both on and off the water.<sup>96</sup> In this same context, there have been discoveries of the use of convict bodies for the purposes of experimentation and post-mortem study; this practice has been further correlated with their punishment and its extension beyond death.<sup>97</sup> As contemporary and available as medical practices for convicts were, they were by no means merciful or immediately successful in restoring patients to full health; deaths in hospitals were common and often expected.

Although government hospitals were founded and intended for the convict system, the end of transportation saw their decommission (around 1842). In the years between its foundation, the “Rum” Hospital (also known as the General Hospital) begrudgingly accepted a small number of non-convict and non-military patients.<sup>98</sup> There were efforts to both deter the patients and to fund the extension of the hospital’s resources through a charging of fees, often around 3 shillings, which succeeded in keeping some away; others were admitted as paupers, without approval from the government. The Rum, named for its foundation afforded by a deal related to

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<sup>94</sup> Brasier and Dunk, “Incarceration, Migration, Dispossession, and Discovery,” 4.

<sup>95</sup> *Ibid.*

<sup>96</sup> Starr, “The ‘Sidney Slaughter House,’” 61.

<sup>97</sup> *Ibid.*, 63.

<sup>98</sup> Hobbins, “Tending the Body Politic,” 91.

the importation of spirits, began accepting patients in 1816.<sup>99</sup> The staff was composed of professionals and convicts, and both groups reportedly operated in a corrupt and negligible manner. The physical conditions themselves were overcrowded, notwithstanding the additional load of various civilian claims to beds and care, and unsanitary even by the standards of the day.<sup>100</sup>

The hospitals that were opened after the disintegration of convict transportation and its specific medical spaces were a reflection of growing medical capabilities, and of the increasing idea of self-governance on the continent. The settlers increasingly looked to Australian cities as metropolitan sites of commerce and political activity, no longer looking back to Europe and its sphere of influence as a primary reference point for governance; social norms, mores, and ideals were however still reflective of larger British society. The Rum became an institution that operated as a day clinic for the free colonist population.<sup>101</sup> Along with the Benevolent Asylum, an often overcrowded host of invalids, the blind, and the unwed pregnant, the Infirmary was founded on the principles of social progress. This ideal permeated the sanitary and health-oriented reforms of the Victorian era in British spaces, both in the metropole and in the colonies. Benevolent societies had led many of the sanitary changes in English cities such as London, and during the same period they went to work in Sydney and other Australian cities.

The increased interest in public health for philanthropic societies coincided with the continent's growing community of medical students and professionals. The standard procedure for seeking a medical education in Australia entailed an apprenticeship and a voyage to Britain to obtain a license through examination.<sup>102</sup> Efforts to open schools in Australian cities failed until

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<sup>99</sup> Starr, "The 'Sidney Slaughter House,'" 65.

<sup>100</sup> *Ibid.*, 69.

<sup>101</sup> Hobbins, "Tending the Body Politic," 93.

<sup>102</sup> Lewis, "Medicine in Colonial Australia, 1788-1900," 7.

the 1860s, and the integration of medical education through relationships between universities and hospitals was not initially conducive to building a domestically educated medical class of skill and quantity. The professional medical class was a resource with high costs, and outcomes of low regard. The increased availability of patented medicines and homeopathic cures, including applications of eucalyptus and other native plants through recipes copied from Indigenous Australian peoples, created further competition for medical professionals and hospitals themselves.<sup>103</sup>

During the period in which transportation was being phased out of both schemes of immigration and of health, the philanthropic concerns for health and sanitation advocated for a quarantine against contagious diseases. Instead, the Rum opened an institution of health for the general population and was opened in 1843, newly renamed the Sydney Infirmary and Dispensary.<sup>104</sup> Its purpose was to provide health services, but as with many of the other hospitals on the continent at that time it was most successful with its short-term endeavors. Health institutions were not known as sites of full recovery, from which one walked away with their health intact and restored, and the Sydney Infirmary was no exception.<sup>105</sup> As little as private practices were sought after before the economic crisis of the 1840s, in its aftermath the private sector suffered dearly. Hospitals, no matter their efficacy, were the most affordable resource after self-reliance.

The systems of hospitals, clinics, and dispensaries as a responsibility of the colonial government were not afforded to every person within the colonies, at least from their foundation. The structures, both physical and administrative, of health care in early colonial Australia were intended not for the use of the free population, but specifically for the provision of services to

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<sup>103</sup> Lewis, "Medicine in Colonial Australia, 1788-1900," 9.

<sup>104</sup> Hobbins, "Tending the Body Politic," 96.

<sup>105</sup> *Ibid.*, 97.



convicts. In general, the settler population relied on the care they could provide themselves through home remedies and “frontier medicine,” with an interspersal of care provided by colonial surgeons or dispensaries—the costs of which were often dear and debt-inducing, if afforded at all. In the cities and more urban settlements, the health status of free settlers was much the same: most of the population lived in hard circumstances with few medical resources they could turn to.<sup>106</sup> The self-reliance of a population at the risk of a multitude of diseases and plentiful accidents causing or leading to a relatively early grave marked both the convict and settler Australians as a particularly hardy, if vulnerable, population.

### *A Robust and Young Australian Ideal*

As the British settled the Australasian region and its primary continent, new realities began to emerge for the growing population of convicts, penal employees, and increasing numbers of free settlers immigrating from Europe and China. While official locales of care in the forms of dispensaries and hospitals originated as facets of the penal system, intended for the primary use of convicts, health was a great concern of the entire population, colonial and indigenous. The establishment of doctors as providers of care was a terse social arrangement, as the knowledge base of medical professionals was still rooted in procedures oriented towards the balance of humoral systems.<sup>107</sup> The care of a doctor was often an expensive luxury, and not one that guaranteed a full or even partial recovery. The settled population in Australia relied on a patchwork of care systems, with little support or aid from formal institutions.

The Australian continent is acknowledgedly varied in its environments, but the majority of colonies and territories were not chosen for their ease of settlement. The Australian frontier

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<sup>106</sup> Hobbins, “Tending the Body Politic,” 91.

<sup>107</sup> Raftery, “Keeping Healthy in Nineteenth-Century Australia,” 283.

was seen as a hard place to live, and was afflicted with trials of establishing claims that manifested in the form of unfamiliar and dangerous wildlife, volatile weather patterns, and a lack of available treatment for rampant disease and frequent injury. The environment was identified by the *British Medical Journal* in 1892 as hard and not generally conducive to the maintenance or regaining of health:

...this up-country life is only suited to the young and vigorous, with a good reserve of physical force, and not without some financial resource also, for lodgings are rough, food badly and hastily cooked, and house rent very high.

While health practices and medical expertise became more available and effective through the latter half of the century, the sharp increase in mines and subsequent risks that came with them heightened awareness of Australian health dangers.

There was a higher proportion of men to women present in Australia through the first century of its colonization, especially in the areas less developed around the frontier, and this was largely due to the initial means of settlement and the perception of the continent as a wildland. As settlement increased, the population grew closer in number between these demographics, but their separation gives certain insights to specific health issues. Tuberculosis was a common cause of death for both men and women, but men suffered from more accidents and women died in the process or aftermath of childbirth.<sup>108</sup> A lack of fertility control and early marrying ages meant most women continually went through periods of pregnancy and lactation until they died or were infertile. Higher than the rates of adult deaths were those of infants and children, with most families expecting to lose at least one child around 1838; infant deaths in the 1840s accounted for almost half of *all* deaths.<sup>109</sup>

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<sup>108</sup> Raftery, "Keeping Healthy in Nineteenth-Century Australia," 280.

<sup>109</sup> *Ibid.*, 281.

The average life expectancy on the continent in 1857 was about 40 years, increasing to 51 and 55 years by the end of the century, for men and women respectively.<sup>110</sup> The health problems faced by the settler population were similar to the complaints of the general British population in the metropole. “Fever” (primarily of the typhoid variety) and gastrointestinal issues were the primary ailments of adults and children alike.<sup>111</sup> What varied from illnesses and ailments familiar to European medicine were more easily taken care of by ship surgeons, used to improvisation, as the earliest establishment of medicine on the continent. Regardless, the primary form of care can once again be identified as a network of home-created treatments and cures developed by the growing settler population, especially as they moved out of urban spheres of port towns.

There are differing opinions on the development of sanitary and medical resources available in 19th century Australia. Some have argued that despite its distance from the metropolis and the Westernizing world, it had a quality of medical treatment comparable to that which was available in England.<sup>112</sup> Reports of the time remarked on the differences that were present in the concurrent development of surgical and medical techniques of the two locations:

Medical men in far Australia laboured under the great and manifest disadvantages of being widely separated from the active ventres of intellectual life of the old countries, and were deprived of the magnetic personal influence of the master minds of the age...they had to take care, in seeking to build up a school of Australian surgery, to keep before their eyes those solid pillars of their craft—accurate knowledge, infinite painstaking, and the sacred reverence for human life that constituted the splendid traditions and still guiding principles of British surgery.<sup>113</sup>

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<sup>110</sup> Raftery, “Keeping Healthy in Nineteenth-Century Australia,” 277.

<sup>111</sup> Lewis, Milton. “Sanitation, Intestinal Infections, and Infant Mortality in Late Victorian Sydney.” *Medical History* 23, no. 3 (July 1979): 325.

<sup>112</sup> Starr, “The ‘Sidney Slaughter House,’” 62.

<sup>113</sup> “Australia.” *The British Medical Journal* 1, no. 1471 (1889): 559.

It was the distance, an intellectually different environment—without the influence of peers—and a distinctly alternate set of health concerns that was thought to inform Australia’s development. Other perspectives, though published in the same journal, identified the British tradition as lagging behind, rather than setting the standard:

Medical men in England have not yet emancipated themselves from the old routine prescription for consumption, namely, a "sea voyage," fraught, as it so often is when in considerably prescribed, with suffering and death; and as a sea voyage must end somewhere, Australia is sometimes prescribed in the same routine fashion.<sup>114</sup>

### *Sanitation for Settlers*

As the primary concern regarding Indigenous Australian peoples was their removal, the sanitary consideration of these populations was not a primary factor in the development of infrastructure in the colonies. The Australian colonies were sanitarily organized as the towns and cities of the British metropole were.<sup>115</sup> The technologies of sanitation, regardless of their impact on health, were mimicked from across oceans, and led to similar disparities in health between continents. The ongoing expansion of the British Empire within the continent, along with regional variations in governmental organization, meant there was not one specific standard or timeline for the development of these systems. There can, however, be conclusions drawn from the ways in which technologies and social conceptions of governmental responsibility for such undertakings were transferred from the metropole to the colonies. Increases in immigration, rapidly expanding populations, and the incorporation of cities on the continent pushed sanitation to the forefront of infrastructural development.

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<sup>114</sup> "Australia For The Consumptive." *The British Medical Journal* 2, no. 1664 (1892): 1129.

<sup>115</sup> Wong, "Colonial Sanitation, Urban Planning and Social Reform in Sydney, New South Wales 1788 - 1857."

The original system of waste management in Sydney, along with that of New Zealand, was a collection of cesspits and systems of surface drainage such as ditches and gutters as they used in England.<sup>116</sup> Mentioned in the previous section regarding sanitation in England, this system was notorious for the pollution of groundwater. Heavy rains would flood the pits, resulting in sewage running into sources of drinking water and the streets themselves, causing smells and health crises such as epidemics of cholera. The consequence of dissatisfactory sanitary conditions was especially evident in the high rates of infant mortality attributed to diarrhoeal diseases, due to dirty water and generally unclean conditions throughout both urban and rural spaces.<sup>117</sup> Diseases such as typhoid fever and cholera were especially indicative of contaminated water, and both diseases repeatedly struck urban spaces in Australia through the century.

Outbreaks and epidemics of cholera through the 19th century were instrumental in the instigation of sanitary reforms within Britain and the colonies alike. The British cholera epidemic between 1831 and 1832 marked the beginning of momentum gained in both the recognition of the disease—and others—as being related to water, and of new campaigns for public health.<sup>118</sup> The concern of sanitation as it related to public health was further stressed through a common thought that the environments that fostered disease were also responsible for “social” diseases, delinquency, and criminal activity. Environmental determinism was a commonly held belief that the moral character of an individual and the greater population was a direct result of the environment in which they were raised and resided. This rendered sanitation and access to water not only an issue to be solved by the government, but also a great concern of those in the upper classes and positions of social benevolence.

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<sup>116</sup> Wong, “Colonial Sanitation, Urban Planning and Social Reform in Sydney, New South Wales 1788 - 1857,” 58.

<sup>117</sup> Lewis, “Sanitation, Intestinal Infections, and Infant Mortality in Late Victorian Sydney,” 326.

<sup>118</sup> Wong, “Colonial Sanitation, Urban Planning and Social Reform in Sydney, New South Wales 1788 - 1857,” 61.

The “social plight of sanitation” within New South Wales originated with the colony’s foundation in 1788.<sup>119</sup> This social plight was not the identification of disparities between neighborhoods divided by class, but a concern of social reformers who saw poor sanitation as a cause of social evils. These concerns evolved into a wider social conversation of health standards, but the origin remains centered around the idea of slum filth. Cesspits were a hotly debated topic of conversation among the reformers concerned with sanitation, as they were associated with rampant disease and social degradation. It was obvious to many that an ill working class would not be able to perform the manual and economically critical tasks that supported the state. The studies done by Snow and his medical contemporaries connected environmental factors to illness, and reformers latched on to illness in a context of the capacity of moral character development. The push of the Sydney Municipal Council and associated reformers led to the start of a truly comprehensive sanitary reform in the 1850s.

Although the sewer systems mimicked the drains and ditches of the British metropole, their inadequacies were not adequately addressed by the government until the middle of the century. The primary sanitary undertakings organized in Sydney were brick and stone sewers constructed in 1857, and outfall and sewage farm plans completed in 1889.<sup>120</sup> These systems were not the first planned for the city; an original plan proposed in 1835 would have been the first had circumstances allowed its completion. The lack of municipal organization, changing technologies, and an economic depression in the 1840s—highlighting the high prices of the proposed system—led to a decline in overall drainage works until the 1857 combined system.<sup>121</sup> Once the City of Sydney was incorporated (1842) and the pressures of the depression lessened, the view of longer term sanitary solutions returned to focus.

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<sup>119</sup> Wong, “Colonial Sanitation, Urban Planning and Social Reform in Sydney, New South Wales 1788 - 1857.” 61.

<sup>120</sup> *Ibid.*, 62.

<sup>121</sup> *Ibid.*

The period after the incorporation of the Sydney Municipal Council was one filled with discussion and debate surrounding the most effective and efficient system of water and waste drainage for the rapidly expanding city. Mapping and surveys were conducted beginning with the appointment of a City Engineer in 1854, and work on the first outfall sewers began in 1855.<sup>122</sup> These sewers used a commonly accepted shape of drain, the oviform—or egg-shaped—drain that originated in London during the 1840s. In Sydney, the proposed system using these drains was intended to completely overhaul and get rid of ditches and cesspools entirely. In reality, the underground sewerage completed in 1857 had a relatively small and limited area of drainage, continued to combine stormwater and sewage, and was detrimentally discharged into the harbor.<sup>123</sup> By 1877, there was still a general reliance on surface gutters.

The end of the 19th century was a period of advancement, both technologically and on behalf of the government, in the sewerage and sanitary systems of Sydney and other Australian cities and settlements. In Sydney specifically, changes began in the years after 1898, in the medical officers of health, increased development of sanitary infrastructures, and sanitary inspections and examinations; in historical review, these changes have been considered pivotal to a marked decrease in diarrheal diseases and subsequent downward trends in infant death rates.<sup>124</sup> At just over a century old, Sydney functioned as both the oldest and largest Australian city. Having made significant progress in its sanitary infrastructure, other spaces—both urban and rural—began to develop in similar patterns.

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<sup>122</sup> Wong, “Colonial Sanitation, Urban Planning and Social Reform in Sydney, New South Wales 1788 - 1857.” 62.

<sup>123</sup> *Ibid.*, 63.

<sup>124</sup> Lewis, “Sanitation, Intestinal Infections, and Infant Mortality in Late Victorian Sydney,” 337.

## The Sanitary Effect of Settler Colonialism

While the initial population of Europeans settling onto the Australian continent were prisoners sent to penal colonies, the transition of the population to a more “civilized” collection of domestically inclined colonies marked a new age for the land and the native population.<sup>125</sup> The expectations of the new British Australian population for their settlements were largely concerned with protection and safeguards against the perceived threats of Indigenous Australians and the sanitary conditions into which they settled. Due to the semi-nomadic nature of the Indigenous Australian population, the urban spaces into which the British settled were manufactured, rather than developed off the tradition of established cities as seen in India.

As towns and cities were established and expanded, the two primary concerns regarding sanitation and health were the sourcing of clean water, and the removal of waste. The systems implemented in Australia were very similar to, having based off of, the typical surface-level drainage systems used in towns and cities in England.<sup>126</sup> Because there was not an established practice of urban development on the continent, the knowledge base from which Australian development was drawn came from the British metropole. Practice and policy were altered after the fact as the settlers learned by trial and error in the territories they claimed as their own. The establishment of Sydney as a colony located on the banks of the Tank stream assured its access to fresh water, but the ingrained practices of British sanitation soon rendered most water sources attached to urban settlements unclean.

Australia serves as an interesting theater for both sanitation and health. Its colonization and subsequent settlement was a process that reached its peak in the 19th century, during a systematic overhaul of sanitary and medical practices throughout the British Empire. Both the

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<sup>125</sup> Macdonald, “Colonizing Processes, the Reach of the State and Ontological Violence,” 53.

<sup>126</sup> Wong, “Colonial Sanitation, Urban Planning and Social Reform in Sydney, New South Wales 1788 - 1857.” 58.



metropole and the colonies on other continents saw new practices and developments, but Australia functioned as one of the most recently developed settler colonies within all British territories. Its lack of physical infrastructure adaptable to the expectations and needs of the colonizers meant a complete foundation and overhaul of the system over the course of hardly more than a century. That the urban conditions of filth and poor health were comparable to cities like London, having been inhabited and heavily populated for more than a handful of centuries before Europeans first charted the Australian continent is noteworthy. The process of sanitation viewed through a lens of settler colonialism helps to illustrate the initial disparities in sanitary quality. These disparities stemmed from the application of a system inherent to a foreign geography, and a forced shift towards a functional system designed from the knowledge of a new continent.

## Conclusion

### *A Comparative Review of India and Australia*

As the methods of colonization differed between these territories, so did the implementation and development of sanitary infrastructure and public health measures. Organized and colonized by the same imperial power, India and Australia provided two theaters in which the British initially applied their knowledge base of sanitation and medicine, before they were forced to diverge from the norm. The contexts and structures of the spaces they aimed to colonize are, as mentioned before, an incredibly complex and diverse body of factors and events. Regardless of the multitude of differences between smaller localities within the Indian subcontinent and Australia in its vastness, they can still be identified by the perceptions of the British colonizers that saw them as, for the most part, two distinct spaces.

Indian sanitation was an increasingly racialized practice that aimed to separate the European population from an environment and a people thought to be dangerous on the basis of disease. Medical discourse and practice further promoted these ideas, and the establishment of hospitals and clinics were oriented almost entirely towards the maintenance of British health. While the initial health resources in Australia were similarly limited, their goal was to preserve the health of the convict population that fulfilled their sentences through labor contracts indentured primarily to the government. Sanitary reforms between the continents saw similar progressions after the acceptance of water as an integral part of disease, its spread, and its prevention. The same body of knowledge in this instance informed both locations, but the application and further development of sanitary systems had varied processes and outcomes due to different political, social, and geographical structures.

The historiography of sanitation and medicine between these spaces is another area of interesting comparison. While the discourse of medicine and sanitation is heavily influenced by its impact and interaction with the Indian population, much of the work done to historicize Australian practices contain few, if any, mentions of the Indigenous Australian population. The history of these subjects in the context of India is not shy of the harm these practices have caused to the structural and social communities on the subcontinent, but in many pieces there is still an underlying savioristic tone, especially coming from pieces written from outside of the affected location. The view of Australian medicine as a product of penal colonization is not the universal tendency of historians, though more recent works feature it more heavily. The historicization of colonial spaces is a complicated discussion throughout the field and its interdisciplines, but the specificity of sanitation and health deserve closer inspection.

### *Lasting Implications*

The same body of knowledge—medically and socially—informed both locations initially, but the application and further development of sanitary systems had varied processes and outcomes due to different political, social, and geographical structures. In reviewing the histories of colonial spaces through a sanitary lens, it becomes clear that colonialism, medical theory and practice, and the foundations of biological distinctions of race are directly related. The trade and territorial colonization in India created a space for health as a means to preserve a military population. Other primary concerns rested with the health of Europeans that more often than not viewed their time in India as a temporary endeavor. In Australia, its penal origins fostered an environment of medicine and sanitation that, though complicated by a shift away from a convict system, was deemed equally applicable to the larger settler population. Poor health was seen as

an outcome of the process of civilization, that might be remedied through a firmer establishment of the British into their new territory, and its domestication.

Major discoveries in the British metropole were brought to the colonies, and the work done there was brought back to England through discourse of medical process, colonial advances, or through the presence of military and economic seamen that returned home. As travel increased, the perceived threat of tropical diseases was officially undertaken by medical communities in the metropole. Even the moniker of tropical diseases engenders this threat to a location and a people. This further separates the territorial colonies of India from the connected view of the metropole and settler colonies. The “white” versus “black” division, named as just two of the superficial and poorly founded distinctions of race, were promoted and viewed through a medical lens well into the 20th century. It can (and should) be said that these racist evolutions of medicine and sanitation have continued to misinform and harm populations of color up to today.

The processes of colonization in India and Australia were not uniform, operating within diverse contexts of indigenous populations, levels of established European presence, and with varied colonial goals. Sanitation and medicine, practiced together in the 19th century as public health, is an important lens through which colonial processes should be studied. The dynamic union of sanitation, medicine, public health, and the colonial goals of the British government manifested through the conditions of colonization. Processes of colonization were in turn shaped by developments in these areas as they experienced changes separate from the metropole. Through a sanitary lens, it becomes clear that these aspects of colonial and imperial history are crucial to the understanding of both the processes of colonialism and its greater legacies.

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