

IMPERIAL FEVER: TROPICAL MEDICINE, BRITISH LITERATURE,
AND THE RETURN TO SOUTH AMERICA, 1880-1930

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Kathleen E. Hames

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Kathleen E. Hames Ph.D.
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Imperial Fever: Tropical Medicine, British Literature, and the Return to South America, 1880-1930 explores the ways in which British writers engaged with the new developments in tropical medicine in their fictional representations of tropical fever in the early twentieth century. With the British Empire undergoing its largest expansion through predominantly tropical regions of the globe between 1860 and 1920, the demand for ‘tropical medicine’ and specialized training in ‘tropical diseases’ was at the utmost importance. Scottish physician and bacteriologist Ronald Ross proclaimed, “Malaria is the greatest enemy of the explorer, the missionary, the planter, the merchant, the farmer, the soldier, the administrator, the villager and the poor; and has...profoundly modified the world’s history by tending to render the whole of the tropics comparatively unsuitable for the full development of civilization” (*Prevention* vii). Medical and scientific journals celebrated new discoveries made in tropical disease transmission and immunity, and promoted the study of tropical medicine. The opening of the tropics to British investment and re-settlement that tropical medicine now made possible captured the British imagination. The three British writers examined in *Imperial Fever* – Arthur Conan Doyle, Virginia Woolf, Evelyn Waugh –

engage with the colonial optimism, reservation, and anxiety inspired by the medical sciences in their depictions of modern British travelers combating tropical diseases and conquering the unruly terrain and indigenous populations of South America.

Imperial Fever examines the ways in which developments in tropical medicine shaped British cultural and imperial identity as a growing tropical empire in the early years of the twentieth century.

BIOGRAPHICAL SKETCH

Kate Hames began her studies in English Literature at the University of Washington, where she graduated with a B.A. in 2004. At Cornell University, she completed her M.A. in 2008 and her Ph.D. in English in 2013. While conducting research in literature and medicine, Kate was inspired to expand her work in the Medical Humanities to include Medical practice. In 2011 she was accepted to the Michael G. DeGroot School of Medicine at McMaster University in Ontario, Canada, where she will receive her M.D. in 2014. Kate is currently living in Ontario where she is studying Orthopedic Surgery and Diagnostic Radiology and conducting research on the intersections between Medicine, Literature, and the body.

To Jade

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The Body Must Be Defended: Immunology and the Imperial Imaginary

The first intercourse between natives and Europeans is invariably attended with the introduction of fever, dysentery, or some other disease, which carries off numbers of people.

Charles Darwin, *The Voyage of the Beagle*

If it had been necessary to make colonial society only with masters and slaves, there would have never been any colonial society. It had to be made with microbes, together with the swarming of insects and parasites that they transported.

Bruno Latour, *The Pasteurization of France*

The chief object of my attention will be the potent and polymorphous object of belief, knowledge, and practice called the immune system. My thesis is that the immune system is an elaborate icon for principal systems of symbolic and material ‘difference’ in late capitalism. Pre-eminently a twentieth-century object, the immune system is a map drawn to guide recognition and misrecognition of self and other in the dialectics of western biopolitics.

Donna Haraway, “The Biopolitics of Postmodern Bodies”

The history of British colonialism is a history of disease exchange. Despite millennia of contact and exchange between parts of Asia, Europe, and Africa, the ‘discovery’ of the Americas and the expansion of European colonialism accelerated the unification of the globe through the transmission of diseases. However, these disease exchanges that occurred in the space of colonial encounters were often to the unequal detriment of the indigenous peoples of the Americas and Pacific islands. Historian Alfred Crosby foregrounds the role of disease exchange in the rapid and massive depopulation of the Americas and colonization of the New World by Europeans. Deadly outbreaks of smallpox, measles, influenza and various fevers weakened native populations. The indigenous populations of North America dropped from an estimated one sixth of the world population prior to 1492 to just a few million by the end of the nineteenth century. “Each breach of previous isolation,” writes Philip D. Curtin, “brought higher death rates,

as unfamiliar diseases attacked populations whose environment provided no source of immunity” (83). These points of biomedical contact and exchange were fundamental to shaping British imperial ambitions as the successful acquisitions of land and resources and control of indigenous populations were often determined by pathogens.

During the late nineteenth and early twentieth centuries, tropical disease was figured as the major obstacle to imperial ambitions in British colonial literature. In Robert Stevenson’s classic adventure novel, *Treasure Island* (1883), Jim Hawkins and Captain Smollett’s crew are overcome with excitement and expectation when they finally reach the elusive island, situated off the coast of South America. However, the sweltering heat and the “melancholy” look of this tropical island quickly dampen their anticipation of newly discovered wealth (103). The island shines with a “poisonous brightness,” and the air is heavy with the stagnant smell of “sodden leaves and rotting tree trunks” (105). Sniffing the air “like some one tasting a bad egg,” the Doctor is the first to recognize the danger the island holds: “I don’t know about treasure,” he said, “but I’ll stake my wig there’s fever here” (105). The elusive treasure hoard hidden on the island is guarded not by frightening ghosts or one-eyed pirates, but by a far more deadly and invisible foe: tropical fever. As the group begins to fracture and many of the remaining pirates come down with fever, the Doctor identifies the root cause of their illness and misfortune: “That comed – as you call it – of being arrant asses . . . and not having sense enough to know honest air from poison, and the dry land from a vile, pestiferous slough” (250). The Doctor surmises that the pirates’ lack of knowledge on how to protect themselves properly from the island’s deadly parasites will have costly outcomes. They will all “have the deuce to pay,” he concludes, “before [they] get that malaria out of [their] systems”

(250). The high mortality rate of British imperialists, merchants, and slave-traders throughout the tropical beltway was the high price British and other imperial nations paid to consolidate their colonial systems.

Representations of disease agents guarding “the richest mines” and “the most fruitful plantations” of the tropics occur repeatedly in British colonial literature.¹ In Rider Haggard’s 1885 novel, *King Solomon’s Mines*, the journey to the ‘lost world’ treasure-hoard in the heart of Africa is beset with fever. At nearly every point in the quest, a member of the expedition comes down with a debilitating malarious fever that weakens the sufferer in both body and mind. Disease is also a prominent obstacle in Haggard’s other African adventure tale, *She* (1887), in which the mosquitoes and swamps repeatedly infect the travelers with blinding and maddening bouts of fever. In *Montezuma’s Daughter* (1893), the marriage of an Englishman to a native princess is doomed by fever; Haggard depicts the first encounters between Europeans and the indigenous peoples of New Spain as a scene of disease exchange. While searching for the Golden City of El Dorado in the tangled, unmapped landscapes of South America, the narrator in *Heart of the World* (1895) is warned by others that “the fever is so bad that few white men can live” (32). While representations of the ‘tropics’ as threatening to the health and civility of the white European date back to the sixteenth-century discovery narratives of Raleigh, Drake and other New World explorers, the rhetoric of disease as the obstacle to exploration and acquisition of wealth exploded at the end of the nineteenth and the early in the twentieth centuries at the same time as advancements in medical science dramatically altered understandings of disease and contagion.

¹ A contributor to the *British Medical Journal* in 1904 writes, “The richest mines, the most fruitful plantations are useless to us so long as they are in the keep of invisible guardians more dreadful than the dragon that watched over the gardens of the Hesperides” (“Imperial” 1022).

Imperial Fever: Tropical Medicine, British Literature, and the Return to South America, 1880-1930 explores the ways in which British writers engaged with the new developments in tropical medicine in their fictional representations of tropical fever in the early twentieth century. With the British Empire undergoing its largest expansion through predominantly tropical regions of the globe between 1860 and 1920, the demand for ‘tropical medicine’ and specialized training in ‘tropical diseases’ was of the utmost importance. Scottish physician and bacteriologist Ronald Ross proclaimed, “Malaria is the greatest enemy of the explorer, the missionary, the planter, the merchant, the farmer, the soldier, the administrator, the villager and the poor; and has...profoundly modified the world’s history by tending to render the whole of the tropics comparatively unsuitable for the full development of civilization” (*Prevention* vii). Medical and scientific journals celebrated new discoveries made in tropical disease transmission and immunity and promoted the study of tropical medicine. The opening of the tropics to British investment and the re-settlement that tropical medicine now made possible captured the British imagination. The three British writers examined in *Imperial Fever* – Arthur Conan Doyle, Virginia Woolf, and Evelyn Waugh – engage with the colonial optimism inspired by the medical sciences in their depictions of modern British travelers combating tropical diseases and conquering the unruly terrain and indigenous populations of South America. *Imperial Fever* examines the ways in which developments in tropical medicine shaped British cultural and imperial identity as a growing tropical empire in the early years of the twentieth century.

While quinine, the primary cure for intermittent fevers, had been successful in reducing mortality rates in the tropical belt, individuals in India, Africa, the West Indies,

and South America continued to die from malaria. The annual death rates of Europeans from fever in Nigeria and the Gold Coast still hovered around 9% by the 1880s. In 1897, Patrick Manson addressed the British Medical Society in a speech designed to garner support for the specialized study of tropical diseases and the founding of the new London School of Tropical Medicine. In his speech, Manson emphasized both the distinctiveness of tropical diseases as well as the importance of tropical medicine to the health and expansion of Empire. Not only were tropical diseases thought to be “in many respects...widely different from the diseases of temperate climates,” necessitating “special knowledge” and specialized institutions of study, but so too were diseases of the tropics the single greatest obstacle to achieving Britain’s imperial ambitions (“Necessity” 985). “Our country is the centre of a great and growing tropical empire,” Manson proclaimed (“Necessity” 985). Under the guidance and support of the Secretary of the Colonies, Joseph Chamberlain, the London School of Tropical Medicine was founded in 1899. For the next thirty years, advancements in tropical medicine would play a key role in maintaining the health of the Empire, both figuratively (as the strength and vitality of the white colonial subject reflected the health of the State and Empire at large), and, most importantly, literally (by maintaining the health of the white colonial subject). Tropical medicine’s understandings of the biomedical mechanisms of disease transmission and immunity provided a series of regulatory procedures and disciplinary processes through which to strengthen the immunological armor of colonial bodies. The cultivation of these fortified bodies incited a period of colonial optimism about the future health of the Empire.

As Colin Jones and Roy Porter note in their introduction to *Reassessing Foucault:*

Power, Medicine, and the Body, “Foucauldian strategies for understanding the modern medical enterprise, indeed the medicalization of life, in terms of power and the body,” have been central to recent scholarship on the history of medicine (11). The various writings of Michel Foucault trace the changing conception of the body, and link these shifts to the emergence of broader technologies of social discipline. In the seventeenth and eighteenth centuries, new techniques of power emerged that were essentially centered on the individual body: “They included all devices that were used to ensure the spatial distribution of individual bodies (their separation, their alignment, their serialization, and their surveillance) and the organization, around those individuals, of a whole field of visibility” (*Society* 242). By the end of the eighteenth century, a new technology of power arose, which Foucault describes as a “biopolitics” of populations. Birth rates and death rates, along with related issues of economic and political problems, became “biopolitics’ first objects of knowledge and the targets it sought to control” (243). In terms of the health of the body, it was no longer “epidemics that were the issue,” but rather “endemics, or in other words, the form, nature, extension, duration, and intensity of illnesses prevalent in a population” (243).² While these illnesses did not cause the more frequent deaths of epidemics, they were “difficult to eradicate,” and “as permanent factors...sapped the population’s strength, shortened the working week, wasted energy, and cost money because they led to a fall in production and because treating them was expensive” (244). Illness was now understood as a “phenomenon affecting a population,” and death was “now something permanent, something that slips into life, perpetually gnaws at it, diminishes it and weakens it” (244).

² Foucault provides a schematic of power that correlates to responses to disease. For Foucault, responses to leprosy elucidate sovereign power; responses to plague elucidate disciplinary power; and responses to smallpox elucidate governmentality and biopower.

Appearing after the disciplines, biopolitics emerges as a “regulatory ensemble that both constitutes and conditions a new aggregate form of life: population” (Cohen 20). Population conceives of the individual “bodies” of national subjects as units belonging to a more encompassing vital domain, which the State now recognizes as a valuable resource for its own ends. In *Immunitas: The Protection and Negation of Life*, Roberto Esposito argues that “biopolitics addresses itself to this body – an individual one because it belongs to each person, and at the same time a general one because it relates to an entire genus – with the aim of protecting it, strengthening it, and reproducing it, in line with an objective that goes beyond the old disciplinary apparatus because it concerns the very existence of the State in its economic, legal, and political interests” (137). The State’s “overinvestment” in “life at the level of the natural body (discipline) and of the population (biopolitics) constitutes the new regime that Foucault names ‘biopower’” (Cohen 20). Foucault writes,

The old power over death that symbolized sovereign power is now carefully overlaid by the administration of bodies and the calculated management of life. During the classical age, there is a rapid development of diverse disciplines – universities, secondary schools, barracks, workshops; in the field of political practices and economic observations, there also appear the problems of birth, longevity, public health, housing, and migration. Hence there is an explosion of numerous and diverse techniques for achieving subjectification of bodies and the control of population. Thus, an era of ‘bio-power’ commences. (qtd. in Cohen 20-21)

The shift from the sovereign administration of death to the biopolitical regulation of life signals “the effective realization of the body-politic metaphor in the material body of the individuals who constitute a population” (Esposito 137). “The power of the State,” writes Esposito, “coincides literally with the survival of the individuals who bear it in their bodies” (137).

At the same time the individual body became the natural and symbolic place for the exercise of power, the political importance of medical knowledge grew. In the nineteenth century, medicine, writes Foucault, “becomes a political intervention-technique with special power-effects” (*Society* 252). Medicine’s main function became “public hygiene,” with “institutions to coordinate medical care, centralize information, and normalize knowledge,” which took the form of “campaigns to teach hygiene and to medicalize the population” (242). According to Foucault, changes in medicine were simply one facet of a wider epistemological revolution: not only were diseases ‘fabricated’ by medicine, but so too were the bodies that contained the diseases. Yet, the production of bodies in medicine was not unique to medicine; the range of techniques deployed by medical professionals was also deployed in workshops, barracks, schools and prisons. Medical historian David Armstrong writes, “The new knowledges of human anatomy and pathological medicine mark the techniques through which medicine could know bodies and at the same time construct them in its own image” (21). In the hospital and clinic, “bodies were observed and analyzed with the purpose of effecting a passive and malleable body, but at the same time establishing those selfsame bodies as individual and discrete” (20). The recognition of self and other was epistemologically central to conceptions of immunity and the body of immunology. Describing the immune system as

a “potent and polymorphous object of belief, knowledge, and practice,” Donna Haraway notes, “the immune system is a map drawn to guide recognition and misrecognition of self and other in the dialectics of western biopolitics” (204). Issues of biopolitics are bound up with issues of immunity.

The subject of immunity as it relates to notions of biopolitics has been a central topic of debate within political philosophy and cultural theory for decades. Haraway employed what she termed “an immune system discourse” to articulate the biopolitical formation of the post-modern body in *Simians, Cyborgs and Women* (1991); immunity also figured into the bio-political theories of Agnes Heller and Jean Baudrillard during the 1990s.³ One of the most prominent theorists to employ the concept of immunity and auto-immunity within contemporary political discourse is Jacques Derrida, whose writings on the events of September 11 frame the violent act of religious and politically motivated suicide as a form of auto-immunity.⁴ The concept of immunity within biopolitical theory is often understood as a state of exemption whereby the individual body has been exonerated or excluded from the laws or confines of the community or the state. For Roberto Esposito, immunity conceives of the individual as separate from the community, thus establishing an individual identity: “immunity connotes the means by which the individual is defended from the ‘expropriative effects’ of the community, protecting the one who carries it from the risk of contact with those who do not (the risk

³ Donna Haraway, “Biopolitics and Postmodern Bodies” in *Simians, Cyborgs and Women: The Reinvention of Nature*. New York: Routledge, 1991: 203; Agnes Heller and Ferenc Feher, *Biopolitics*. Brookfield: Aldershot, 1994; Jean Baudrillard, *The Transparency of Evil: Essays on Extreme Phenomena*. New York: Verso, 1991. See Timothy Campbell, “Bios, Immunity, Life,” in the introduction to Roberto Esposito’s *Bios*, for a full catalogue and analysis of prominent works in biopolitical theory in the 1990s as well as a close reading of the bio-political writings of Jacques Derrida, Giorgio Agamben, and Antonio Negri.

⁴ “Autoimmunity: Real and Symbolic Suicides,” in *Philosophy in a Time of Terror: Dialogues with Jürgen Habermas and Jacques Derrida*, ed. Giovanna Borradori. Chicago: University of Chicago Press, 2003. See Campbell, “Bios, Immunity, Life,” for a reading of Derrida and Esposito’s differing uses of the notion of auto-immunity as a potentially productive, rather than violent and negative concept within biopolitics.

being precisely the loss of individual liberty)” (Campbell 8).

As evidenced by the writings of some of the most prominent thinkers of the late twentieth and early twenty-first centuries, the concept of immunity lends itself to a multitude of philosophical, legal, and cultural understandings of the body and the relationship of the body to other organisms, be they biological, legal, or political. However, in *Imperial Fever*, I am interested in the ways in which immunity – through the rise of immunology as a scientific discipline – emerged during the late nineteenth century as a medical and biological concept that radically transformed understandings of the physical body, its internal defense mechanisms, and the relationship of the individual body to the body politic. As a bio-medical theory predicated on clinical observations of cell behavior, immunity conceived of the body as porous and vulnerable to invasion by outside forces, particularly bacteria and other disease agents; more importantly, scientific understandings of immunity also endowed this body with an inner defense system comprised of cellular and chemical mechanisms designed to identify and eradicate foreign invaders that breached the membranous boundaries of the body and threatened the human (and state) organism with infection. As Ed Cohen argues in *A Body Worth Defending*, immunity becomes defense within both a bioscientific and biopolitical domain, and establishes war as the basis of life itself. Thus, immunity as a biological concept maps bio-geographical significance onto both the individual body and the state body through a dialect of self and other, recognition and mis-recognition, invader and invaded. Here, Foucault’s work on biopolitics and the emergence of the modern body and the modern state is particularly useful for my understanding of the ways in which concepts of immunity-as-defense construct the individual and state body as vulnerable to

disease agents and in need of disciplinary regimes to protect the body – defensively and offensively – through the new technologies of tropical medicine.

At the end of the nineteenth century, German bacteriologist Robert Koch “reimagined medicine itself as a quasi-military practice” (Cohen 253). In his keynote speech before the International Medical Conference in Berlin in August 1890, Koch “translates the tropes of invasion and enemy from the geopolitical domain into the individual body” (253). In translating bacteria as “an invasive disease’s cause,” Koch privileged “the biological atom (as opposed to population) as the relevant biopolitical *and* biomedical target for health policy and practice, both nationally and internationally” (253). In *Membranes: Metaphors of Invasion in Nineteenth-Century Literature, Science, and Politics*, Laura Otis argues that “the very idea that one might erect a barrier against germs, successfully or unsuccessfully encouraged people to view them as a living force” (27); like most advocates of germ theory, Louis Pasteur famously “associated health with the maintenance of just such a barrier” (27). Writing in 1879, Pasteur claimed that “the human body in a state of health is closed to all of these organisms” (27) that would otherwise weaken it. The bio-medical concept of immunity – literally self-defense – does not emerge until the end of the nineteenth century when Koch, Pasteur, and Metchnikoff described the cellular processes of eliminating invading microbes as the body’s natural defense system; “when science,” writes Cohen, “transfigures immunity in the 1880s and 1890s by equating it with defense, defense is acknowledged for the first time as a capacity of the living organism” (3). Significantly, while “the germ emerges as both a biological and political agent in the decade or so before immunity realizes its defensive capacity,” Cohen notes, “immunity-as-defense retrospectively lends germ theory some of

its legal force, helping it achieve the status of natural law” (5). With the advent of immunity-as-defense, bioscience “affirm[ed] that living entail[ed] a ceaseless problem of boundary maintenance,” such that specialized disciplines of bioscience were developed to fight against major infectious diseases at the beginning of the twentieth century (8).

In “this microbial age,” writes Laura Otis, “scientists assumed the heroic role of soldiers, the creators and defenders of empires” (28). One of the most deadly disease agents tropical medicine was charged with defending against was malaria. The mosquito had long been suspected of playing a part in the transmission of fever, but it was not until 1880 that Italian scientist Laveran first began to suspect the malaria parasite lived in the blood of the mosquito. By 1897, Ronald Ross and Patrick Manson had successfully identified the *anopheline* mosquito as the primary vector of malaria, concluding that the *Plasmodium vivax* and *Plasmodium falciparum* parasites – found in the stomach of the mosquitoes – invaded the human blood streams by the bite of an infected insect.⁵ At the turn of the century, the battle against the mosquito was in full force as colonists, medical personnel, and statesmen all sought to eliminate the deadly fever that was seen to “constitute the greatest obstacle to the civilization of a large part of the most fruitful part of the earth” (“Imperial” 1022). It was the responsibility of the London School of Tropical Medicine, Manson claimed, to train a “vast army of medical men” so that “they should be properly equipped for their special work” (“Necessity” 989).

Throughout the nineteenth century, tropical hygiene focused predominantly on avoiding particular activities or regions thought to endanger the colonial body. By the

⁵ Once inside its human host, the parasite quickly attacked red blood cells, harming the liver and spleen, and caused regular 48 and 72 hours bouts of fever as new parasites burst from red blood cells to continue the cycle. Quinine, it was later found, interrupted this cycle by preventing the merozoites from entering red blood cells.

turn of the century, cellular and molecular understandings of the body's immune system and disease mechanisms allowed tropical medicine to promote an overtly offensive strategy of eradication, blood surveillance, and chemical prophylaxis to armor the colonialist's body against tropical diseases. This moment in tropical medicine marks the "transposition of the defense function" defining the immune system "into aggressively military terms" (Esposito 154): "the immunological framework," writes Cohen, "establishes war – at the level of cells and molecules – as the condition of life itself" (20). Significantly, Esposito contends that "all the tropes in the seventeenth-century treatises on the body politics – from the obsessive attention to the boundaries of identity, to the phobic fear of infection from potential infiltrates, to the continuous erection of new defensive barriers – are now reinforced and given authority by a very different scientific endorsement" (154). In other words, the emergent modern will-to-power of positive science extended the justification of colonial power.

In the early twentieth century, numerous fiction writers, travelers, scientists, geographers, film makers, photographers and countless government officials turned their attention to the possibilities of tropical exploration and exploitation of treasured resources in South America. For many British writers in this period, the seed of Britain's grand imperial ambition originated in the mysterious tropical landscape of South America: "The region is surrounded with a halo of romance," writes Sir Clements Markham, "for here the old conquerors of the 16th century believed the far-famed El Dorado dwelt in golden abundance" (122). In his 1880 speech delivered to the *Royal Geographic Society*, Markham credits the vast tropical landscapes and riverscapes of South America for inspiring some of the most valuable, influential, and inspiring works of exploration,

adventure, and discovery. Markham writes,

South America is indeed the classic land of travelers; the land to the descriptions of which the writer of travels and the portrayer of scenery must go for his best models, the land which inspired our ablest geographical writers from the classic works of Humboldt to the charming narrative of Bates. No travelers have been more thoroughly fitted for their tasks by previous training, none have more resolutely faced dangers and privations, and some among them stand first as accurate scientific observers, while their works are the best models on which a book of travels can be written. Every geographical author should be student of Humboldt, of Schomburgk, and of Bates. (85-86)

From the 1880s to the 1930s, these foundational texts inspired more than just trained geographers. The proliferation of geographical, botanical, bio-medical, adventure travel, and popular literature in this period attests to a soaring fascination with South America. Figured by Markham and others as the “originary” site of British imperialism, this “diseased” tropical region could now be conquered by modern British travelers armed with the knowledge of tropical medicine.

In his widely popular 1912 travel narrative, *The Sea and the Jungle*, H.M. Tomlinson documents his journey aboard the *Capella*, the first English steamship to successfully ascend the Amazon river and its tributary, the Maderia. Tropical disease, fever, and death frame his arrival to the region. Looking out “over the bows” as the *Capella* nears the coast, the “prelude” before the journey begins with a discussion of fever:

We have heard many unsettling legends of yellow fever, malaria, blackwater fever, dysentery, and beri-beri. The mates, looking for land, swear they were fools to come on a voyage like this. They ought to have known better. The Doctor, who does not always smile when he is amused, advises us not to buy a white sun umbrella in Para, but a black one; then it will do for funerals. (84)

The fear of tropical disease informs Tomlinson's introduction to the mysterious continent of South America. From the earliest writings of Sir Walter Raleigh, the tropical landscapes of Amazonia are described as being simultaneously threatening and beautiful, dangerous and bountiful. The same malevolent force that haunts the landscape in the travel narratives of Raleigh, Drake, Bruce and Wallace also haunts Tomlinson's.

Upon glimpsing the thin outline of the Brazilian coastland and estuaries for the first time, Tomlinson's vision is cast not ahead to the forests and townships of a modern Brazil, but behind to visions of romance and terror of the jungle found in the travel writings of past explorers. "Where are the Spanish Main, the Guianas, and the Brazils?" he wonders.

At last I had discovered them. I found their true bearings. They are in Raleigh's "Golden City of Manoa," in Burney's "Buccaneers of America," with Drake, Humboldt, Bates, and Wallace; and I had left them all at home. (83)

Tomlinson collapses four centuries of British encounters with South America into a single sentence in his vision of South America and the Amazons: from Sir Walter Raleigh's fabled El Dorado which sparked the Elizabethan's earliest imperial desires; to the famed exploits of Sir Francis Drake, whose acquired wealth in the sixteenth century would later help finance the rise of Britain as a global Empire; to the great German

naturalist Alexander von Humboldt, whose writings on South America are credited with having “redefined tropical nature” itself; to the influential work of naturalists Henry Bates and culminating in the scientific advancements of A.R. Wallace, who independently formulated the theory of evolution in the nineteenth century.

Tomlinson’s vision catalogues and consolidates in one broad sweep some of the most influential voyages and discoveries in the history of the British Empire, wherein South America is a living archive of British exploration and scientific discovery. The land glows with promise and mystery, writes Tomlinson, but not in its own light: “We borrow the light of an observant and imaginative traveler, and see the foreign land bright with his aura; and we think it is the country which shines” (83). In this moment of discovery, Tomlinson constructs a genealogy of the British Empire that locates its beginning in the torrid zones of South America. A return to South America in the present marks a resumption of the Empire’s past glory and might. Its health and longevity extended by scientific men like Tomlinson who continue the quest into “unknown” and “unmapped” territories. Tomlinson’s travel narrative marks a “modern” conquering of the elusive continent now made possible through the discoveries and advancements in the medical sciences.

In addition to Tomlinson, South America captured the imagination of other British writers, including R.M. Ballantyne, Thomas Hardy, Rider Haggard, Robert Stevenson, Cunningham Graham, Joseph Conrad, W.H. Hudson, and Graham Greene.⁶

⁶ In *British Representations of Latin America*, Luz Elena Ramirez argues that the surge of literary texts on South America in the late nineteenth and early twentieth centuries reflects both a fascination with earlier explorer narratives as well as anxieties about Britain’s place in the world as an imperial power. While Ramirez’s survey touches on literary representations of Latin America, Panama, and Mexico, her readings primarily revolve around Britain’s economic interests in the region, which, although informative, do not acknowledge the disease discourse that permeates these South American encounters.

The three British writers explored in this dissertation – Arthur Conan Doyle, Virginia Woolf, and Evelyn Waugh– offer unique insights into the complex ways in which different societal groups understood, engaged with, and reacted to some of the most sweeping paradigmatic shifts that occurred at the turn of the century; they serve as extremely valuable resources for interrogating the ways in which tropical medicine became a bio-political technology targeted at resuscitating the Empire and its declining population. While defined historical frameworks are by nature artificial, as history does not fit neatly into decade or century-long packages, I have nevertheless chosen to frame this study between 1880 and 1930. 1880 marks the year that the mosquito was first identified as the carrier of the malaria parasite, and 1930 marks the tercentenary celebration of quinine, the miraculous South American bark that cured malaria fever and revolutionized western medicine. During this 1930 celebration, it was said that quinine “did for medicine what gunpowder had done for war” (“Cinchona” 1090), a statement that would serve to encapsulate the importance of quinine and tropical medicine to the health and expansion of the British Empire. Each chapter in *Imperial Fever* examines how British writers engaged with new notions of cell membranes and biological immunity – concepts that developed with laboratory medicine, cell theory, and germ theory – that were re-defining conceptions of the state and body as individual organisms under constant threat of invasion from outside forces. Within these literary texts, these outside invasive forces take on the form of microbes, parasites, colonial others, or foreign international invaders, depending upon the level of perceived threat.

In chapter one, “To Conquer the Tropics: Disease, Empire, and the Rise of

Tropical Medicine,” I provide a historiography of the rise of tropical medicine as a disciplinary institution that emerged at the turn of the twentieth century with the founding of the London School of Tropical Medicine in 1899. Diseases of the tropics had been a source of anxiety and a persistent obstacle to British exploration and colonization of the tropics for centuries. The emerging fields of germ theory and immunology shifted understandings of disease causation away from climatic theories of illness to specific bacterial agents of disease. Through new technologies of hygiene, insect eradication, and quinine prophylaxis, tropical medicine claimed it could strengthen the colonial body by fortifying its immunological armor against tropical pathogens. By offering the tools to protect the body against tropical diseases, tropical medicine heightened colonial optimism surrounding the consolidation of the empire and the exploitation of its tropical territories through settlement. In this chapter, I examine the ways in which the medical and scientific journals of the period promoted the study of tropical medicine and celebrated the new technologies of the discipline as vital to the health and expansion of the British Empire.

In chapter two, “‘At the Extreme Edge of the Knowable’, The Biological Frontier in the Writings of Sir Arthur Conan Doyle,” I examine the ways in which Doyle’s medical training and interest in bacteriology shaped his literary pursuits. Many of his short stories and novellas engage with the subject of tropical illness and reveal a deep anxiety about contact and contagion and the need for Science to expose and eradicate these microbial enemies. Reading *The Lost World* (1912) through an immunological framework of infection, contagion, and eradication, I argue that Doyle’s depiction of the battle between the Red Indians and the Ape-Men engages with (and fictionally portrays)

the militant ethos inherent in the bacteriological discourse of the early twentieth century. Like the famous bacteriologist, Robert Koch, Doyle's "children of Science" work tirelessly to "bring under subjection those unruly tribes of deadly micro-organisms which are the last creatures in the organic world to submit to the sway of man" ("Dr. Koch" 552). Doyle's fantastic adventure tale of pterodactyls and Ape-Men thus becomes a triumphant story of Science and Medicine eradicating disease and making the world safe for future imperial expansion.

In chapter three, "Reproducing Great Britain: Biopolitics, Disease, and Sexuality in Virginia Woolf's *The Voyage Out*," I examine the ways in which Woolf refigures the role of women and illness in the conquest and cultivation of the tropics. Throughout the novel, Woolf engages with concepts of immunity that were redefining women's bodies in the tropics as vulnerable to invasion and in need of protection and enclosure. However, by depicting her protagonists, Evelyn and Rachel as strengthened by their contact with the jungles and rivers of South America, Woolf offers an alternate vision of immunity predicated on an ethos of symbiosis and community. By removing women's bodies from the constraints of a masculine regime of security, Woolf redefines the female body "as a functioning construct that is open to continuous exchange with its surrounding environment" (Esposito 17), and which is strengthened, not enfeebled, by new forms of contact and exchange. In casting her female characters as Elizabethan adventurers who retrace the footsteps of Raleigh and Drake, Woolf returns to the imaginative origins of the imperial project and imagines an alternate script for the future of the Empire predicated upon positive forms of exchange.

By the 1930s, the colonial optimism engendered by tropical medicine had begun

to fade. In chapter four, “Concerning the ‘Contaminated’ Native: Tropical Medicine and Colonial Economies in Evelyn Waugh’s *Ninety-two Days, Travels in Guiana and Brazil* (1933),” I examine the ways in which Waugh critiques the use of tropical medicine as a tool for corporate development of tropical resources. During the 1920s, British and US investments in tropical medicine began to focus on the health of indigenous populations as a means to secure a cheap and reliable labor force. As diseased workers were inefficient workers, corporate interests mandated tropical medicine campaigns be implemented to eradicate disease and prevent profit loss. In *Ninety-two Days*, Waugh offers an acerbic commentary on both the efforts of these medico-corporate disease campaigns in the 1920s as well as the deleterious effects of the campaigns, and their dissolution in the 1930s, on native bodies and environments. While tropical medicine casts “natives” as the *cause* of tropical disease, diseases that killed so many indigenous peoples in the tropics were the *effect* of the disciplinary procedures and regulatory mechanisms of tropical medicine. For Waugh, the widespread illness and rampant poverty among indigenous peoples are evidence of tropical medicine’s deep irony.

In this study, my reading of British literary representations of tropical diseases in the early twentieth century is framed by an interdisciplinary network of distinct though occasionally overlapping studies on the history of tropical medicine; on disease and empire in literature; on South America in British history and literature; and on the construction of the tropics within the British imperial imaginary. A small number of literary scholars have examined representations of illness in Georgian, Romantic, and Victorian literature, and a fair number of medical and cultural historians have interrogated the rise of tropical medicine in an imperial context. However, there has yet

to be a full-length study on the intersections of tropical medicine and British literature in the early twentieth century. *Imperial Fever* attempts to bridge this disciplinary gap by examining the ways in which developments in tropical medicine informed “modern” literary representations of Britain’s growing tropical empire in the first decades of the twentieth century. *Imperial Fever* is my small contribution to literary critic Alan Bewell’s call for scholars to examine more thoroughly “the rise of a literature in which pathogenic images play a growing role in understanding colonial situations” (7).

To Conquer the Tropics: Disease, Empire, and the Rise of Tropical Medicine

[The study of Tropical Medicine] is the highest degree beneficial to mankind, and which, more than trade, or statecraft, or conquest, tends to consolidate our empire. The richest mines, the most fruitful plantations are useless to us so long as they are in the keeping of invisible guardians more dreadful than the dragon that watched over the gardens of the Hesperides.

British Medical Journal, 1904

Medicine becomes a political intervention-technique with specific power-effects. Medicine is a power-knowledge that can be applied to both the body and the population, both the organisms and biological processes, and it will therefore have both disciplinary effects and regulatory effects.

Michel Foucault, “*Society Must Be Defended*”

In a review article entitled “A Tropical Retrospect,” published in *The Lancet* in 1939, the author succinctly asserts, “of all the themes for the medical historian, none is more fascinating than tropical medicine” (705). The article is written in praise of H. H. Scott’s monumental tome, *A History of Tropical Medicine*, published the same year. In his two-volume study, Scott traces the history of European encounters with and medical understandings of various diseases that were increasingly defined as endemic to tropical regions of the globe. Though Scott acknowledges the observations and contributions made by (European) scientists from the seventeenth century onward, the arc of his historical analysis clearly situates the development of bacteriology and the work of Sir Patrick Manson during the late nineteenth and early twentieth centuries as the pinnacle of scientific discovery and the true birth-date of tropical medicine as a formal medical discipline. Before the nineteenth century, Scott writes, scientists and physicians possessed only “vague, empirical ideas” about tropical illness and disease causation, which reflected a “curious mingling of acute observation and vague surmise” on the subject of climate and contagion (*History* 1073). Only during the nineteenth century, he

argues, did “the beginnings of rational thought” (1074) begin to emerge in the study of tropical diseases. The mounting scientific discoveries in disease origin and diffusion, Scott argues, culminated in the work of Sir Patrick Manson, the discovery of the malaria vector, and the founding of the London School of Tropical Medicine in 1899.

As historian David Arnold notes in *Warm Climates and Western Medicine*, the chronological history of tropical medicine as a point of European inquiry and anxiety predates the work of Manson by centuries. However, it was not until advancements in germ theory, parasitology, and immunology during the 1880s and 1890s that tropical medicine emerged as a distinct medical discipline with its own set of knowledges, technologies, disciplinary mechanisms, and regulatory procedures. As John Farley writes in his study on bilharzia, despite nearly three hundred years of imperial expansion through the ‘tropics,’ it was only in 1898 when Patrick Manson, with the support of Secretary of the Colonies, Joseph Chamberlain, founded the London School of Tropical Medicine that Britain “declared war on tropical diseases” (13). By the early twentieth century, Tropical Medicine was no longer a sub-discipline concerned vaguely with diseases of warm climates. Rather, tropical medicine as a formalized institution with its laboratories, microscopes, and disease manuals was increasingly celebrated as fundamental to the health and expansion of the British Empire into the tropical regions of Africa, India, the West Indies, and South America. As a bio-political apparatus, tropical medicine possessed a distinctively militaristic agenda as it sought to control and eradicate disease elements, discipline diseased bourgeois bodies, and segregate native bodies as a means to maintain the health and productivity of the white imperial body, both individual and political. As numerous physicians, scientists, and politicians repeatedly argued, if

diseases of the tropics could be conquered and the tropics made safe for white colonization, then the “richest mines, the most fruitful plantations” (“Imperial” 1022) would undoubtedly be brought under the yolk of the British crown.

In this chapter, I provide a cultural historiography of the rise of tropical medicine. Engaging with the most influential medical and scientific journals of the period, including the *British Medical Journal* and *The Lancet*, I examine the ways in which these texts celebrated the new technologies of tropical medicine, its biomedical mechanisms and regulatory procedures, and promoted the study of tropical medicine as being vital to the health and expansion of the British Empire. One of the most pervasive topics in these journals concerned the scientific advancements of Sir Patrick Manson and Sir Ronald Ross, whose joint research on parasitology and identification of malaria transmission by mosquitoes revolutionized the study of tropical medicine and ultimately revitalized imperial ambitions to colonize the tropics. The late nineteenth-century discovery that many diseases were caused not by climatological factors, but rather by minute bacterial organisms led to a revolutionary shift in understandings of disease causation and conceptions of the body as porous and vulnerable to penetration and infection. Through new technologies of hygiene, sanitation, insect eradication, and quinine prophylaxis, tropical medicine claimed it could strengthen the colonial body by fortifying its immunological armor against tropical pathogens. The cultivation of these bodies that would not only survive but also thrive in the tropics became the ultimate mandate of the London School of Tropical Medicine and other similar disciplinary institutions that were formed in the first decade of the twentieth century. Tropical Medicine was responsible for heightening colonial optimism that the British would finally conquer South America.

Although tropical medicine as an institutionalized field of study did not emerge in Britain until the late nineteenth century, theories concerning diseases of warm climates and miasmatic decay have a much longer history. As historian David Arnold emphasizes, “disease was one of the defining characteristics of the tropics well before the 1890s, one of the factors that divided the civilized, temperate North from the heat, humidity and backwardness of the tropics” (“Tropics” 309). In 1598, English merchant George Wateson compiled one of the earliest English accounts on the subject of tropical diseases, entitled *The Cures of the Diseased In Remote Regions*. Wateson specifically warns of diseases produced by an “intemperate climate” (qtd. in Arnold 157). Such regions, he writes, were “a rich storehouse or treasure for the diseased” (157). While the lush, fertile landscapes of the Americas and West Indies inspired theories of spontaneous generation and botanical riches, the hot climates and thick tropical miasmas were believed to be the source of infectious disease, putrefaction, and degeneration. For centuries prior to the founding of the London School of Tropical Medicine, scientists and medical practitioners were preoccupied with the various diseases considered to be endemic to the ‘torrid’ or tropical zones of the world. Representations of primitive man, sublime landscapes, abundant vegetation, miasmatic decay, and intermittent fever in medical and scientific journals combined to create what Denis Cosgrove terms a “dialect of ‘paradise and pestilence’” that would come to define notions of “tropicality” (205).

Throughout the eighteenth and nineteenth centuries in particular, many of Europe’s most prominent naturalists and explorers depicted the lush New World landscapes as simultaneously seductive and dangerous. The landscapes, though beautiful

and sublime, were also thought to be the source of the most deadly and mysterious enemy to European travelers in the torrid zones: tropical illness. During Alexander von Humboldt's 1800 botanical expedition along the Orinoco, the scientist and explorer associated the outbreak of fever in various villages with "the pestilent exhalations that rise from the bare rocks" (*Personal Narrative* 242). Fifty years later, when Richard Spruce traced Humboldt's steps, he too noted the sharp contrast between the beauty of the tropics and the ever-present threat of fever: "the sight of Esmeralda is a Paradise [...], but in reality it is an Inferno scarcely habitable by man" (qtd. in Honigsbaum 17). The hot, humid air is "alive with mosquitos" that leave his "hands, feet, neck and face covered with blood" (17) and quickly result in a long bout of fever. In his 1852 *Sketches of Brazil*, Robert Dundas echoes the findings of Humboldt and Spruce, when he writes, "the primary [...] cause of intermittent and remittent fevers [...] consists in certain invisible effluvia or emanations from the surface of the earth, which were formerly called marsh miasmata, but to which it has become fashionable to apply the foreign term *malaria*" (128). These "effluvia," he writes, "proceed from the surface of the earth," from the "accumulation of dead and inorganic particles, with impure sulphur and acrid and volatile salts, and with other extraneous matters" which emerge as "exhalations from the waters" (131).

As the climatological theories of Galen and Hippocrates dominated medical theories during the eighteenth and nineteenth centuries, notions of disease born of bad air strengthened conceptions of the tropics as fundamentally poisonous, noxious, and dangerous for men born of more temperate climates. Such miasmas overwhelmed the delicate constitutions of the white, civilized European subject and threatened the

bourgeois body with degeneracy, tropical neurasthenia, and even moral corruption. Hippocratic medical theories of pathogenic landscapes markedly shaped the evolution of medical geography, not just in antiquity, but also throughout the centuries of European discovery and exploration of the Americas; climatological theories of fever causation in particular, argues Bewell, effectively served to “pathologize the globe” (17). Thus, areas of Africa, India, and the Americas – and the diseases encountered in such spaces – came to be defined as tropical, and their ailments as geographically and climatologically determined. Medical understandings of diseases in warm, tropical climates helped shape new notions of geography; in turn, conceptions of European place and identity evolved in relation to this equatorial beltway whereby the torrid heat, diseased miasmatic landscapes, and perceived immorality of the native inhabitants of the tropics served as a foil to the temperate, white, healthy, and civilized European body and culture. The perceived inherent backwardness of the tropics was thus attributed to the pathological nature of the tropical climate. This medical, cultural, and political construction of the tropics as diseased came to define wide regions of the globe as both the “white man’s burden” and the “white man’s grave” for centuries of European and British expansion and imperial endeavors.

In his influential 1768 text *Essay on Diseases Incidental to Europeans in Hot Climates*, James Lind emphasizes the direct connection between diseases of the ‘tropics’ and the health and expansion of the British Empire. Expressing the urgent need for medical intervention to ensure the health of British sailors and soldiers and the success of the Empire’s maritime fleet, Lind contends that certain climates are “healthy and favourable to European constitutions, as some soils are favourable to the production of

European plants” (qtd. in Bewell 36). However, “most of the Countries beyond the limits of Europe, which are frequented by Europeans,” writes Lind, “unfortunately prove unhealthy to them” (36). Illnesses inherent in the spaces beyond the geographical borders of Europe were to blame for the vast majority of European deaths in the tropics. Those who dared enter the equatorial zones of South America or West Africa inevitably “suffered more by sickness than by shipwreck . . . [or] by wars with the natives, and every other accident” (36). The significance of Lind’s claims was not lost on medical, military, or state officials hoping to expand their colonial reach. As Philip Curtin outlines in *Death by Migration*, the annual mortality rate for British soldiers stationed in the West Indies was six times greater than that in Great Britain, ranging from 15.30 per thousand in Britain to 130.00 per thousand in Jamaica. By the early nineteenth century in Sierra Leone, seen to epitomize “the white man’s grave,” military records show that the annual mortality rate for Europeans in the region averaged 483.00 per thousand, thirty times greater than England (11).⁷ From Lind’s writings in the eighteenth century to Manson and Ross’s research in the late nineteenth century, colonial fears of diseases dominated imperial debates and shaped policies on trade, expansion, and European health in the tropics.

As discussions surrounding diseases of intemperate climates increased, conceptions of the ‘tropics’ as a medical category began to emerge. By 1787, the term ‘tropical’ appeared as a medical signifier in Benjamin Mosely’s foundational medical text, *A Treatise on Tropical Diseases*. By 1813, James Johnson’s text, *The Influence of Tropical Climates on European Constitutions* became the most influential work on

⁷ For a more detailed analysis of the statistical surveys of European deaths in the tropics see Philip Curtin, *Death by Migration*. Cambridge: Cambridge University Press, 1989.

colonial medicine and paved the way for future studies of ‘tropical medicine.’ Johnson’s work on diseases deemed endemic to the tropics, along with the work of famed physician James Ranald Martin forty years later, came to define Britain’s biomedical and biopolitical relationship with much of the world throughout the nineteenth and early twentieth centuries and set the stage for the work of Manson and Ross and the London School of Tropical Medicine. As Bewell argues, the biomedical construction of the tropics as fundamentally diseased provided the *other* against which the British were able to cultivate their own biomedical identity as healthy and civilized (19). The ‘tropics,’ writes Bewell, were not “simply the dark edge bordering a Western biomedical identity; they were intrinsic to its formulation” (19). By the turn of the twentieth century, the aim of Tropical Medicine was to cultivate a body that could not only survive, but also thrive in the tropics.

Among the dozens of diseases deemed specific to the tropical regions of the globe, none was more terrifying or deadly to British soldiers and colonists than malarial fever. Once the human host is infected by the bite of the mosquito, the *plasmodium* parasite begins to circulate throughout the blood, attacking and invading red blood cells and penetrating the liver and spleen. As the parasite matures, it ruptures or lyses the red blood cells in 48-72 hour cycles characteristic of malaria’s tertian and quartan fever bouts; once the cell is lysed, the parasite is released into the blood stream and continues to spread. As the liver fails to metabolize the large amounts of hemoglobin released from the damaged red blood cells, the victim begins to show signs of jaundice, a yellowing of the skin and eyes that signifies a decompensation of the liver. As the spleen attempts to sequester the lysed red blood cells and mounts an immune response, the patient develops

splenomegally and generalized anemia, which leaves him weak, edematous, and in pain. Physicians attributed these symptoms of organomegally and ascites (fluid accumulation in the abdomen) to moral and humeral corruption; that is, the fevers and physical changes were figured as lapses in moral discipline and an imbalance in the body's fluids and humors.

These intermittent fevers, which peaked every two to three days, were considered the single biggest threat to the white bourgeois body: not only did the fever weaken the body, leaving it anemic and jaundiced and unable to work, but so too did it infect the mind, resulting in disorientation, hallucinations, and hysteria. In response to these waves of infection, the body reacts in a series of hot-dry, cold-wet, and hot-wet fevers in an attempt to kill and purge the parasitic invader. Both the fevers and the decreasing red blood count repeatedly weaken and incapacitate the body, leaving it frail and anemic, if alive at all. The violent fevers that accompany the illness also affect the brain, leading to brain fever and ischemia, which causes the victim to lose consciousness and experience intense bouts of delirium often leading to coma. The result of infection therefore rendered both the victim's body and mind weak and frail, attributes that threatened the biological and cultural superiority inherent in the white masculinity of Britain's imperial race.

Due to its deleterious effects on both the body and the mind, malaria in particular, writes Arnold, "was seen as an emasculating disease that threatened reproduction, produced weakly and sickly individuals, and further accentuated the division between the 'manly races' [...] and the 'effeminate' inhabitants" of the tropics (*Warm Climates* 135). For many scientists and colonial personnel, malaria, was seen as "the great sapper of civilizations, the destroyer of imperial races" (127). In 1898, Manson proclaimed that

malaria was “by far the most important disease agent in tropical pathology” (*Tropical Diseases*). This physically and mentally debilitating illness defined not only the tropics as diseased and threatening to the white bourgeois body, but also became, through the work of Manson and Ross, the focal point around which British biomedical identity was formed and the foundation stone for the institutionalization of tropical medicine in Britain. Therefore, when Manson and Ross successfully identified the source of the malaria parasite and its mode of transmission in 1897, they inspired a renewed imperial interest in tropical expansion and exploitation. Through a highly crafted bio-political rhetoric, Manson and Ross constructed malaria (and its conquest) as the primary obstacle of British imperial expansion and successfully petitioned for the founding of the London and Liverpool Schools of Tropical Medicine as fundamental to the health and future success of the Empire.

Hailed as the “father of tropical medicine,” Sir Patrick Manson is best known for his research on malaria and his role in establishing the London School of Tropical Medicine. However, his work in parasitology and vector transmission twenty years prior had already revolutionized the study of disease causation in the tropics and placed him on the map as a prominent scientist and physician. Born in Aberdeenshire, Scotland in 1844, Manson studied medicine at Aberdeen University and received his degree at the age of twenty-one. Like many other young physicians, Manson found it difficult to open his own private practice in Scotland or England. As a result, he dedicated his skills to imperial service and in 1866 travelled to the tropical island of Formosa (present day Taiwan) where he served as a medical officer for the Chinese Imperial Maritime Customs. For the next eighteen years, Manson lived, worked, and studied in the tropical

region, moving between Formosa and the nearby city of Amoy on China's mainland, just across the strait. During this period, in addition to practicing as a physician and surgeon, Manson began his study of the *filairus* parasite, the organism responsible for the lymphatic disease known at the time as elephantiasis. Filarial disease was quite prevalent in Amoy, as it was in other tropical regions of Africa, India, and the West Indies. Indeed, elephantiasis, along with leprosy, was one of the most visually powerful diseases, the grotesque physical effects of which helped construct tropical regions as innately pathological.⁸ Though the filarial parasite had been previously identified in the urine of an infected patient (thus suggesting a causative link between organism and disease), the exact etiology and transmission of the disease remained a mystery.

Through careful observation and analysis, Manson began to suspect the mosquito played an important role in the transmission of the parasite from human to human, an insight that would soon transform understandings of diseased bodies and pathologized climates. In 1877, Manson confirmed his theory when he fed a mosquito the infected blood of a patient and then cut open the insect's abdomen to find dozens of parasites in its gut. More importantly, Manson observed that the mosquito's digestive enzymes actually fostered the growth of the *filairus*, transforming the embryonic form of the parasite into its adult form before the insect infected its next host. Manson's identification of the mosquito as the primary vector for filarial disease was a remarkable feat in the history of medicine and parasitology. As Michael Warboys notes, Manson's discovery of the filarial transmission by mosquito was the first demonstration of disease transmission by insect-vector (23); this discovery would in turn have profound implications for the

⁸ For an elegant analysis of the visual portrayal of such tropical ailments as elephantiasis and leprosy through photography, see Nancy Leys Stepan, *Picturing Tropical Nature*. Ithaca: Cornell University Press, 2001.

field of parasitology and tropical medicine. In 1894, Manson published his famous mosquito malaria hypothesis in which he proposed that the mosquito played a central role as an intermediate host and vector in the transmission of malaria just as it did in filarial disease. By this time, Manson was quickly becoming Britain's foremost authority on tropical disease. In 1897, Manson earned a position as medical advisor to the Colonial Office. During the same year, he published his highly influential and definitive text, *Tropical Diseases: A Manual for Diseases of Warm Climates*.

The only connection Manson failed to make between mosquito and host was the means by which humans were infected with the parasite. Manson concluded that the mosquito served as a necessary intermediate host that contracted the parasite from human blood, fostered its growth and development, then deposited the ova into water supplies, thus infecting any human who drank from the tainted source. Manson's student and colleague, Ronald Ross, would finally prove that the mosquito transferred the germ from human to human directly by biting its host and depositing the parasite into the blood while simultaneously consuming the blood of both healthy and infected persons. This final piece of the puzzle was solved in 1897 when Ronald Ross successfully demonstrated the direct infection of man with the plasmodium parasite delivered by the bite of the *anopheles* mosquito.

Ross, having completed his medical degree in London in 1875, was serving in India with the Indian Medical Service during the period in which Manson was experimenting with malaria. Upon hearing Manson's mosquito malaria hypothesis, Ross became consumed with the desire to prove the theory and make a name for himself as a prominent physician and scientist. Under Manson's guidance, Ross learned how to

cultivate and manipulate the *plasmodium* parasite in blood and in mosquitoes. After numerous experiments, including drinking water contaminated by the larvae of infected mosquitoes (to no effect), Ross was no closer than Manson to deducing the direct route of transmission. However, his breakthrough came when he made two revolutionary observations: first, only a specific species of mosquito, the *anopheles* or dapple-winged mosquito carried the parasite; and second, that those bitten by infected mosquitoes in turn came down with malarial fever, thus proving the final causal link between host, vector, and victim. As Bruno Latour argues, “all the great discoveries of this period consisted in discovering the route by which a parasite, an insect, and a man were linked” (143). Ross’s discovery was made on August 20, 1897, a day that continues to be celebrated as Mosquito Day. In 1902, Ross’s contributions to medicine and science were fully recognized when he became the first British recipient of the Nobel Prize in Medicine.

The discovery of the mosquito vector of malaria radically transformed the study of tropical diseases and led to a renewed confidence in the ability of British military and trade personnel to open up the tropics to white settlement and exploitation of resources. Shortly after Ross’s announcement regarding the identification and transmission of malaria, an article in the *British Medical Journal* in 1897 celebrated the malaria breakthrough in terms of colonial advancement: “get rid of or avoid these disease germs and we get rid of a principal obstacle to the colonization of the tropics by Europeans” (“Europeans” 93). The equation of the malaria parasite with other “disease germs” associated with the tropics reflects not only the rhetoric of disease as an impediment to imperial expansion, but also the ways in which germ theory itself had dramatically altered European understandings of disease causation. By the late nineteenth and early

twentieth centuries, the emerging fields of bacteriology, parasitology, and the related study of immunology shifted the concept of disease causation away from climatic theories of illness to specific bacterial agents of disease. The knowledge that “germs” or parasites were the causal agents of disease, and not the landscape or climate, revolutionized medical understandings of the body and the body politic and provided the scientific and political background necessary for Manson and Ross’s malaria research and the founding of the London School of Tropical Medicine in 1899.

For centuries, the Hippocratic theory of pathologized climates and landscapes dominated medical understandings of illness, contagion, and the relationship between Man and the environment. However, at the beginning of the nineteenth century, new technological advancements in microscopy and imaging techniques permitted scientists to observe and describe various biological and pathological elements that Foucault argues had previously “remained below the threshold of the visible and the expressible” (*Birth of the Clinic* xii). Two of the most groundbreaking discoveries permitted by these new technologies of the visible included the recognition that the body is comprised of countless individual cellular units, and that microscopic organisms, or bacteria, are the causative agents of many of mankind’s most fearsome diseases. Both of these discoveries – as articulated by cell theory and germ theory – revolutionized understandings of the body as an individual and political organism and transformed it into what Foucault describes as an object of knowledge and power.

In *The Birth of the Clinic*, Foucault argues that, “the space of *configuration* of the disease and the space of *localization* of the illness in the body have been superimposed, in medical experience, for only a relatively short period of time” (3). This

time frame, he continues, is that which “coincides with nineteenth-century medicine and the privileges accorded to pathological anatomy” (4). During the late eighteenth and early nineteenth century, new understandings of human anatomy and pathology localized disease in the body of the individual, whereby the anatomy of the individual – the liver, spleen, lungs – was found to be the seat of pathology – jaundice, anemia, tuberculosis. This revolutionary shift in medical and scientific thought brought the individual body under the power of the medical and political gaze. “From that time,” Foucault argues, “the body has been the point on which and from which power has been exercised” (*Discipline 2*). The body, as site of pathology, quickly became the site of inquiry and examination.

In tropical regions specifically, the fevered, anemic, and jaundiced body of the infected colonist demanded extensive scrutiny and documentation. Careful examination included detailed accounts of one’s food intake, activity level and occupation, amount of sun exposure, degree of organomegally, and more intimately, the color and odor of any emesis or excrement. Due to the high mortality rate of European colonist in the tropics, all manner of investigation and precautionary measures were taken to detect and prevent illness. From the perspective of the medical physician, every fluid or purulent emanation from every pore and orifice of the ailing body signified potential disease mechanisms taking place under the skin. Whereas the extreme temperatures and humidity of the tropics were long believed to cause organ swelling, neurasthenia, and the black vomit of yellow fever, by the late nineteenth century, scientists began to examine the blood itself which in turn revealed new sources of infection. With the rapid advancements in new microscopic techniques and staining assays, the physical and pathological landmarks

associated with tropical fever were made visible to the physician's gaze; with the right technology, and the right investigative techniques (from physical palpation to blood cultures), the underlying pathology could be localized and deduced, and many tropical parasites detected in the blood.

The details of such excrements and temperature fluxes thus demanded a relentlessly penetrating clinical gaze to detect the underlying pathology and manipulate both the body and the environment to eliminate the source of the illness. In the tropical colonies, this required strict adherence to regimes of physical and moral hygiene to limit infection, including avoiding the heat, limiting alcohol and sexual activity, and exercising extreme moderation in all physical and intellectual pursuits. On a larger scale, legislation dictated that the design and location of barracks and hospitals be away from stagnant water with adequate ventilation and access to clean water. Any potential site of contagion was to be avoided, as was any activity deemed immoral (sex, drinking, flirtation) and thus straining to the body's natural defenses. An ailing body was thus associated with a breakdown in surveillance and the dissolution of borders: the diseased body was presumed to be diseased precisely because of a lapse in vigilance that resulted in infection by a foreign agent. As a pathologized, politicized entity, the individual diseased body was seen as permeable and susceptible to invading forces and in need of clinical surveillance (at the personal and state level) so that the disease agent (read as foreign invader) could be detected, localized, isolated, and eradicated.

To diagnose and cure the ailing body therefore demanded the systematic diagnostic and quarantine powers of the clinic. As Foucault argues, this shift in the ways in which the body was *seen* and therefore managed, defined precisely the "political

anatomy” of the body “as object and target of power” (*Discipline* 28, 136). The “docile body” that emerged as a result of this shift, Foucault continues, was one “that could be subjected, used, transformed, and improved” (136). Moreover, the colonial physician was responsible not only for the health of the white colonists but also for the health of the indigenous populations upon which the colony relied for labor and production; while the habits and rituals of hygiene and quarantine that were imposed upon the white colonial body to protect it from invasion and infection, the practice of segregation imposed upon racialized and diseased subjects clearly positioned the native body as a source of infection that threatened the vulnerable, porous, and refined white subject. In the mid-nineteenth century, as the individual body was increasingly understood as a collection of cellular entities vulnerable to invading germs and diseases, the need to discipline, transform, and improve the health of individuals became fundamental to protecting the health of the state.

While the political landscape inevitably shaped medical opinion in the late eighteenth and nineteenth centuries, scientific discoveries, perhaps more profoundly, influenced political thinking (Otis 11). This is particularly true with regards to advancements in cell theory and germ theory, which not only reshaped understandings of the material nature of the body, but also reconfigured the health and vulnerability of the individual and political body within a discourse of militarized borders and boundary maintenance. Although Robert Hooke famously identified plant cells in a sample of cork in 1665, it was not until advancement in microscopic lenses, lighting, and staining techniques in the early nineteenth century that scientists finally discovered that animal tissues are also comprised of cellular units. The discovery that the human body is

comprised of millions of distinct and largely independent cellular entities was first theorized by Theodor Schwann in 1837 and confirmed by Rudolf Virchow in 1858. The confirmation of animal cells, unlike plant cells earlier, required specific techniques that allowed for the visualization of cell borders, or membranes. Cell theory, Otis argues, “relies on the ability to perceive borders,” whereby each cellular entity is surrounded by a “membrane that distinguishes it from its surroundings” (4). In his highly influential text, *Cellular Pathology* (1858), Virchow argues that it is the membrane itself that distinguishes the cell as an independent structure: “what really constitutes a cell,” he writes, “is the presence within a non-nitrogenized membrane of nitrogenized contents differing from it” (qtd. in Otis 23). Moreover, the semi-permeable nature of the cell membrane allows it to control its borders and monitor what molecules may enter the cell, and what substances it in turn excretes.

The advent of cell theory and what Otis terms the “membrane model” of identity and boundary maintenance dramatically transformed individual and political understandings of Self and Other, inside and outside, healthy and diseased. Not only was the individual body now seen as vulnerable to penetrating forces (included microscopic germs), but so too was the body politic deemed open to invading forces if it did not actively work to secure its membranous, and thus porous, boundaries. However, to protect the State against illness and contagion demanded the protection of the individual, whether in the metropole or in the periphery. Through Virchow’s rhetoric of cell membranes and individual cell bodies, the politically motivated scientist also collapsed the metaphor equating the personal and state body by directly equating the composition of the human organism with the composition of the state. Virchow writes in 1856: “all

action is in the parts, and the life of a people is nothing more than the sum of the lives of the individual citizens. So it is also in the little country, which the body of every plant and every animal represents” (qtd. in Otis 21). For Virchow, the political parallel between the singular organic body and the population of a given state was perfectly clear: the body, as comprised of individual yet interconnected cellular units, could therefore be understood as a state unto itself, in which each cell constitutes a separate and independent entity that, upon working with other cells, combines to form the foundations of the living, breathing, acting body. In turn, when these cells become diseased, the entire body is affected, just as an infected individual may weaken the body politic by failing to thrive and strengthen the state as a whole.

In *Immunitas*, Italian theorist Roberto Esposito argues that Virchow’s conception of individual bodies composing a State just as cells comprise a human body “signals the effective realization of the body-politic metaphor in the material body of the individuals who constitute a population” (137). Through Virchow and cell theory, Esposito argues, “the metaphor of the body finally took on its own body” (137). With the rise of cell theory followed by germ theory, by the mid to late nineteenth century, “the social ‘body’ ceased to be a simple juridico-political metaphor,” Foucault argues, “and became a biological reality and a field for medical intervention” (qtd. in Esposito 137). During this period, medical knowledge became increasingly important on a political level, as understandings of disease and contagion reshaped notions of boundaries, both individual and political, and established the health of the individual as intrinsic to the health of the State. When the body of citizens became more than the metaphoric object of state power and came to represent the very literal site of illness and state vulnerability, Esposito

argues, the “exercise of power was concentrated [on] the issue of public health” (137); the general health and welfare of the population “clearly became the pivot around which the entire economic, administrative, and political affairs of the state revolved” (137). As mortality rates of British soldiers and colonists in the tropical regions of the Empire continued to climb, questions of public health and health of the body politic became increasingly focused on protecting the white body against tropical illness and the degenerative effects of malarial fever on the body and mind. By the 1880s, cell theory gave rise to the germ theory of contagion, which revolutionized understandings of disease origin and causation; in turn, germ theory served to re-imagine the individual body and the body politic as porous entities under threat of foreign invasion and in need of bio-medical and bio-political intervention.

The germ theory of disease is historically attributed to the work of Robert Koch who discovered the tuberculosis bacillus in a sample of contaminated water in 1882. Though scientists prior to Koch suspected the existence of microorganisms and correctly identified their role in fermentation, the correlation between germ and disease was not clarified until Koch’s research in the 1880s. Koch’s groundbreaking contribution to medical science included the identification of specific bacterial organisms and the reproducible proof that unique microorganisms caused specific, predicable illnesses. During this period of biological discovery, “the relation between the visible and invisible – which is necessary to all concrete knowledge – changed its structure,” Foucault argues, “revealing through gaze and language what had previously been below and beyond their domain” (xii). With the aid of the microscope, entire new worlds were revealed and “a new alliance was forged between words and things, enabling one *to see* and *to say*” (xii).

This recognition that living organisms caused disease, and not climate, dramatically transformed medical theory, and quickly led to the identification of numerous other disease agents including the bacteria that cause cholera, tuberculosis, anthrax, dysentery, small pox, and by 1898, the *Plasmodium* parasite that causes malaria.

While these discoveries led many physicians and scientists to re-examine the climatic model of contagion, so too did the microbe-model of disease work to re-affirm the deleterious nature of the tropics by shifting the focus from the landscapes that bred the microbes to the native bodies that harbored the parasites and transmitted the fevers to white colonists. As pathologists turned their attention to microbes as disease agents, Otis argues, “the blame for disease shifted from physical environments to the people who inhabited them” (8). This shift directly affected the ways in which the British perceived their own bodies and the Empire as distinct entities with semi-permeable membranes under constant threat of invasion and penetration from foreign bodies – both politically and microbially. At the same time, germ theory also re-positioned tropical landscapes as breeding grounds for disease parasites and identified tropical bodies as carriers of such parasites – all of which threatened the white European body and state with infection and contamination. This shift from diseased landscapes to diseased bodies significantly shaped colonial debates on race and labor in the tropics. While Africans were carriers of the disease, they were also immune from the parasite; thus, they were believed to be better suited to work in the harsh conditions of the tropics.⁹

In her study of tropical medicine in *Race, Place, and Medicine*, Julyan Peard writes that by the late nineteenth century with the rise of germ theory, the term ‘tropical

⁹ See Roy MacLeod and Meltion Lewis eds., *Disease, Medicine, and Empire*; Randall Packard, *The Making of a Tropical Disease*; and Philip Curtin, *Death by Migration*.

disorders' had evolved to include not just fear about white European health and mortality in the hot climates, but also served to justify the history of native and African enslavement and continued politics of segregation. By the 1880s, the concept of tropical disease, writes Peard, "contained two very fatalistic connotations: it was the inevitable outcome of the combination in the tropics of 'airs, waters, and places' that produced a pathological miasma and, at the same time, it was the inevitable disease of the natives, which explained their supposed inferiority" (86). The climatological and racial categories of tropical disease therefore combined to situate the tropics as at once backward and in need of the white civilizing mission, as well as potential sites for future white settlement, in which the tools of tropical medicine would provide the means to conquer invading microbes.

In addition to new practices of tropical hygiene, which previously relied on defensive mechanisms of quarantine, segregation, and sanitation, tropical medicine promoted specific offensive methods to protect the borders and boundaries of both the colony and the individual body at the social and molecular level. Throughout the nineteenth century, tropical hygiene focused predominantly on avoiding particular activities or regions thought to endanger the body. Without a clear understanding of the etiology of tropical fever, anything and everything threatened the male body with degeneration and the female body with decay and infertility. By the turn of the twentieth century, however, cellular and molecular understandings of the body's immune system and disease mechanisms allowed tropical medicine to promote an overtly offensive strategy of eradication, blood surveillance, and chemical prophylaxis to armor the body against tropical diseases. Within the regulatory procedures of tropical medicine, defense

became offense. Through offensive maneuvers such as eradication of parasites, inoculation, and the alteration of blood chemistry with alkaline pharmaceuticals, tropical medicine cultivated a body fit for the tropics with the aid of biomedical mechanisms and regulatory procedures that secured and strengthened the body's immunological armor against tropical pathogens.

The battle against microbes shifted from a solely defensive to a defense-as-offensive operation. In 1903, Koch proclaimed, “we have now moved away from this defensive point of view and have seized the offensive . . . We must be prepared, first, to detect the infectious material easily and with certainty, and second, to destroy it” (qtd. in Otis 34). For Manson and Ross, protecting the white British subject from the dangerous pathogens of the tropics demanded military-like discipline and precision; to survive and prosper in the tropics, one must be adequately trained to detect sources of infection, protect oneself and the colony against invasion, and actively eradicate the mosquito vector and its malaria parasite. In Ross's detailed account on how to protect oneself and the colony from malaria, he outlines “personal, domestic, and municipal precautions” to avoid and eradicate the fever, including draining ponds, sleeping with mosquito nets, segregating the ill, avoiding native villages, and using sulfurous compounds to smoke out insects in the home (*Malarial Fever* 37). By taking all of these precautions, Ross writes, “I have been able to work in the most dangerous places with impunity” (37). The enemy not only hides in marsh lands and stagnant water, however, but more significantly among native villages and native bodies. Ross writes, “If your house is near a native location, or if you are a traveler and are forced to sleep in the house of a native, or near a native village, redouble your precautions. It is just in such places that the infected mosquitoes

most abound” (39). For colonial personnel in the tropics, the natives, by harboring microorganisms, have become the invaders against which the white body must defend itself.

Within tropical medicine, tropical hygiene now required the active pursuit and eradication of mosquitoes and their larvae to prevent the spread of the malaria parasite. Maintaining clean water supplies was no longer a defensive strategy; rather, tropical medicine dictated precise offensive procedures to monitor any sites of stagnant water, to drain pools when they were found, and to use kerosene and other chemicals to ensure the elimination of any mosquito nests. Tropical medicine also dictated an offensive strategy at the molecular level. General advice on avoiding excess alcohol or exercise in the heat to maintain one’s health still pertained; however, tropical medicine dictated that blood samples must be regularly monitored to ascertain the health of the immunological system. Quinine and other alkaline prophylaxis were prescribed regularly as an offensive strategy against the bite of the mosquito. These alkaloids were designed to circulate through the blood and alter the host’s physiological environment, making it unsuitable for the plasmodium parasite, thus strengthening the body at the molecular level. Tropical medicine sought to cultivate a body that could be immunologically shielded from the dangers of tropical diseases. This body was specifically male, however, as the manipulation of the blood at the chemical level required a stable and fixed medium that women, due to their regular menstruation cycles (cycles thought to be exacerbated in the tropics), lacked. Nevertheless, tropical medicine’s aims to strengthen and fortify the body at the cellular and molecular level worked to cultivate a colonial body that possessed both defensive and offensive capacities; to defend the colonial body required arming that body

internally.

By strengthening the body's immunological defense systems, tropical medicine heightened colonial optimism surrounding the consolidation of the empire and the exploitation of its tropical territories through settlement. As Mr. Dalloway asserts in Virginia Woolf's *The Voyage Out*, the Empire encompassed "enormous chunks of the habitable globe," which needed only "to be consolidated" (51). Tropical colonization no longer depended on the specific physiological features possessed by the soldier's body; any body, regardless of age, stature, musculature, or occupation could be fortified by tropical medicine, equipped to survive and thrive in Britain's most promising and profitable tropical colonies. On board the ship that carries Woolf's characters from London to South America, her sampling of white bourgeois bodies includes men and women who are young and old, frail and strong, in good health and poor. Regardless of their physical capacities, their optimism for the tropical landscape of South America is unbridled. In Arthur Conan Doyle's *The Lost World*, the protagonist is not a full-bodied hero, but rather a thin and mild mannered journalist who, rather than fearing the tropics, lines his pockets with quinine tablets and embarks on his tropical adventurer with the confidence and optimism that characterized the cultural and literary faith in tropical medicine at the turn of the century.

With the advent of germ theory, the radical nature of what was made visible – self cell and foreign cell – and the militarized rhetoric used to describe these new entities as either hostile or favorable drastically transformed understandings of the body, both individual and political, and its relationship to State power. As Donna Haraway writes, "expansionist Western medical discourse in colonizing contexts has been obsessed with

[...] hostile penetration of the healthy body,” in which the “colonized was perceived as the invader” (*Cyborgs* 223). At no prior point in British imperial history was this sentiment truer, as fears of infection and contamination were displaced onto the bodies of native subjects. With the advent of germ theory, therefore, and the discovery of mosquito vector for malaria, a renewed confidence in disease control matched fears of racial contagion as science and medicine had clearly identified the microbial invader; the quest now became the elimination of the threat through systematic measures of quarantine, quinine prophylaxis, agricultural management, building techniques, and segregation. Bacteriology, writes Otis, directly served Britain’s imperialist ideology, providing the means and aims by which scientific and colonial powers could send forth the “microbe hunters” to aggressively invade, conquer, and colonize those regions previously deemed uninhabitable for white men. Against the backdrop of germ theory and parasitology, Manson and Ross defined malaria as *the* tropical illness *par excellence*; in doing so, they positioned both the importance of their research on the parasite and the necessity of eradicating it as the single most important element in the health and future expansion of the British Empire. For Manson, malaria was “by far the most important disease agency in tropical pathology,” as is evidenced in the prominent position he afforded it in his 1898 manual on *Tropical Diseases*. Ross similarly argued that malaria was “perhaps the most important of human diseases” (*Prevention* vii). By making visible one of the greatest enemies of the Empire, Manson and Ross localized the illness in the body and the environment and reshaped the relationship between the individual body and the body politic.

For both scientists, the political implications of the deadly fever were clear.

Manson and Ross petitioned for a centralized institution for tropical medicine and encouraged numerous state policies designed to discipline, survey, and protect the colonial body against infection. With the advent of the germ theory of disease and the recent discovery of the malaria parasite and its mosquito vector, Manson and Ross's rallying cry shifted the rhetoric from fear of tropical disease to conquest over disease, and placed tropical medicine at the center of imperial debates. Manson's appeal to the state and the British Medical Association in 1897, accompanied by the publication of his definitive *Tropical Diseases: A Manual for Diseases of Warm Climates* (1898), was met with a quick response. One of the most politically powerful supporters of Manson was Joseph Chamberlain, the Secretary of State for the Colonies, whose support for Manson led to the erection of the London School in less than a year following Manson's appeal. Appointed in 1895, Chamberlain is perhaps best known for promoting the idea of "constructive imperialism," which promoted the consolidation of all colonial holdings and the efficient, rational exploitation of all colonial resources. As many of Britain's most valuable colonial territories were considered 'tropical,' investment in resources to protect the health of British colonists and native workers was highly practical. In his 1897 address, Manson stated: "The school strikes, and strikes effectively, at the root of the principal difficulty of most colonies – disease. It will cheapen government and make it more efficient. It will encourage and cheapen commercial enterprise" ("Necessity" 985). Manson's appeal to Chamberlain for the founding of the London School was thus met with great enthusiasm. If Britain was the heart of a "great and growing tropical empire," then measures must be taken to assure the utmost profitability of the tropical colonies. To prosper in these regions, however, demanded control over the health of the white

colonists and control over tropical disease: to conquer the tropics physically and economically thus demanded the specialized study of tropical medicine.¹⁰

Investment in the London School and in the study of tropical disease thus promised substantial returns, as the possibilities of ‘opening up’ the tropics to trade, mining, and immigration were dependent upon the health of the men working and living in the region. The *British Medical Journal*, *The Lancet*, and other medical and popular presses provided the means by which to distribute their medico-political rhetoric and gain political support for the founding of a centralized institution of Tropical Medicine.¹¹

Through the use of the medical and popular press, Manson and Ross depicted malaria as the paradigmatic tropical disease, and presented the need for a centralized institution for tropical medicine as vital for Empire’s future. Manson and Ross’s repeated insistence upon the necessity and centrality of the tropics to the success of the imperial enterprise and the threat malaria posed to this endeavor arguably constructed what Foucault terms a “regime of truth” in which their rhetoric cultivated a body that would not only survive but thrive in the biological, economic, and social spheres of the tropics due to its fortified immunological armor. “‘Truth’,” writes Foucault, “is to be understood as a system of ordered procedures for the production, regulation, distribution, circulation and operation

¹⁰ Upon his death in 1914, Chamberlain’s obituary in *The British Medical Journal* stated “there was nothing in his career of which he was more proud than he was of the success of his efforts to promote the study of tropical diseases and to help in freeing these gardens of the Hesperides from the dragons which kept watch over the treasures they contain.”

¹¹ Douglas Haynes notes the critical role the medical press, including the *British Medical Journal* and its rival, *The Lancet*, played in constructing and proliferating knowledge about the empire (58). He writes: “the coverage of the empire had cultural consequences for British medicine: It enmeshed the metropolitan profession, as much as it did practitioners in the empire, in the process of imperialism” (58). The discourse on disease and empire, Haynes continues, directly reflected the extent to which the medical profession influenced the cultural production of British imperialism; however, he reminds readers, the very function of the press itself, including the *British Medical Journal* and *The Lancet*, politicized the process of constructing imperial knowledge (58).

of statements” (*Power/Knowledge* 133). ‘Truth’ “is linked in a circular relation with systems of power which produce and sustain it, and to effects of power which it induces and which extend it” (133). In turn, the disciplinary and regulatory effects – both medical and political and therefore bio-political – of Manson and Ross’ regime of truth culminated in the institutionalized management of colonial and metropolitan bodies.

In 1899, the London School of Tropical Medicine was founded under the guidance and encouragement of Manson, Ross, and Chamberlain. The School set out to provide physicians with the necessary training to secure the health and vitality of the British body, both individual and national, in the tropics. Soon after the London School of Tropical Medicine, other institutions were founded throughout Europe. The Institute of Tropical Medicine in Hamburg and the Institute of Colonial Medicine in Paris were founded in 1901, and the School of Tropical Medicine in Brussels in 1906. However, the discipline of tropical medicine proliferated most substantially in Britain. In 1900, Ronald Ross became head of the Liverpool School of Tropical Medicine. By 1904 the Imperial Diseases Bureau was founded, followed in 1906 by the opening of the Royal Society of Tropical Medicine and Hygiene, and the 1909 appointment of the Advisory Medical and Sanitary Committee for Tropical Africa. For Manson, the School was necessary in order that the “vast army of medical men should be properly equipped for their special work” (“Necessity” 989). These medical men, writes Manson, required special education in parasitology and medical entomology so that they might accurately identify the most dangerous insect vectors and thus prevent, or potentially eradicate, the spread of malaria and yellow fever (among other ‘tropical’ illnesses). As historian Roy MacLeod succinctly summarizes in *Disease, Medicine, and Empire*, at the turn of the twentieth century, “the

discipline of tropical medicine was given marching orders – to secure the safety and improve the productivity of the British Empire” (7).

**“At the Extreme Edge of the Knowable”
The Biological Frontier in the Writings of Sir Arthur Conan Doyle**

In every literary or dramatic romance you will observe that from the time that the villain is unmasked he is innocuous. It is the undiscovered villain who is formidable. So it has been in this wonderful romance of medicine.

A.C. Doyle, “The Romance of Medicine”

“Well, I’m a bacteriologist, you know. . . I’m a frontiersman from the extreme edge of the Knowable.”

A.C. Doyle, *The Lost World*

In his 1924 autobiographical collection, *Memories and Adventures*, Sir Arthur Conan Doyle recounts the pivotal moment in his life when he decided to abandon medical practice and pursue a literary career. Fittingly entitled, “Pulling up the Anchor,” the story recalls a journey Doyle took to Berlin in 1890 to attend a lecture by the famous German bacteriologist, Robert Koch, on the subject of the tuberculin cure for tuberculosis. Prior to this adventure, he writes, his “life had been a pleasant one” (74), in which he enjoyed some moderate literary success and a slow but “pleasant” medical practice. In fact, he notes, had he not gone to Berlin to attend the lecture, he “should have remained in Southsea permanently” (74). However, upon hearing the announcement that Koch had at last discovered a cure for consumption and that he was to “demonstrate” this cure in a public forum, Doyle recalls being overcome by a desire to witness such a historic event: “A great urge came upon me suddenly that I should go to Berlin and see him do so. I could give no clear reason for this, but it was an irresistible impulse and I at once determined to go” (74). Within hours Doyle had packed a bag, procured the necessary letters of introduction, and secured an assignment to write a character sketch of Professor

Koch for the *Review of Reviews*. That very night he found himself on a train bound for Berlin. Two days later, he “came back a changed man” (76).

What so intrigued Doyle about Koch’s work was the promise Koch made to demonstrate the consumption cure. For decades scientists had sought to render visible the multitudes of invisible microbes that plagued mankind. Although scientists had recently begun to suspect that microorganisms played a role in disease causation, it was not until the late nineteenth century that technological advancements in microscopy and staining techniques allowed Koch and Pasteur in particular to observe – and thus deduce -- the mechanisms by which such deadly organisms as the tubercle-bacillus and bacillus-anthraxis infected their host. Koch, not satisfied with mere sketches of bacteria, was also the first to apply photographic techniques to microscopy and successfully produced photomicrographs of his specimens, which were widely circulated and provided conclusive ocular proof of the bacteria’s existence: To see was to believe. Armed with this visible knowledge, Koch famously set out to eradicate the organism and produce a cure for consumption, a cure that he would attempt to demonstrate to the public in Berlin on November 16, 1890.¹² In a flowing stream of ceaseless wonder and praise, Doyle hails Koch and his team for capturing and revealing “that deadly tubercle-bacillus which has harassed mankind from the dawn of time, and yet has become *visible* to him only during the last eight years” (“Dr. Koch and his Cure” 552).

¹² Koch’s presentation was a disaster, as he was pressured to go public with his findings that he could eliminate the bacteria in guinea pigs by inducing tissue death in which the bacteria resided; the tuberculin had no such curative effects on humans at the time, and Koch’s cure was deemed a frustrating failure. He was not deterred, however, and famously went on to many discoveries and accolades, including the Nobel Prize in 1905.

This “Berlin episode,” as critics have termed it,¹³ constituted a decisive shift in Doyle’s career, leading him to abandon his medical practice to pursue literature full time. Although Doyle had expressed for many years an avid interest in the medical and scientific advancements of the period, including the revolutionary developments in germ theory, parasitology, and immunology, Koch’s Berlin performance ignited a passion for romance and narrative that quickly consumed him. Doyle became increasingly fascinated by what he would describe in 1910 as “The Romance of Medicine,” a real-life tale of heroes and villains in which the Scientist unmask the microbe and renders it innocuous, thus saving all of mankind from its deadly grip. Set in the mysterious jungles of South America, Doyle’s 1912 novella *The Lost World* follows a select group of British scientists and explorers as they search for an isolated plateau rumored to house prehistoric creatures long believed extinct. Atop the nearly impenetrable plateau, the travelers discover not only a plethora of dinosaurs, including a venomous flock of pterodactyls, but also two diverse branches of mankind: a tribe of Red Indians who, though undoubtedly primitive, are relatively refined, and a horde of “ape-men” who seem to represent a “missing link” in the chain of human evolution.

While the epic battle of Man vs. Ape-Man in *The Lost World* has traditionally been read by critics within the context of Victorian debates on Darwinian evolution and the rise of Anthropology as a scientific discipline, I suggest that we understand the Ape-men as a metaphor for or a physical manifestation of tropical microbes. By portraying the parasite, the most fearful of tropical villains, in animal form, Doyle shifts the scale of the

¹³ See Alvin E. Rodin and Jack D. Key, *Medical Casebook of Doctor Arthur Conan Doyle: From Practitioner to Sherlock Holmes and Beyond*; see also Douglas Kerr, “Arthur Conan Doyle and the Consumption Cure.”

tropical laboratory and renders the microscopic threat macroscopic.¹⁴ With the invisible made visible, our heroes may now assist the Red Indians in conquering this historic enemy. In this immunological reading of *The Lost World*, the battle on the plateau serves to illustrate the relationship and struggle between parasitic microbes (Ape-Men) and the host body (Red Indians) as if viewed within a laboratory or under a microscope. “As the blank spaces on maps rapidly disappeared,” writes Laura Otis, “the laboratory provided a new realm for conquest in which imperial heroes could unveil, one by one, the microbes that caused infectious diseases” (90). The cell-like plateau functions as a stage to dramatize the battle between microbe and host organism and demonstrate the tools with which the “children of European Science” can triumphantly defeat the microbes themselves (165). Ultimately, Doyle presents the eradication of the microbe and the boosting of the imperial immune system, seen here as the enhancement of innate self-defense mechanisms, as the primary tool for British colonial conquest of South America.

Literary critics have often noted that illness is a common theme that emerges throughout Doyle’s writings, including his most famous Sherlock Holmes and Dr. Watson tales. According to Alvin Rodin and Jack Key, at least nineteen of Doyle’s short stories and two novels may be considered medical fiction, “that is, having a plot or theme

¹⁴ In a short science fiction piece entitled “Life and Death in the Blood” (1883), Doyle produces a similar shift in scale between the micro and macroscopic. However, in this earlier tale, the macroscopic human is shrunk to a microscopic stature so that he might float freely through a living artery and observe the work of red and white blood cells. Among this “romance world of living creatures,” our minuscule hero observes leucocytes phagocytosing various particles in the blood stream: “introducing [the particle] into its interior,” the leukocyte neutralizes the substance “by the simple method of surrounding it without any preliminary ceremony of swallowing” (178).

that is primarily medical” (123). For example, Doyle’s 1894 collection *Round the Red Lamp* includes fifteen short stories relating to medical practice and the medical field, including accounts of his own experiences as a physician. While not every plot of the many adventures of Sherlock Holmes is primarily medical in nature, as defined by Rodin and Key, references to disease and illness often dominate the backdrop and determine the course of events for the keen detective and his medical sidekick. From 1885 to 1890 when he abandoned medical practice to pursue a literary career, Doyle published numerous medical letters relating to theories of infection and vaccination, and no fewer than forty short stories and five novels, including the first two Sherlock Holmes tales, *A Study in Scarlet* and *Sign of Four*. Doyle’s first Sherlock Holmes story, *A Study in Scarlet* (1886), begins with Dr. Watson returning to England after being invalidated by enteric fever while serving in Algeria. In his 1890 novella, *Sign of Four*, Doyle references the medical and cultural belief that tropical landscapes were innately diseased. Outcast Jonathan Small recalls the “twenty long years in that fever-ridden swamp, all day at work under the mangrove tree, all night chained up in the filthy convict-huts, bitten by mosquitoes, racked by ague [malaria] . . . That was how I earned the Agra treasure” (96). The allusions to the ‘fever-ridden swamp’ and the filthy living conditions of the island are in keeping with the general pathologizing of tropical landscapes.

Spending nearly two years as a ship’s surgeon stationed off the West Coast of Africa, Doyle encountered first hand the deleterious effects of malaria and yellow fever. After graduating from medical school in 1881, and lacking the financial resources to start his own practice, Doyle accepted an invitation to serve as a doctor aboard the African Steam Navigation Company’s *Mayumba*. In the semi-autobiographical tale, “A Medical

Document” (1894), Doyle describes the ceaseless attacks of malaria: “Many of our men were struck down by miasma,” he writes, “and for some weeks the quinine bottle was more familiar to me” (24) than any other tool of the profession. Doyle’s suggestion that the fever may have been caused by “miasma” (24), the pestiferous air and waters of the coastland, echoes medical theories concerning diseases of hot climates and miasmatic decay that date back to the writings of Hippocrates, whose monumental treatise *Of Airs, Waters and Places* located the cause of disease within the environment, particularly the steamy jungles and fecund marshes of hot, moist climates. While climatic theory of disease causation persisted well into the early decades of the twentieth century, the advancements in tropical medicine, such as the identification of such causal agents as the plasmodium parasite associated with malaria, produced tectonic shifts in medical theories of disease causation in the last decades of the nineteenth century. Describing his own contraction of malaria, Doyle writes, “the germ of the mosquito or whatever it was reached me and I was down with a very sharp fever” (24). The fever plagues him for months on end, plunging him into a “nightmare fog” which leaves him weak and delirious (141). As the only doctor on board the ship, Doyle’s illness renders him unable to care for the crew or himself. “It’s no joke when the doctor of one of these isolated gunboats himself falls ill,” he writes: “you might think it easy for him to prescribe for himself, but this fever knocks you down like a club, and you haven’t strength to brush a mosquito off your face” (141). Importantly, Doyle’s reference to the “the germ of the mosquito” presents an additional cause of malaria (24). That Doyle attributes the origin of his fever to both the miasmas of the West African coastland and the bite of the mosquito is particularly significant in that his observation as well as his subsequent

publication of the story in 1894 occurs years before Ronald Ross's own 1897 publication of his results which demonstrated conclusively that the *anopheles* mosquito transmitted malaria to humans.

Doyle's close association of mosquitoes and malaria reflects his intimate familiarity with the work of Manson and Ross and the revolutionary developments that were redefining the frontier of medical knowledge. Doyle's apposition of "ague" and "mosquitoes" reveals the shifting medical theories of the late nineteenth century that began to identify parasites and microbes as disease agents, marking a shift from climatic models of disease to a germ theory of disease. The convergence of medical and popular literature around the topic of tropical illness is evident throughout Doyle's writings. Doyle's references to malaria, ague, quinine, and mosquitoes in a number of his short stories and novellas reflect both his engagement with and indebtedness to the work of Ross and Manson. Though there is no record of Doyle corresponding directly with Manson, Doyle alludes to the famed scientist through the character of Dr. Ainstree, who Holmes describes as the "greatest living authority on tropical disease" in the short story "The Adventure of the Dying Detective" (1913). For a number of years, Doyle corresponded directly with Ross on matters both literary and scientific. The letters reveal a close friendship between the men, who actively debated such topics as poetry, science and literature, and even mesmerism and spiritualism. At one point Doyle urges Ross to conduct research into "psychic matters," for which Ross showed little interest despite Doyle's best efforts. In 1928, Doyle published an editorial in the *Daily Express* on behalf of Ross' many achievements and in recognition of the enormous value of the scientist's collected archives, which were up for sale at the time. Ronald Ross, writes Doyle, "has

been the most successful of all generals, winning victory for the human race against the Malaria Fiend which has claimed its victims by the million” (“Case” 10).

For Doyle, the story of Manson and Ross’s discovery of the malaria parasite and its mosquito vector was a fascinating tale of detective work, culminating in the identification and exposure of one of the Empire’s most sinister villains. In a commencement address delivered to the graduating medical class of St. Mary’s Hospital in 1910, entitled “The Romance of Medicine,” Doyle popularizes the scientific achievements of tropical medicine by likening the establishment of the field to a medical romance, which, he writes, is not unlike its literary or dramatic counterparts. Such a tale includes both heroes and villains, and inevitably concludes with the hero’s conquest over evil and the maintenance of peace and order through the identification and disciplining of the offending body. “In every literary or dramatic romance,” writes Doyle, “you will observe that from the time the villain is unmasked he is innocuous. It is the undiscovered villain who is formidable. So it has been in this wonderful romance of medicine” (“Romance” 1066). Regarding the work of Manson and Ross among other prominent scientists, Doyle writes “all this work of late years has been in the direction of exposing the villain” (1066). Once the threat has been identified, Doyle continues, “be he micrococcus or microbe, and be his accomplice a mosquito or a rat-flea, the forces of law and order can be turned upon him, and he can be broken in to comply with that system which he has defied” (1066).

For Doyle, the romance of laboratory science, and the groundbreaking discoveries made in the newly emerging fields of bacteriology and tropical medicine, is “the story of how these forces of evil were exposed, how one by one their machinations were traced,”

and is undoubtedly “one of the most wonderful and certainly one of the most eventful in science” (1066). The story of triumph over microbes and the institutionalization of tropical medicine is also a patriotic tale, writes Doyle, as “it is one also which we, as Britons, can regard with a peculiar satisfaction, for our fellow-countrymen have been protagonists in the battle” (1066). The battle, Doyle concludes, has been fought by the greatest scientists of the day, including “Manson, Ross, Bruce, and Wright” against some of man’s most fearful enemies: filairus, malaria, Maltese fever, and other bacterial infections. In characterizing the work of Manson and Ross as an act of heroic conquest over Britain’s greatest microbial enemies, Doyle echoes the military rhetoric espoused by both scientists in their joint efforts to establish tropical medicine as a central weapon in the defense of imperial health and the expansion of the imperial project.

As Warwick Anderson and Julyan Peard argue, the shift from climate theory to germ theory in the late nineteenth century did not exonerate the tropical climate as the source of disease; rather, instead of being the cause of disease, the tropical landscapes (and more importantly, people) were believed to harbor the very parasites and microbes that endangered white colonists. The germ theory of disease thus worked to reaffirm the deleterious nature of the tropics by shifting the focus from the landscapes that bred the microbes to the native bodies that were believed to harbor the parasites and transmit them to colonial subjects. Locating the microbe within the body of the imperial other marked the “growing racialization of germ carriage and distribution” (Anderson 8). Colonial medical and military personnel not only believed that germs were hidden within the bodies of colonial subjects, but also feared the implications of such a radical discovery: parasites were now mobilized in the body of the other and could potentially infect the

white European within the colony as well as penetrate the imperial center through travel and trade. “Contagion,” write Alison Bashford and Claire Hooker, “requires contact, but it always implies more than this: it implies absorption, invasion, vulnerability, the breaking of a boundary imagined as secure, in which the other becomes part of the self” (4).

The rise of cell theory and subsequently germ theory radically transformed the ways in which concepts of ‘inside’ and ‘outside’ and self and other were understood both biologically and politically. Developed in the mid-nineteenth century, cell theory required one to understand the individual cell, and by extension, the individual and political body, as separate organisms surrounded by a semi-permeable membrane. The notion of a ‘semi’ permeable membrane in turn raised anxieties about what was and was not permitted to enter this bounded sphere, and what foreign substances could forcibly invade the body if its defense mechanisms were weakened. These anxieties of penetration and invasion, writes Otis, were the same anxieties produced by imperialism, in which the centralized body finds itself in greater and greater contact with the foreign substances it selectively seeks to engulf and exploit, while also maintaining its traditional boundaries in order to protect itself from dangerous contaminants. The membrane model, she writes, “bases identity on resistance to external forces” by which “penetration of one’s ‘membrane,’ whether by bacteria or by foreign ideas, represents an insult, a subversion of selfhood” (7). When exotic poisons, blood-born parasites, and other foreign contaminants enter the city and endanger its inhabitants, these biological dangers, Otis notes, are not merely “metaphors for political threats; they *are* political threats” (100).

With a new understanding of cellular organisms and the rise of bacteriology and

germ theory, anxieties of racial and cultural contamination were increasingly expressed in terms of foreign invasion by microbes. As Donna Haraway notes, “Expansionist Western medical discourse in colonizing contexts has been obsessed with...hostile penetration of the healthy body,” in which the “colonized was perceived as the invader” (*Simians* 223). Pathogens once believed to exist solely outside the nation and relegated to exotic, tropical territories, were now mobilized in the body of the other whose blood harbored the microbe and transmitted it across racial and national boundaries. Immunologically speaking, the infiltration of foreign bodies (both human and microbe) into the imperial center also resulted in the introduction of foreign bacteria into the metropole, fueling “both scientific fears of infection and nationalistic fears of infiltration” (Otis 6). From the 1880s onward, the concept of biological immunity as an innate cell-based form of self-defense not only radically transformed concepts of self vs. other, but also endowed the imperial rhetoric of disease-as-obstacle to health and progress with a militant agenda for actively combating these foreign enemies at home and in the colonies. Throughout Doyle’s writings, biological threats are often conflated with political threats by the very fact that they are introduced to the blood of the imperial body through an infected object transported to the metropole by a colonial subject.

In “The Sussex Vampire” (1927), Sherlock Holmes is solicited by a friend to help solve a particularly peculiar and gothic mystery involving a suspected vampire attack. Holmes is told that Mr. Robert Ferguson witnessed his wife, a “Peruvian lady” of “foreign birth” and “alien religion” (74), biting the neck of their newborn son, apparently sucking the child’s blood from a small wound on his throat. Suspecting his foreign wife of vampirism, Mr. Ferguson tells Holmes that the event is particularly shocking because

it seemed no longer “some wild tale of foreign parts” but rather had taken place “in the very heart of the English Sussex” (76). While conducting his investigation, Holmes notices a “fine collection of South American utensils and weapons” belonging to the Peruvian wife (80). After a series of questions and astute observations, Holmes reveals that Jacky Ferguson, Mr. Ferguson’s son from his first marriage, harbored an intense jealousy towards the new baby and attempted to murder the child with the poisoned South American arrows. Holmes explains how he came to his conclusions: “My instinct felt the presence of those weapons upon the wall before my eyes ever saw them...If the child were pricked with one of those arrows dipped in curare or some other devilish drug, it would mean death if the venom were not sucked out” (87). What Mr. Ferguson had witnessed was not vampirism, but rather his wife attempting to suck the poison out of her child. This fear of invisible, microbial invaders penetrating national and physiological boundaries often conflated cultural contamination with parasitic invasion, as the microbial disease agent itself was believed to enter the metropole through the body of the colonized and pathologized other.

This equation of the colonial body as foreign invader is a key theme throughout *Sign of Four*. In the novella, the stolen Agra treasure is smuggled into London by a lowly band of criminals comprised of escaped Sikh convicts, a criminal and debased Englishman, and a grotesque cannibal armed with poisoned darts. In Joseph McLaughlin’s study of the novella, he argues that the tale enacts innumerable processes of invasion from the opening scene in which Holmes is seen injecting himself with cocaine to the invasion of cannibals and returned convicts that penetrate London after escaping from the Adaman islands. When Watson and Holmes discover the murdered

body of Bartholomew Sholto, Holmes observes that the man was killed by a poisoned dart, a “long dark thorn stuck in the skin just above the ear” (39). Upon closer examination, Watson notes that this poisoned instrument is not “an English thorn,” but rather a foreign import saturated with a deadly agent, which, once introduced to the victim’s blood stream, kills immediately (45). The poison is identified as a “powerful vegetable alkaloid” (44), a substance, Watson proposes, that may have originated from South America. After a series of evasions and plot twists, Holmes is able to identify and capture these intruders, and neutralizes the threat of both the criminal and the poison. Following a dramatic struggle on the Thames, the source of the infection is finally eliminated as Holmes watches the dart-wielding cannibal sink beneath the river, his “venomous, menacing eyes” (87) eradicated by the “white” (87) waters of that great imperial thoroughfare.

While McLaughlin focuses primarily on invasion as a metaphor for commodity consumption, particularly in the intravenous consumption of the South American opiate, cocaine, the figures of the cannibal and the convict represent a far more immediate threat of invasion – not merely by their criminal actions and motives, but also by the poisons they carry with them. In another tale of puncture and poison, “The Adventure of the Dying Detective” (1913), Holmes is called upon to solve the murder of Victor Savage who appears to have died from contracting a mysterious tropical illness. However, Holmes concludes that Savage was indeed murdered after he discovers an elaborate ivory box, designed in such a way that a “sharp spring like a viper’s tooth emerges as you open it” (146). Holmes suspects that the box’s needle penetrated the unsuspecting Englishman, thereby infecting his blood with foreign bacteria. In order to catch the

culprit, Holmes feigns the symptoms of the very illness he has identified and calls upon the sinister Culverton Smith, a Sumatran planter and bacteriologist for assistance. While on his feigned deathbed, Holmes is able to procure a confession from the Sumatran, who admits to the murder of Savage and the attempted murder of the detective himself. By casting the foreign bacteriologist as the criminal mastermind, Doyle not only equates the non-native Englishman with disease, but also highlights the power and weaponry such laboratory scientists truly possess. Smith identifies himself as an investigator: an “[amateur] of disease,” as Holmes is “an amateur of crime” (139). “For him the villain, for me the microbe,” he tells Watson. Gesturing towards a collection of small glass vials and petri dishes, Smith states, “these are my prisons...Among those gelatine cultivations some of the very worst offenders in the world are now doing time” (139).¹⁵ It is from this collection of biological weaponry that Smith selects the poisons to murder the native Englishmen. As an individual body, therefore, Smith carries these microbes as weapons, which he then transmits to his victims through blood contamination. In both “The Adventure of the Dying Detective” and *Sign of Four*, the foreign germs and poisons that infect the respectable citizens of London are transported to the imperial center by the colonial other.

The role of the detective, like that of the scientist and physician, is to unmask the villain and in doing so bring him under the control of the gaze. The penetrating vision of Sherlock Holmes, therefore, is not unlike the enhanced vision of the laboratory scientist wielding a microscope. For Doyle, the task of uncovering and neutralizing those organisms that pose the greatest biological and political danger to the national body is

¹⁵ Pasteur boasted in 1879 that “the three diseases of which I have just spoken, anthrax, blood poisoning, and chicken cholera, all exist in the state of germs enclosed in a bunch of flasks in my laboratory” (qtd. in Otis 27).

one in which bacteriology itself becomes an “imperialistic battle fought on the home front” (Otis 91). In “The Sussex Vampire,” the conflation of the blood-sucking bite and the deadly poisoned arrows – both imported from the “foreign parts” of South America – calls forth the fear of malaria and the mosquito bite. Similarly, the threat of a piercing thorn that transmits a foreign contaminant into the blood of its victim in *Sign of Four* and “The Adventures of the Dying Detective” is not unlike the penetrating bite of the mosquito, which posed a very real danger to colonial personnel. The fear that the tropical contaminant may infect not only the imperial traveler abroad, but also return to bite those in the imperial center is dramatized in Doyle’s writings, wherein Holmes is tasked with protecting the individual and the national body from the penetrating bite of the colonized other. Bacteriology directly served Britain’s imperialist ideology, providing the means and aims by which scientific and colonial powers could send forth the “microbe hunters” to aggressively invade, conquer, and colonize those regions previously deemed the white man’s grave. At the same time, scientists and physicians in the laboratories of Britain were equipped with the tools necessary to protect the home front from returning colonial invaders.

At the turn of the twentieth century, the most dangerous villain was that which remained unseen: the invisible microbe. As Doyle himself confessed, the character of Holmes is based upon Dr. Joseph Bell, a professor of clinical surgery at the University of Edinburgh and mentor to the young Doyle. In an 1892 letter to Bell, Doyle tells the professor “it is most certainly to you that I owe Sherlock Holmes . . . Round the center of deduction and inference and observation which I have heard you inculcate, I have tried to build up a man who pushed the thing as far as it would go” (qtd. in Liebow 172). For

Doyle, pushing the limits of perception included looking beyond the visible surface of the body or case at hand and into the very cells that make up that body. The most threatening and menacing objects to deduction were none other than the microscopic bacteria and parasitic organisms that had recently been uncovered through laboratory science. For Bell, “the greatest stride that has been made of late years in preventive and diagnostic medicine consists in the recognition and differentiation by bacteriological research of those minute organisms that disseminate cholera and fever, tubercle and anthrax” (xvii). Bell celebrated bacteriology as the newest and most powerful weapon in identifying and eradicating biological threats. When praising men such as Manson and Ross as heroes in the fight against microbial invaders, Doyle repeatedly emphasizes the singular importance of identifying and unmasking the threat in order to neutralize it.

In an article in the *British Medical Journal* in 1903, the scientific achievements made in the field of tropical disease are celebrated as acts of discovery and conquest: “this pathological territory has till lately been almost unexplored, and the work of research is only in its first beginnings” (“War” 1601). Yet, the article continues, more work remains to be done and more territory conquered for there exists within laboratory science “an almost limitless field for peaceful conquest” over man’s microbial enemies (1601). When the young journalist, Edward Malone, in Doyle’s *The Lost World*, desires to embark on some great adventure and discover new lands, he is told he is too late: “the big blank spaces in the map are all being filled in, and there’s no room for romance anywhere” (8). Instead of conquering some new territory, Malone is tasked with exposing Professor Challenger as a fraud, an assignment that takes him to the heart of the South American jungle in search of prehistoric creatures. When Malone asks the scientist Tarp

Henry for information on Challenger, Henry scoffs at both Challenger and his claims to new discoveries in South America. As if to suggest that the pursuit of new knowledge is not to be found in the *macroscopic* but rather the *microscopic* world, Henry tells Malone, “I’m a bacteriologist, you know. . . I can hardly claim to take serious notice of anything that I can see with my naked eye. I’m a frontiersman from the extreme edge of the Knowable” (11). Rather than attempting to plant the flag of conquest atop a distant mountain, Henry conducts his pioneering work within “a nine-hundred-diameter microscope” where vast territories of microbes, bacteria, parasites and other foreign populations still remained to be discovered (11).

In the very opening pages of *The Lost World*, Doyle constructs a clear parallel between the desire to explore and conquer an unmapped geographic frontier and the innumerable discoveries yet to be made in the microscopic frontier of laboratory science. In *The Lost World*, the mysterious and fantastical continent of South America is imagined as the quintessential frontier for early twentieth-century travelers and scientists. Doyle’s use of South America reflects the prominent place the region held in the British political, cultural, and scientific imaginary. From the writings of the renowned German naturalist Alexander von Humboldt, to Charles Darwin’s revolutionary study of the flora and fauna of Brazil, to the botanical and geographical writings of other such famed naturalists as Bates, Wallace, and Richard Spruce, the British public were saturated with images of the South American tropics as wild, exotic, and primitive Nature. Coming on the heels of the great naturalists Bates and Wallace in the mid nineteenth century, explorers throughout the 1880s and 1890s sought the labyrinthine rivers and dense jungles of the region for geologic, anthropologic, botanical, and pharmaceutical discoveries. One of the most

important pharmacological discoveries was of course quinine, an essential tool in the fight against malaria. As many critics have noted, Doyle's fascination with travel narratives and his involvement with the Royal Geographic Society greatly influenced his representations of South America's tropical landscapes and the mysterious plateau in his novel.¹⁶

Doyle captures the turn of the century public fascination with South America through the character of Lord John Roxton, an adventurer and South America enthusiast who accompanies Edward Malone and Professor Challenger on their expedition. Malone describes Roxton as "a South Americomaniac": "he could not speak of that great country without ardor, and this ardor was infectious" (64). Roxton's fascination with the future possibilities of the continent in particular reflect a growing discourse in Europe surrounding the desire to expand into South America as a site for future emigration, and for the development and exploitation of mineral and agricultural resources. The entire region, Roxton claims, is largely undiscovered: "man has just made a track here and a scrape there in the maze" (57). Part of the reason for the vast expanses of unmapped territory is the very nature of the landscape itself prevents easy exploration. He states, "Half the country is a morass that you can't pass over" (57). The region is thick with "a wilderness of swampy forests, where no white man has ever been," a characteristic that makes the continent all the more inviting to such avid explorers as himself and Challenger (57). Having spent numerous years traveling throughout South America,

¹⁶ Rosamund Dalziell, for example, writes that Doyle relied heavily on the writings of Sir Everard im Thurn for his descriptions of the isolated South American plateau featured in *The Lost World*. A contemporary of Doyle's and a frequent speaker at the Royal Society, im Thurn was widely acclaimed for successfully climbing Mt. Roraima, the highest peak in British Guiana, in the winter of 1884. Dalziell argues that im Thurn's description of the region as an elevated, isolated plateau that is notorious for its inaccessibility and highly prized for its reported wealth of botanical treasure directly influenced Doyle's own descriptions in his fantasy adventure tale.

Roxton claims a first hand knowledge not only of what *has* been discovered in the region, but also a keen understanding that many mysteries remain hidden.

Roxton reflects the traditional romantic and fictional depictions of the region as harboring such mythic treasures as Raleigh's El Dorado, or even the lost city of Atlantis. "South America is a place I love," he tells Malone, "and if you take it right through the Darien to Fuego, it's the grandest, richest, most wonderful bit of earth upon this planet. People don't know it yet, and don't realize what it may become" (57). "The more you knew of that country," Roxton tells Malone, "the more you would understand that anythin' was possible – *anything*" (57): "why shouldn't somethin' new and wonderful lie in such a country? And why shouldn't we be the men to find it out?" (58). Roxton's imperialistic zeal to discover new geographical and biological wonders is characteristic of the adventure travel genre in which Doyle was writing. However, read within the context of biological discovery and bacteriology, Roxton's excitement that *anything* might be hiding in the unseen jungles reflects the fervor and imperialistic rhetoric fueling laboratory science. Throughout *The Lost World*, Doyle's attention to the pathological dangers of the region shifts the traditional travel narrative of heroic discovery and conquest from one of territorial acquisition to one of bio-medical triumph.

While Doyle was influenced by adventure travel narratives for the tropical setting of his novel, the pathologization of the region is more in tune with the scientific and medical understandings of the tropics that had shaped the ways the region, and the tropical climate and people in general, were understood as innately diseased. With the development of natural history, anthropology, and theories of evolution during the mid-nineteenth century, South America was increasingly imagined as a living archive of

biological and geological development. Before Malone even agrees to accompany Challenger on an excursion to the mysterious plateau, Challenger describes the region as unhealthy and dangerous. “A swampy, jungly region, full of snakes, insects, and fever” surround the plateau, which is described as “a natural protection to this singular country” (36). In the preface to James Rodway’s 1894 text, *In the Guiana Forest: Studies of Nature in Relation to the Struggle for Life*, Grant Allen remarks that, “no tropical country is more interesting than South America” (1). In reference to Rodway’s engagement with Darwinian evolution and the ‘struggle for life,’ Allen describes the region as an invaluable site for biologists and naturalists precisely because the teeming jungles and sheer abundance of flora and fauna in the region arguably represented the earliest forms of life and the ongoing struggle for existence. The region “preserves for us, as in amber, numberless intermediate stages” of evolutionary development (1). In *The Lost World*, Doyle portrays South America as an evolutionary lost world in which ‘intermediate stages’ of human and zoological development include not only ape-men and primitive Indians, but Jurassic-era dinosaurs as well.

At the time Doyle was studying medicine and publishing his first literary works, debates about white acclimatization in the tropics frequently argued that the indigenous inhabitants of the tropical regions of Africa, Asia, and the Americas were naturally weak and debased precisely because of the deleterious soils that nurtured them. For centuries of European thought, it was believed that tropical climates “reflected in the moral character of their human occupants” (Livingston 105). For example, Scottish physician-explorer Robert Felkin argued in 1892 that people living in “flat, hot Bengal” were naturally “timid, servile, and superstitious” while those who descended from the more temperate

region of Mysore were in contrast “brave, courteous but passionate” (qtd. in Livingston 105). For the naturalist and explorer Joseph Thomson, a voyage up the Niger river in 1886 revealed that with an improving climate followed “a higher type of humanity” (105). With regard to representations of tropical climates and ‘tropical’ peoples, “race and region, the ethological and the ethnological, the moral and the material, were very tightly tied together” (105).

This “moral economy of climate” (104) is fictionalized and dramatized in *The Lost World*. Upon their arrival in South America, the small band of travelers soon learn that Challenger’s warning about the pathological dangers of the region was not an exaggeration. A pestilent swamp, teeming with insects and venomous snakes, and populated by ferocious ape-men just inside its borders, surrounds the fantastical plateau, the treasured object of their arduous quest. The landscape and the threat of invasion and disease indeed serve as a natural barrier to this isolated region, as Challenger astutely observed. The hot, humid air is stifling, and the landscape reeks with luxuriant growth and decay. The entire forest is “full of the eternal hum of insects, a tropical chorus of many octaves, from the deep drone of the bee to the high, keen pipe of the mosquito” (65). As they near the plateau, this pestiferous atmosphere only grows more oppressive and threatening. Malone notes, “The place was horribly haunted by clouds of mosquitoes and every form of flying pest” (80). Amid the swamp and insects Malone is consumed with the desire to escape “this pestilent morass, which droned like an organ in the distance, so loud was it with insect life” (80). Challenger’s association of thick jungle, wet swampland, and menacing biting creatures with fever suggests not only a climatological theory of tropical illness, but also a parasitic explanation of fever by way

of an insect vector. Moreover, the surrounding morass and intricate network of tangled jungle and biting creatures provide a seemingly impenetrable membrane for the isolated, cell-like plateau.

The very nature of the plateau is suggestive of a biological cell, a recently discovered entity whose bio-physical and biochemical properties had only begun to be deduced. While critics have noted Doyle's indebtedness to im Thurn's descriptions of Mt. Roraima in constructing the geographical and geological details of his own fictional lost world, the biological symbolism of the region is more suggestive of Doyle's experience as a physician and his fascination with laboratory science. The real frontier, Malone is told from the beginning, is not the geographical plateau he sees before him, but rather the minute world of cellular organisms revealed through the nine-diameter lens of the microscope. One of the most fascinating and provocative aspects of cell behavior was precisely the semi-permeable nature of the cell membrane. Not only did scientists observe that only select molecules were capable of passing through the lipid bilayer that surrounds the cell, but through extensive biochemical analysis, they also discovered that the cell itself selects what it actively brings in, and actively excludes from its interior. That the cell membrane constantly regulates what it absorbed, excluded, and excreted was a revolutionary discovery: our cells, and thus our bodies, do not passively absorb the molecules to which it is exposed, but rather specifically select those elements that will enter the system. While Otis notes the profound impact this 'cellular-thinking' had on the political understandings of national borders and the movement of bodies across these borders (particularly for an island nation such as England), Doyle dramatizes this notion of the cellular organism in *The Lost World* in the battle between the colonial body and the

physical manifestations of tropical nature that threaten to invade and consume that body.

As the company prepare to enter this cell-like plateau, they are keenly aware that penetrating this space may result in being attacked by the myriad of living creatures and natural processes that seek to maintain its boundary. After circling the plateau for days, the travelers realize the only way to enter the plateau is by crossing over the moat-like morass; after felling a tree to make a bridge, the men are soon able to enter the site. Before they cross over, however, Challenger is struck with fear of what creatures may be waiting, unseen, to attack them once they force their way through. His first concern reflects the fear of physical consumption and being eaten alive by tropical creatures – including cannibals. Roxton is the first to articulate these concerns: “We are, accordin’ to my ideas, invadin’ a new country, which may or may not be cock-full of enemies of sorts,” he states. “For all I know,” he continues, “there may be a tribe of cannibals waitin’ for lunch-time among those very bushes” (101). Roxton’s fears of being bitten – by insect or man – are not unfounded, as the isolated plateau teems with natural defenses that threaten to invade and consume them.

As the travelers find themselves within the boundaries of the plateau, having forcefully penetrated the great barrier that isolated the region from the surrounding jungle, their own bodies are immediately threatened with invasion by the numerous menacing creatures that inhabit the site, including the previously encountered ape-men. During their first day in this lost world, Malone wakes to find a large purple organism attached to his leg. Upon closer inspection he sees that it is a hideous and “enormous blood tick” with “lancet like proboscis and distending stomach” (108) which has feasted on him during the night and is now fully engorged with his blood. Having sunk its fangs

into his flesh, the parasite becomes the first agent of tropical invasion upon the plateau, and the first enemy to draw blood. As Malone pinches it, the offending parasite bursts, “squirting blood in every direction” (108). These blood-sucking creatures infest the surrounding bushes at their campsite and force the group to move on, but not without first drawing blood upon the very boundary of the plateau. That Doyle populates the plateau with blood-sucking parasites that literally feed on the travelers as soon as they arrive suggests that the real dangers to white colonists in the tropics are not flesh-eating cannibals, but blood-sucking insects, parasites, and microbes that literally consume the traveler and poison his blood. The British explorers are not the only victims of these tropical enemies, whether climatic or parasitic; another population of human inhabitants who also occupy the plateau are terrorized by the very same threats.

Before the travelers ever see these *other* humans, Malone is able to deduce their presence when he uncovers man-made spears in the forest. Although Challenger had previously “declared that man could not exist upon the plateau, since with his feeble weapons he could not hold his own against the monsters who roamed over it,” the blood-stained weapons suggest otherwise (147). Despite the monstrous dinosaurs and violent ape-men that rendered the entire region largely inhospitable to humans, “Man was always the master” (147). The travelers’ first encounter with the “human” inhabitants of the plateau, the “Red Indians,” occurs when they witness an attack by the ape-men on the “poor little chaps” who were either killed, or left badly “bitten and clawed” by the sinister beasts (157). The physical and thus moral and cultural distinction between the two species is made abundantly clear. While the ape-men are slouching, hairy creatures with “evil eyes” and sharp canines, the Red Indians are “small men, wiry, active, and well-

built, with lank black hair” and dressed in leather loin-cloths (168). Their faces reflect a degree of nobility and intelligence and are clear, “hairless, well formed, and good-humored” (168). They also display fluent linguistic skills, though the travelers cannot understand them. The men are clearly of a higher order, notes Challenger, who concludes that the Red Indians, “whether judged by cranial capacity, facial angle, or any other test, cannot be regarded as a low [type]; on the contrary,” he states, “we must place it as considerably higher in the scale than many South American tribes which I can mention” (169). The explorers, after witnessing a particularly brutal attack by the ape-men on this benevolent tribe, and after being viciously attacked and nearly murdered by the creatures (Malone is almost decapitated), take it upon themselves to wage war against the ape-men and claim the region for mankind.

Doyle’s account of the ape-men portrays these beastly creatures not merely as ‘missing links’ in the chain of human evolution, as other critics have argued, but rather associates the blood-thirsty and sharp-fanged monsters as indicative of the innate violence of the tropical climate and landscape. Malone is the first to encounter one of these troubling creatures while climbing a tree in order to get a wider survey of the surrounding plateau. As he pushes his way higher up into the tree, he finds himself struggling with a “thick, bush-like clump” of vegetation “which seemed to be a parasite” growing on the branches (131). This vegetable parasite quickly gives way to an animal parasite; Malone pushes the bush aside to reveal a ghastly face that is “crouching behind” it (131). The malignant nature of the creature is clear: its face appears marred and diseased and is “blotched with pimples,” its eyes are “bestial and ferocious” and filled with “hatred and menace,” and its snarling mouth is full of “curved, sharp canine teeth”

(132). In an instant it appears as if the menacing terror of the jungle itself is staring back at Malone through the “evil eyes” of the organism. The encounter is brief, however, as the creature quickly dives back into the forest, its hairy body disappearing into the “swirl of leaves and branches” and parasitic flora from which it first emerged (132). The malevolent nature of the tropics is here given animal form, whereby the creature is not merely a reflection of early man, but a reflection of all that is fundamentally dangerous and *other* about the tropics in relation to the temperate lands and peoples of Europe.

Doyle’s ape-men emerge as physical manifestations of the very organisms that render the climate and landscapes of tropical nature so menacing. More than just representatives of a baser form of man in need of the civilizing efforts of the white colonialists, the ape-men represent the most extreme form of tropical nature – that innate, yet hitherto invisible force which has for centuries threatened to attack and consume the colonial traveler (literally through parasitic invasion). Yet, the ape-men, relegated solely to the isolated plateau, also serve as a key barrier to the region, not unlike the festering morass and clouds of mosquitos that encircle this lost world. However, the struggle for survival depicted on the plateau is not that of modern man waging war against his primitive ancestors in an epic battle of survival of the fittest, but rather civilized man struggling to subdue the unruly and threatening nature – now understood as fundamentally microbial – of the tropics. Framing his classic South American adventure tale between the nineteenth-century desire for geographic exploration and the twentieth-century advancements in bio-medical exploration, Doyle fictionalizes the shifting notions of conquest and discovery in which the establishment of bacteriology and tropical medicine were redefining the very tools and methods of imperial expansion at the turn of

the century. In *The Lost World*, the fight waged between the European travelers and Red Indians against the ape-men and the battle between the travelers and the monstrous pterodactyls becomes a singular fight for tropical colonization: a battle the colonial subject must wage against not only tropical nature but, more importantly, against the parasites that constitute such landscapes and climates. The mission for the travelers thus becomes to eradicate these tropical enemies and render the region safe for future occupation.

Shortly after our intrepid heroes encounter the Ape-Men, Professor Challenger attempts to explain their presence on the plateau and their hostile relationship to the more refined Red Indians. Although he surmises that the geological isolation of the plateau must be due to an ancient volcanic upheaval, which elevated the region and isolated its inhabitants from the surrounding continent, Challenger concludes that both the Ape-Men and the Red Indians must have penetrated the plateau at different times. For Challenger, the Ape-Men are undoubtedly the more ancient and insidious occupants of the region, which leads him to conclude that the Red Indians “are more recent immigrants from below” (169). Whether the Indians penetrated the plateau “under the stress of famine or conquest” is unclear; however, what is clear to Challenger is that these refined humans are, by the natural right of Man, the rightful occupants of the plateau, and that they have been plagued by the bloodthirsty Ape-Men from the time the time they first arrived. The Indians “have no doubt had a bitter fight to hold their own against wild beasts,” notes Challenger, “especially against the ape-men [who] wage a merciless war upon them” (169). The most sinister creatures of the plateau, therefore, and the most dangerous enemies of the Red Indians are not the monstrous dinosaurs that roam the region (though

they also pose a threat), but rather the insidious Ape-Men that hide in the dense foliage and ceaselessly attack the plateau's most recent *human* occupants.

Although the Red Indians are more intelligent than the Ape-Men, these macroscopic enemies prohibit the Indian's rightful dominance – as Man – atop the plateau. It is due to the murderous Ape-Men, notes Challenger, “that [the Indians] numbers appear to be limited” (169). Although the Indians have found refuge in the basalt caves that pepper the plateau, their existence remains tenuous; the possibility of expanding their population and their settlements is nearly impossible due to the menacing ape-like organisms that repeatedly attack and kill them, and against which they possess little defense. Doyle's description of the Ape-Men as microbes parallels contemporary descriptions of malaria and other tropical maladies (caused by parasites) that were seen to limit the expansion of white Europeans through topical territories. For Ross, malaria in particular had “done more than anything else to prevent the settlement and civilization of the vast areas which would otherwise be most suitable for the human race” (*Memoirs* 114). Just as Doyle casts the Ape-Men as the singular enemy of the Indians, preventing them from expanding throughout the plateau, so too did Ross declare malaria to be “the principal bar” to British “progress” in the tropics: “We can scarcely look at a map of the world,” writes Ross, “showing as it does enormous and rich tracts of tropical country remaining un-peopled and barbarous, without enquiring the reason for such an anomaly” (“Progress” 271). In *The Lost World*, Doyle dramatizes this battle for human dominance over the tropics by casting the Ape-Men as the very microbial enemies that prevent the full and rightful expansion of Man (the Red Indians) through these tropical regions.

Although the explorers do not set out initially to wage war upon these newly

discovered – although murderous – creatures, once they come under attack by the Ape-Men their desire for self-defense manifests itself as an offensive response that requires nothing less than the eradication of the entire species. When the attack occurs, Malone is off exploring the plateau alone; it is not until he finds Roxton (who managed to escape the Ape-Men) that he learns of the assault. It was early that morning, Roxton explains, when out of nowhere a hoard of Ape-Men, previously hidden within the canopy, began to assail them. “Suddenly it rained apes,” he gasps: “they came down thick as apples out of a tree” (155). Similar to the parasitic creature that Malone previously encountered, the Ape-Men are capable of making themselves invisible by blending in with the lush foliage of the jungle. Just as Doyle depicts the malaria parasite and the tubercle-bacillus as two of mankind’s most formidable villains, which, under the powerful gaze of the bacteriologist, are unmasked and (potentially) conquered, the Ape-Men are threatening precisely because they remain hidden. “So long as we are among the thick trees these swine are our masters,” Roxton observes: “they can see us and we cannot see them. But in the open it is different” (160). As long as the Ape-Men remain hidden within the dense foliage of this tropical plateau neither the Red Indians nor the British travelers can combat them. Roxton’s statement that the Ape-Men, when invisible, are the *masters* of Man clearly echoes Doyle’s own scientific rhetoric in which he characterizes microbial disease agents as “infinitesimal and contemptible creatures which have it in their power to overthrow the strongest intellect and to shatter the most robust frame” (“Dr. Koch and his Cure” 552). Thus, to make the plateau safe for the explorers, and for Man more generally, the parasitic creatures must be exposed and eliminated.

The militarized language Doyle uses to establish the conflict between Ape-Men

and Man (whether white explorer or Red Indian) positions the creatures as threats to the health and wellbeing of mankind. In 1900 Koch described the fight against malaria – one of the most significant ‘tropical’ enemies of white colonists – in overtly militant terms: “for the struggle against malaria, it is of the greatest significance to inform oneself quickly about the presence and strength of the enemy” (qtd. in Otis 32). The rhetoric of contagion and infection by deadly microbes – both foreign and domestic – demanded a militarized model of active defense and eradication. This shift to host self-defense may be seen in Koch’s own language of tubercular bacteria when he identified the microbes not merely as “parasites” that a host body may inadvertently acquire, but as “invaders” that actively seek to penetrate and consume the host” (qtd. in Cohen 250). Similar to Koch’s description of “parasites” as “invaders,” and Metchnikoff’s discovery that leukocytes actively consume and eliminate foreign pathogens through phagocytosis, immunology defined external microbes as hostile enemies that demanded mechanisms of host self-defense. The war on disease now became a battle fought within the individual cells of both the individual and national body against foreign invaders. As Cohen writes, immunity “defines a specific microbial agent as the hostile cause against which the organism must wage its relentless war with death” (5). As medical science began to uncover the intimate ways in which bodies interact with other organisms in the environment, immunity is imagined “as a powerful weapon in the body’s necessary struggle to defend itself *from* its life-threatening context” (6). Thus, Cohen concludes, this “immunological framework establishes war – at the level of cells and molecules – as the condition of life itself” (20).

In *The Lost World*, Doyle assigns the initial military operation against the Ape-

Men to Roxton; through diligent reconnaissance and personal experience, Roxton garners key information about both the strength and the location of the enemy. As he leads Malone back to the Ape-Men's nest in order to rescue Challenger and Summerlee, Roxton explains that the bloodthirsty creatures are most vulnerable when they are flushed out into the open, and instructs Malone to steer clear from the dense trees lest he too be captured. When the two men finally arrive at the Ape-Men's nest, the mere sight of the swarming creatures sends Malone into a feverish swoon: the entire scene seems to him "some wild nightmare, some delirium of fever" (161). Though Malone has yet to encounter the Ape-Men directly, their affect upon his senses is overpowering, and mimics the effects of tropical fever. The parasitic nature of the creatures seems to poison the landscape itself as Malone describes the sinister cliffs and tangled foliage surrounding the nest as sickening to look upon. He recovers quickly, however, when he and Roxton spot their comrades at the center of the swarm.

However, before Roxton and Malone infiltrate the mob to save their companions, they notice an uncanny resemblance between Challenger and the Chief of the Ape-Men. Standing next to Challenger, the Ape-Man appears to be "the very image of [the] Professor, save that his coloring was red instead of black" (162). Moreover, the men notice that Challenger has been welcomed into the group, whereas the tall, thin Professor Summerlee appears bound and badly beaten. When Malone first meets Challenger, he describes the imposing Professor as an "enormous" man with large hairy hands and a girth not unlike that of "an Assyrian bull" (18). Now, as Challenger stands next to the "king of the apes," it seems that the two "might have been kinsmen" (155). Roxton in turn describes the Ape-Man as "sort of a red Challenger, with every one of our friend's

beauty points” (155). Aside from possessing the distinguished “cranium of the European,” Challenger physically resembles the Ape-Men, and is welcomed into the fold of “sharp-fanged” creatures and arguably accepted as one of their own (162). Roxton explains that while he and Summerlee were beaten and bound by the Ape-Men, “Challenger was all right. Four of them carried him shoulder high, and he went like a Roman emperor” back to the nest (156). To Roxton’s further amazement, while he and Summerlee were strung up by their feet from a tree, Challenger was up in the canopy with the beasts: “eatin’ pines and havin’ the time of his life” (157). To the bewilderment of Roxton and Malone, it seems clear that the Ape-Men’s mis-recognition of Challenger as their kinsman is precisely what saves him from being killed outright.

Critics have traditionally interpreted the resemblance between Challenger and the Ape-Men as an example of colonial anxieties about ‘going native’ in the tropics, whereby even the strongest European subject was in constant danger of reverting to a more primitive form amidst the heat and fecundity of the tropics. However, the likeness between Challenger and the Ape-Men not only blurs the line between concepts of self and other, but also serves to highlight one of the most fundamental concepts of immunity as host-defense: self vs. non-self discrimination. The particular biochemical and protein-signaling pathways involved in immune tolerance, termed self-nonsel self discrimination (SNSD), were not fully understood until the mid twentieth century;¹⁷ however, earlier concepts of host-defense against foreign organisms provided the necessary language with which to conceive – at least theoretically – the ways in which the body actively expelled

¹⁷ In *The History of Immunology*, Arthur M. Silverstein writes: “Burnet went on to speak and write about [immunological tolerance] extensively, including such books as *Self and Nonsel self* and *The Integrity of the Body*. With Burnet’s help, the borders of tolerance and ‘self/nonsel self discrimination’ quickly expanded from the simple explanation of tolerance mechanisms to a metaphor with evolutionary and even philosophical implications” (92).

foreign pathogens while tolerating and nurturing its own cells. From Metchnikoff's discovery of leukocyte phagocytosis in the 1880s, immunologists have understood that the very foundation of the immune defense system is the recognition of nonself so that the body might eliminate any perceived threat (thus foreign by definition).

That the Ape-Men perceive Challenger as potentially one of their own does not suggest that Challenger is also a parasitic threat akin to his doppelgangers. Rather, the fact that the Ape-Men recognize Challenger as *self*, or rather do not discriminate against him as *non-self*, illustrates the ways in which Doyle configures the relationship between Man and non-man as an immunological struggle of Man vs. Microbe for dominance in the tropics. As such, Challenger's ability to infiltrate the group, or rather to avoid being killed, is a lucky accident of mis-recognition whereby he avoids being identified by the Ape-Men's defense network as purely foreign, and is therefore allowed to live. Roxton draws similar conclusions when he attempts to account for Challenger's safety among the murderous creatures. He states, "Well, it's lucky for you, Challenger, that you *are* a little out of the ordinary. If you hadn't been so like the king—" (165). Roxton suggests that such a likeness, however offensive, is Challenger's saving grace. Yet, Challenger's 'immunity' within the group is only temporary; after Roxton and Malone rescue Challenger and Summerlee from the Ape-Men, the men declare war on the hideous beasts and vow to eradicate them from the plateau.

The rhetoric of bacterial invasion that Doyle applies to the Ape-Men culminates in an immunological response by the travelers who, by declaring war on the organisms, enact the process of host-defense in the battle for tropical dominance. After escaping from the Ape-Men, and after the Indians implore them for help, Challenger and the crew

make it their mission to “wipe the monkey men off the face of the earth” (175). The immediate benefit of eliminating these creatures is articulated by Roxton, who declares, “I’d clear out the whole infernal gang of them and leave this country a bit cleaner than we found it” (171). Roxton’s assertion that clearing out the vile organisms would undoubtedly leave the “country a bit cleaner” echoes precisely the rhetoric of tropical hygiene that characterized tropical medicine at the turn of the century. Through a strict regimen of personal and collective hygiene, what Laura Otis describes as “boundary maintenance” (ix), colonial personnel could theoretically protect themselves from tropical parasites. However, as the renowned malariologists Manson and Ross both emphasized, the most reliable protection against infection was the eradication of the parasite (or its vector) entirely. In *The Lost World*, the battle to “clean” the country and save the Red Indians from the parasitic Ape-Men dramatizes this imperial racial ideology, an ideology that was ultimately strengthened by the rhetoric of foreign invasion put forth by concepts of immunological defense.

By shifting the scale from microscopic to macroscopic, Doyle ultimately portrays the British imperial battle for the tropics as an immunological battle against disease. After a brief but bloody battle, the Men and the Indians successfully conquer the Ape-Men and declare victory over the plateau. Once Challenger, the “chosen child” of “European science” and “the hope of the future”(165), and his crew aid the Red Indians in defeating the Ape-Men, Challenger triumphantly declares:

We have been privileged to be present at one of the typical decisive battles of history – the battles which have determined the fate of the world. What, my friends, is the conquest of one nation by another? It is meaningless. Each

produces the same result. But those fierce fights, when in the dawn of ages the cave-dwellers held their own against the tiger folk, or the elephants first found that they had a master, those were the real conquests – the victories that count. By a strange turn of fate we have seen and helped to decide even such a conquest.

Now upon this plateau the future must ever be for Man. (179)

The racialized rhetoric in which the Ape-Men are likened to beasts who must learn to serve their rightful master, Man, echoes the colonial rhetoric of white European's natural right to enslave and subdue the lesser creatures (and fellow humans) of the world. This language of Man triumphing over Ape-Men also reflects a scientific battle of Man vs. Microbe, the most sinister of Nature's villains. Challenger's rhetoric parallels Doyle's own praise of Koch and the fight to identify and conquer the cholera and tuberculosis bacteria. Just as Koch was working tirelessly to bring "under subjection those unruly tribes of deadly micro-organisms," Doyle depicts the 'children of Science' aiding Man in subduing and eradicating the most sinister of tropical villains ("Dr. Koch and his Cure" 552). The battle for the tropics is thus a battle of Man vs. Microbe, in whatever guise the microbe may appear.

Doyle, through Challenger's speech, also echoes Koch's own 1890 address to the International Medical Conference in Berlin. In his speech, Koch overtly describes bacteriologic discoveries in militant terms whereby the fight against bacteria is a fight for the supremacy of man over microbe: "It may be possible, given a bacterial infectious disease, to master the microscopic yet previously uncontrollable invaders within the human body" (qtd. in Cohen 253). He also urges his fellow scientists to join together "in war against the smallest but most dangerous enemies of the human race [...] for the good

of all humanity” (253). The undeniably militaristic, racial, and imperial rhetoric with which Doyle – through Challenger and in his review of Koch – describes these bacteriological advancements reflects both the political importance of bacteriology to British imperial expansion through the tropics, as well as his own romanticizing of such discoveries, as illustrated in *The Lost World*. However, the ultimate goal for Koch and other bacteriologists was not merely the elimination of the microbial threat from the outside, but the cultivation of an immune defense system internally through the process of inoculation: thus establishing the crucial link between bacteriological discovery and immunological defense.

Roughly eighty years before the bacteriological work of Koch and Pasteur and the parasitology work of Manson and Ross, Edward Jenner published his revolutionary paper on the *Vaccination against Smallpox: An Inquiry into the Causes and Effects of the Variolae Vaccinae, or Cow-Pox* (1798). After years of clinical observation and experimentation, Jenner famously discovered that infecting a person with cowpox, a less virulent form of smallpox, conferred a degree of immunity to that person against the more virulent form of the disease. In later years, advancements in immunology allowed scientists to observe directly the inoculated host’s response to the foreign invader and confirm that the prior introduction of an innocuous form of the pathogen in fact primed the host immune response to attack and phagocytose the more virulent particle immediately upon its introduction into the body. Jenner’s work thus proved that vaccination works by effectively “substituting the lesser risk of cowpox for the greater risk of smallpox” (Cohen 119). The concept of inoculation and vaccination as a form of host-defense is predicated upon the notion that vaccines protect the body in a preemptive

manner; thus, vaccines provide the ammunition that allows the body to enact a host-*offence* against foreign invaders and not merely a *defense* (though the virus or bacteria must first enter the body for the immune system to attack it). The body has seen this invader before; as such, at first glance of this recognizable enemy, a full arsenal of immune-mediated cells and toxins are released upon the invader, effectively eliminating it before the rest of the body ever knows it might be sick.

As Cohen notes of Metchnikoff's identification of phagocytosis and inoculation, "prophylactic success results not from avoiding engagement with the pathogenic cause, but by incorporating it" (261). As Metchnikoff writes in 1891, "immunity is due to the engulfing functions of certain phagocytes which have gradually become accustomed to these [foreign] organisms" (qtd. in Cohen 261). In addition to his fascination with germ theory and bacteriology, Doyle was also fascinated with and a keen proponent of vaccination. In July 1887 Doyle wrote a letter to the Portsmouth *Evening Mail* in which he proclaimed that vaccination was "one of the greatest victories ever won by science over disease" (qtd. in Kerr 5). In *The Lost World*, Doyle dramatizes the "romance" of inoculation by depicting the subjugation of the women and children of Ape-town (read as the virus or parasite) as necessary for the health and protection of the Red Indians (read as the host body). Although the threat posed by the Ape-Men is eliminated and Man declared victor upon the plateau, not all of the Ape-Men are killed; rather, "the males were exterminated, Ape Town was destroyed, [and] the females and young were driven away to live in bondage" (180). These "surviving ape-folk," we are told, "were driven across the plateau and established in the neighborhood of the Indian caves, where they would, from now onwards, be a servile race under the eyes of their masters" (182). The

enslavement of the less threatening members of the Ape-Men undoubtedly upholds the imperial and racial ideology that justified the genocide and subjugation of millions of people for centuries under the banner of European conquest and colonial expansion: a justification that was only strengthened by medical understandings of germ carriage and contagion.

However, in keeping with an immunological reading of *The Lost World*, the incorporation of the women and children of the Ape-Men into the contained and monitored borders of the Red Indian's colony enact precisely the process of inoculation. In *The Lost World*, the battle of Man vs. Ape-Man (or rather, Man vs. Microbe) culminates in the substitution of the women and children as the more innocuous version of the Ape-Men in place of the more virulent and threatening form of the large males. By doing so, the Red Indians successfully incorporate the less virulent form of the biological threat as a means to protect themselves against future invasion: they now control the disease agent, and are no longer subject to its destructive powers. Aided by the children of "European science" (176), the Red Indians enact the very battle Doyle praised Koch for fighting: by defeating the Ape-Men, the Red Indians and Challenger's crew finally succeed in "bringing under subjection those unruly tribes of deadly microorganisms which are the last creatures in the organic world to submit to the sway of man" ("Dr. Koch and His Cure" 552).

The bacteriological laboratory, writes Doyle, "was constructed [...] in order to make visible the invisible" (63). Rather than attributing the source of 'tropical disease' to the vast array of 'tropical' climates and landscapes – the mere magnitude and variability of

which made it impossible to isolate and control, despite sanitation measures – Science could now identify and localize tropical illness within a singular threat: the parasite and its vector. As Laura Otis writes, “unlike the vapors of the hygienists, microbes could be visualized. Once they were unveiled, scientists could study their movement and distribution and eventually control the spread of the disease” (27). Once bacteriologists identified the causative agents of such deadly diseases as malaria, yellow fever, and cholera, such organisms were effectively “unmasked,” and thus more readily controlled. The threat of tropical disease, therefore, is rendered innocuous, as the ability to identify such singular causative agents ensures (theoretically) that such enemies can be eradicated. *The Lost World* concludes with our band of travelers returning to London where Challenger unveils a live Pterodactyl as proof of their adventure and their monumental discoveries. Doyle figures the Pterodactyl as a giant scaling of the white European’s greatest tropical enemy: the mosquito.

The results of the exploration are presented at a highly anticipated public gathering held in Queen’s Hall at the heart of London where hundreds of people gather to witness Challenger’s historic achievement. After a series of spirited objections to his claims that dinosaurs in fact persisted on this ancient South American plateau, Challenger asks the crowd if physical evidence would satisfy their disbelief. In response to a resounding “Yes!”(208), Challenger opens a large crate, out of which emerges a hideous winged creature with “small red eyes” and a “long, savage mouth” filled with “a double row of shark-like teeth” (207). In this moment, the pterodactyl stands not merely as proof of living dinosaurs, but more significantly, the creature emerges as a physically monstrous and temporally ancient embodiment of the very disease agents that had longed

plagued the tropics. Startled by the ensuing screams, the creature takes flight into the hall. As its grotesque body swoops through the air, it emits “a putrid and insidious odor [that] pervaded the room” (208). In its singular, venomous and miasmatic body, the pterodactyl encapsulates the most dangerous aspects of the tropics, including the pestiferous airs and poisonous bite of insects.

By bringing this specimen back to London, Challenger makes visible the singular nature of the organism that has for centuries plagued Europeans in the tropics. As the pterodactyl flies through the hall, it is clear that the putrid odor long associated with tropical disease emanates from the beast itself, the very creature that also possesses a “long, savage mouth” filled with sharp teeth (207). The organism itself is thus revealed to be the source of the ‘bad air,’ whereby the causative agent of disease is localized in the body of the pterodactyl, not the air itself. The singularity of the pterodactyl here reflects the discovery of the specific plasmodium parasite and its mosquito vector as the singular source for malaria. As the monstrous creature flies through the hall, it eventually finds an open window and escapes into the skies above London. At first glance, one would expect such an event to cause unprecedented hysteria and compound fears of infection and contagion, as this tropical beast is now free to spread its venom throughout the heart of the imperial center. However, aside from startling a few people on the street, this mosquito-writ-large simply disappears quietly into the night and is last seen far out over the Atlantic, presumably heading back to South America. That Doyle allows this creature to escape without alarm or collateral damage emphasizes the profound consequences of identifying such organisms as the causative agents of disease: once unmasked, such enemies became innocuous. Therefore, the Pterodactyl is no longer a threat to the public

precisely because it has been identified, and its “movement and distribution” made known. Similarly, in exposing the public at large to this creature, the imperial body itself may act as an immune system, standing ready to identify and capture any future invaders.

Thus, *The Lost World* assuages public and political anxieties of foreign contamination and disease proliferation by assuring the reading public that Science now possesses the tools and weapons necessary to finally conquer the bountiful tropics that the British Empire had desired for so long. In *The Lost World*, that monstrous mosquito-come-Pterodactyl with its venomous power is made known, and as such, can be slain, and the treasures of the tropics finally claimed. As if to emphasize the point further, Doyle ends his novella with Malone and Roxton, now equipped with the knowledge of the creature’s habits and location, making plans to return to South America to mine the countless diamonds that riddle the plateau. For Doyle, the discovery and identification of these deadly microbes by Koch and others was nothing less than the heroic conquest over mankind’s most sinister villains: the microscopic parasites that plagued mankind for eons and yet remained hidden until the late nineteenth century. By augmenting the physical and temporal scale of this epic battle of Man vs. Microbe, Doyle makes visible the very debates and discoveries surrounding bacteriology and the health of the Empire that may have otherwise remained invisible to the public at large. Doyle’s fantastic adventure tale of pterodactyls and Ape-Men thus becomes a triumphant story of Science and Medicine eradicating disease and making the world safe for future imperial expansion.

**Reproducing Great Britain: Biopolitics, Disease, and Sexuality in Virginia Woolf's
*The Voyage Out***

Biopolitics deals with the population, with the population as political problem, as a problem that is at once scientific and political, as a biological problem and as power's problem.

Michel Foucault, "*Society Must Be Defended*"

Considering how common illness is, how tremendous the spiritual change that it brings, how astonishing, when the lights of health go down, the undiscovered countries that are then disclosed ... it becomes strange indeed that illness has not taken its place with love and battle and jealousy among the prime themes of literature.

Virginia Woolf, "On Being Ill"

In her 1926 essay, "On Being Ill," Virginia Woolf questions why illness has been largely neglected in literature. Given the profound effects illness has on the body and mind, and the dramatic change in perspective it affords the sufferer, Woolf wonders why novels have not been "devoted to influenza; epic poems to typhoid, odes to pneumonia" (4). Woolf suggests that writers have neglected the body for the mind, such that the body is merely a "sheet of plain glass through which the soul looks straight and clear" (4). For Woolf, the body is not a solid, monolithic, and bounded form that may be separated from the mind and the world. She writes, "All day, all night the body intervenes; blunts or sharpens, colours or discolours, turns to wax in the warmth of June, hardens to tallow in the murk of February" (4). The body is a living, feeling, pulsing organism that is open to the environment, and is viscerally responsive to and enhanced by its connections to the world around it. The body's "whole unending procession of changes, heat and cold, comfort and discomfort, hunger and satisfaction, health and illness" (5) constitutes life itself, "until there comes the inevitable catastrophe" of death and the body "smashes itself

to smithereens” (5). Woolf’s description of the body as a living organism that is stimulated, even in illness, by its intricate and intimate relation to the world stands in stark contrast to bio-medical conceptions of the body as a biological and political entity in need of immunological defense.

During the late nineteenth and early twentieth centuries, new understandings of biological immunity radically transformed the living body into an organism at war with its environment. With the “advent of immunity-as-defense,” the modern body emerged for the first time as a biopolitical organism whose very existence depended “on a perpetual engagement *against* the world to maintain” its integrity and selfhood (Cohen 8). The modern biopolitical formulation of the body as vulnerable to invasion and in need of strict disciplinary regimes of boundary maintenance posits the body as a bounded entity that can be secured. Woolf’s celebration of the porous body contrasts significantly with the biopolitical renderings of the body. Although “On Being Ill” was published a decade after *The Voyage Out* (1915), Woolf’s articulation of illness and the relationship between the body and the environment reflects the very themes and struggles that permeate her first novel. Set against the backdrop of a small coastal village in South America, *The Voyage Out* traces the coming of age of the young Rachel Vinrace, who voyages to the continent aboard her father’s merchant ship, the *Euphrosyne*. While Woolf laments the lack of literary engagement with illness in “On Being Ill,” *The Voyage Out* is a novel devoted to fever.

Although critics and biographers including Hermione Lee have noted that “illness is one of the main stories of Virginia Woolf’s life” (xii), the role of illness in *The Voyage Out* has yet to be fully examined. I argue that illness, specifically fever, and the

disciplining of the female body in the tropics constitute the “prime themes” of the novel. While critics have read Rachel’s death by fever as a subversion of the marriage plot or destabilization of the allegory of nationhood and adulthood (Esty 9), I examine Woolf’s representation of illness alongside scientific and medical debates surrounding women’s health and the role of women’s reproduction in Britain’s tropical colonies. While the vast horizons of the South American landscape offer new possibilities and freedoms for Rachel and the other women in the colony, patriarchal concerns about tropical disease and the vulnerability of the female body threaten to restrict their movements and limit their experiences. Instead of celebrating immunology and tropical medicine as tools for strengthening the boundaries of the individual and imperial body, Woolf implicitly critiques these disciplinary regimes. For Woolf, the very technologies of security, discipline, and restraint designed to protect women’s bodies in the tropics instead threaten to stifle and suffocate them physically, intellectually, and emotionally.¹⁸ In *The Voyage Out*, Woolf critiques the biopolitical discourse of security as a defense ethos that creates devastating consequences for women’s individualism and freedom.

In the opening pages of *The Voyage Out*, London appears as a shrinking, claustrophobic, and diseased landscape infected with the dirt and grime of factories, poverty, and urban squalor. The streets that lead Helen and Ridley Ambrose down the Embankment along the Thames are muddy and narrow and filled with “innumerable poor people” who appear to Helen as “sordid,” “sodden hags” (12). The city is not beautiful, Helen notes,

¹⁸ Woolf, herself a frequent victim of mental illness, was also victim to the medical systems that sought to imprison and restrain her as a means to strengthen her defenses against invading stimuli. Hermione Lee writes, “with drugs went a regime of restraint: avoidance of ‘over-excitement,’ rest cures, milk and meat diets, no work allowed” (xiii).

and has long since lost its aura of wonder and vitality. Instead of bright lights and wide, avenues filled with happy, healthy people, London is filled with “bigoted workers” hurrying to their offices; countless “poor who were unhappy and rightly malignant”; and “tattered old men and women [...] nodding off to sleep” on the park benches (11). Even the waters of the Thames, the historic life-blood of Britain’s great imperial city, are polluted and filled with a “troubled yellow light” (13), further suggesting a current of decay and degeneration running through the city. A shift in perspective from the crowded streets of the city to the open deck of the ship does little to alleviate this ominous vision. Depicted as a living organism, London appears to the passengers of the *Euphrosyne* as a diseased and ailing body. When Rachel tries to envision the nation as an organic entity made of flesh and blood, she does not imagine a healthy, powerful body; instead, she sees only “drains like nerves, and bad houses like patches of diseased skin” (83). The bright burning lights of London similarly fail to evoke an image of the British Empire as a blazing beacon of power and knowledge; rather, the lights seems “dreadful” (17), and England appears as “a circumscribed mound, eternally burnt, eternally scarred,” and as “a crouched and cowardly figure, a sedentary miser” (18). Rather than a thriving, prosperous body open to the world beyond its shores, England emerges as a bounded, fearful, and stagnant figure in the throws of decay. England is depicted as a diseased, “shrinking island in which people were imprisoned” (32), and from which the passengers aboard the *Euphrosyne* seek to escape. Woolf’s portrayal of England as shrinking and riddled with decay and stagnation echoes the general anxieties of the period concerning national decline and population management.

The acquisition of and expansion into Britain’s tropical territories was believed

necessary to secure the economic and biological vitality of the Empire. The numerous reports outlining the debilitating and degenerative effects of the tropical ‘airs, water, and soils’ on the white European body “provided a commentary upon the . . . limits of imperial control” (Bell 3). At the heart of these imperial debates remained the question of tropical disease and white acclimatization in the tropics. The need to secure new populations and territories relied upon the strict management of disease. In a 1905 article in the *British Medical Journal*, the author directly links the future health of the Empire with the development of Britain’s tropical colonies. “The prosperity of our Empire, perhaps the existence of our country,” the article states, “depends to a large extent on the successful development of the material resources of our colonies, and this in turn depends on the increased possibilities of acclimatization” (“Progress” 156). As tropical medicine as a discipline evolved from the study of diseases of warm climates to an institutionalized body of medical science at the turn of the century, the political power and knowledge wielded by the institution constituted a specific technology of security aimed at regulating and disciplining colonial bodies in the tropics. One of the most vulnerable and dangerous bodies in these tropical spaces, and thus one in greatest need of security, was the female body. Reduced to her sexual function and reproductive potential, the (white, colonial) woman’s body in the tropics was a “body to be cared for, protected, cultivated, and preserved from the many dangers and contacts, to be isolated from others so that it would retain its differential value” (Foucault *History* 123).

In 1893, Dr. Andrew Davidson published a manual on *Hygiene and Diseases of Warm Climates* in which he devoted substantial attention to the health of women and children in the tropics. Providing statistical analysis on the mortality and invalidating rates

of men, women, and children in India, Davidson argued that women were naturally the weaker sex. Their physiology rendered them more vulnerable to the devastating effects of the tropical sun; the heat was particularly dangerous for women's menstruation and reproductive health. Patrick Manson, the "father of tropical medicine," addressed the 'woman issue' directly in his canonical text, *Tropical Diseases: A Manual on Diseases of Warm Climates* (1898). According to Manson, the effects of tropical heat and illness on women in the tropics included "abortion and sterility," and the high risk of "miscarriage of the fetus" (107). Malarial fever in particular was believed to be a chief cause of female sterility in the tropics. Malaria, notes Manson, "becomes a potent agent in repressing the population" because of its ability to prevent women from carrying a fetus to term (106). The medical observation of Davidson, Manson, and other experts on women and tropical diseases resulted in increased hysteria over the contamination of women's bodies in the tropics and the need to protect and secure their reproductive health. With the rise of tropical medicine as an institution came a new era of disease management, one in which women's bodies in particular became the prime site of intervention.

In *The Voyage Out*, Woolf's female characters are repeatedly subject to the patriarchal mechanisms of discipline and surveillance that seek to control and monitor their intellectual and physical development and experience. When the reader is first introduced to Rachel, she is waiting "down in the saloon of her father's ship" (14). Rachel's father, Willoughby, has gone to great lengths to ensure his daughter is reared in isolation and ignorance in order to preserve her health and her innocence. Having lost her mother as a young girl, Rachel is raised by her paternal aunts in Richmond, where she receives only the most rudimentary education. She is sheltered from the company of

others, particularly young men, who might negatively infringe upon her moral and physical purity. For Rachel, “the shape of the earth, the history of the world, how trains worked, or money was invested, what laws were in force . . . the most elementary idea of a system in modern life – none of this had been imparted to her by any of her professors or mistresses” (34). Instead, Rachel is “brought up with *excessive care*, which as a child was for her health; as a girl and a young woman for what it seems almost crude to call her morals. Until quite lately she had been completely ignorant that for women such things existed” (35 my emphasis). Willoughby’s protection of Rachel has stunted her intellectually, emotionally, and physically. Rather than a vibrant, confident young woman of twenty-four, Rachel appears to Helen as lacking in maturity and self-possession. Rachel’s face is “weak rather than decided,” and due to being physically sheltered indoors, she has been “denied beauty . . . by the lack of colour and definite outline” (20). Willoughby’s protection of Rachel has had the opposite effect on her well-being: “a hesitation in speaking, or rather a tendency to use the wrong words, made her seem more than normally incompetent for her years” (20). Rather than developing into a healthy and productive body, Rachel is feeble, ignorant, and weak. The excessive care of her upbringing has denied Rachel a voice and opinion of her own.

The surveillance and policing of Rachel’s body, sexuality, and intellect has left her vulnerable and ill equipped to negotiate new relationships outside the confines of her home in Richmond. Helen is particularly horrified at Rachel’s ignorance of men and sexual matters, as Willoughby “brought up his daughter so that at the age of twenty-four she scarcely knew that men desired women and was terrified by a kiss” (81). In *Immunitas*, Esposito argues that the “self-protective syndrome” that characterizes

biopower has the precise opposite effect of what is desired (14). “Instead of adapting the protection to the actual level of risk,” biopower, and the technologies of security that medicalize the population, “tends to adapt the perception of risk to the growing need for protection – making protection itself one of the major risks” (15). That Rachel cannot comprehend the sexual advances of men or conceive of what marriage means frightens and frustrates Helen, who takes it upon herself to educate Rachel about the world during their stay in Santa Marina. For Helen, “Willoughby’s selfishness . . . made her determined to have the girl stay with her, even if she had to promise a complete course of instruction in the feminine graces” (86).

Women’s bodies and sexuality were deemed both constitutive of and threatening to the maintenance of a strong, healthy, and racially pure imperial body. The equation of Rachel’s “health” and “morals,” and the need to protect both from contamination, echoes the extent to which women’s sexuality was considered a chief object of political and medical control. As Radhika Mohanram notes in *Imperial White: Race, Diaspora, and the British Empire*, women’s sexuality constituted a primary concern for men and required strict policing and control. As Mohanram and other critics argue, white, Victorian womanhood, in keeping with the cult of domesticity, symbolized the health and vitality of the (masculine) imperial body. In *The Voyage Out*, Mr. Dalloway proclaims that he similarly shelters his wife from the public sphere and never allows her “to talk politics” (65). Rather, Mrs. Dalloway is tasked with preserving the purity of Mr. Dalloway’s domestic sanctuary so that he may be strengthened and empowered to conduct his imperial duties. Mrs. Dalloway has “preserved” his ideals: “I have been able to come home to my wife in the evening and to find that she has spent her day in calling,

music, play with the children, domestic duties – what you will; her illusions have not been destroyed. She gives me courage to go on. The strain of public life is very great” (65). Women are “considered requisite for the production of the meaning of the nation, as they are located as *the very ground* upon which the meaning of the nation itself rests” (Mohanram 27).

Women’s sexuality was a central focus of tropical medicine, as the reproductive labor performed by women was seen as essential to the future of the white, civilized, British race. In an 1898 report in *The Geographical Journal*, scientists Louis Sambon stated that the dangers of the tropics included “heat, cold, damp, and various epidemic diseases, especially malaria and those constitutional conditions induced by climate which either destroy the immigrants or diminish their fertility after one or two generations” (589). Historian Ann Laura Stoler notes that European women in the colonies were tasked with maintaining the standards of European morality and culture while also producing children to strengthen the expansion of the colonial enterprise. European women were expected “to create and protect colonial prestige” (232). In addition to bearing children, women were “charged with regenerating the physical health, the metropolitan affinities and the imperial purpose of their men” (71). Motherhood stood at the center of empire building and empire maintenance. The importance of producing children in particular was of vital national importance and was “hailed as a national, imperial, and racial duty” (72). Concerns over the deleterious effects of tropical climates on female reproduction came to dominate imperial debates on tropical colonization and re-population of tropical territories. The medical discourse that constructed women as naturally prone to hysteria, neurological disorders, and fluid imbalances associated with

menstruation in the nineteenth century provided the disciplinary and regulatory procedures designed to manage women's bodies and sexuality in the tropics at the turn of the twentieth century. Women's cultural and biological reproductive capabilities were thus intimately linked in the imperial 'battle for the tropics.'

The London School of Tropical Medicine published numerous reports and manuals dictating the proper procedures for managing diet, hygiene, sanitation, and prophylaxis in order to maintain one's health and vitality. These rules and regulations for proper living commanded that women in particular avoid physical exertion, including dancing and vigorous walks; direct sun exposure; dietary excess; amorous flirtation; and consuming water from most natural sources. The equation of moral hygiene with physical hygiene is evident throughout the manuals, which advise moderation in all things, including the passions. The manuals emphasized the notion of "very careful living" (Livingstone 93). For Professor of Surgery, Sir Charles Havelock, the question of maintaining one's health in the tropics came down to one simple concept: "for a crop to grow, two things are required: seed, and soil" (870). The biological and cultural reproductive health of the imperial body required the cultivation of an impenetrable, immunological sterility. "Since the parasitic seed everywhere abounds in the torrid zone, the aim of the sojourner," writes Havelock, is to "live so that his body may be but bare and stony ground where the germs fall thereon" (870). Tropical illness is a result of the penetration and contamination of a passive, weakened body whose secure, immunological borders have been breached (and thus demand protection). For Havelock, a series of defense strategies needed to be followed to protect the body from invasion and contamination. In *The Voyage Out*, this ethos of security, of fortifying and protecting the

body, becomes the primary occupation of the men in the company. Mr. Pepper, Mr. Ambrose, and Mr. Hirst repeatedly express their fears of tropical illness. They are obsessive about the need to carefully regulate one's diet, exercise, and mental stimulation in order to protect against forms of 'invasion' and subsequent deterioration.

As the *Euphrosyne* sets sail, Ridley Ambrose is the first to articulate his concern that this tropical voyage will undoubtedly affect his health. "My diseases of course will be increased," he tells Helen: "I already feel worse than I did yesterday" (30). Of greatest concern to Ridley is that he will "catch rheumatism and pneumonia" from the conditions aboard the ship as well as in the tropical port that awaits him (30). The hot, humid climate of the tropics had for centuries been attributed to the rise and exacerbations of arthritic disorders, just as the miasmatic air of the torrid zones was believed to damage fragile lung tissue, leading to pneumonia. Both rheumatism and pneumonia were also commonly reported among navy vessels and large merchant ships, and often accounted for the high rates of mortality and invaliding of soldiers on long ocean voyages and in tropical colonies. That Ridley fears the six weeks aboard the *Euphrosyne* will cause "unspeakable misery" (30) reflects Woolf's awareness of and engagement with earlier discourses of disease and tropical invaliding that continued to circulate during the late nineteenth and early twentieth centuries. Ridley's concern that he may fall victim to these diseases also reflects the more contemporary debates on rheumatism and pneumonia in relation to both diet and parasitic diseases in the tropics. In his *Manual of Diseases in Warm Climates*, Manson reports that the tropical climate and poor diet may indeed exacerbate rheumatism, and that many victims of malaria ultimately develop both musculoskeletal complaints as well as fatal bouts of pneumonia. Ridley's apprehension

exhibits a very real concern about avoiding risk and securing one's health in the tropics.

St. John Hirst also expresses anxieties about the risk of physical exertion, poor nutrition, and the breakdown of the male body in the tropics, particularly in relation to the musculoskeletal framework. Like Ridley, Hirst is troubled by bouts of rheumatism during his stay in Santa Marina. After participating in a night of vigorous dancing and feasting, Hirst finds his body stiff and weakened the next day. He moves slowly and cannot sit on a hard chair without a cushion. His "rheumatism" is acting up as a "result of the dance" (200). Hirst attributes the acute attack to his physical exertion the night before. One of the most dangerous activities listed in the manuals of tropical medicine was excess physical stimulation, as it was believed to cause overheating, loss of vital body fluids, and nerve strain. He tells Helen, "Whenever I get at all run down I tend to be rheumatic" (200). As if to demonstrate the extent of his disease, Hirst bends his wrist back to "hear little pieces of chalk grinding together" (200), the clinical sign of painful inflammation and deterioration of cartilage in the joints. Even with new technologies of parasitology and sanitation designed to protect the body, the increased temperatures and humidity continued to pose a threat to the more delicate, temperate European body. Excess physical exertion, particularly dancing, also violated the rules of moral hygiene and conduct in the tropics, in which any form of amorous behavior was thought to weaken the body and spirit and leave the subject vulnerable to contamination and disease. Hirst's acknowledgment that his rheumatism was brought on by being 'run down' further emphasizes the ways in which anxieties of illness and bodily defense frame the men's relationship to danger and risk while living this tropical space.

After a few months into his stay in Santa Marina, Hirst begins to complain of joint

pain, weight loss, and the health of his heart. He fears the tropical climate is turning him into an invalid. "I've actually gone down in weight since we came here," he states, which he claims must "account for the rheumatism" (204). Hirst also begins to fear that his heart may soon begin to suffer as a result of his joint disease. "I'm always expecting to be told that I've got heart disease," he states: "Rheumatism always goes to the heart in the end" (204). While Hewet mocks Hirst for talking like "an old cripple of eighty" (204), Hirst's ailments reflect precisely the physical attributes that tropical medicine considered maladapted to life in the tropics. In his 1910 report on Europeans in the tropics, Havelock states that men traveling to the tropics must have strong bodies, "a clear head, an even temper . . . a healthy circulation, and a strong liver" (871). Men of weak constitutions, especially those with weak hearts and limbs, are not well suited for life in the tropics. Even with advancements in tropical medicine, Havelock continues, the body must be strong enough to defend against pathogens: "The ordinary type of 'weak-kneed' and 'broken-backed' individual will not do now more than formerly" (874). However, the hot tropical air and water was also believed to have a direct effect on the male physique, and often sapped its vigor and vitality. In his report on *Hygiene and Diseases in Warm Climates*, Davidson writes: "as a rule, the bodily weight is diminished by tropical residence; and the muscular system becomes deficient in tone," resulting in "the natural consequences of lessened bodily vigour and loss of weight" (14). Therefore, even as germ theory took hold, physicians continued to report that even the strongest (male) bodies entering the tropics required the utmost care to ensure the maintenance of health and physical prowess.

While Hirst may have exposed his body to particular risks, and thereby left

himself vulnerable to a bout of rheumatism, Mr. Pepper is more stringent in taking precautions to protect his health in the tropics, particularly in relation to diet. Upon the arrival of the company in the villa of Santa Marina, Mr. Pepper becomes increasingly anxious about the living quarters and the quality of the food and water available. After six days in the house with the rest of the company, Mr. Pepper announces that he will take up occupancy in a nearby hotel for the sake of his health. His reasoning, he tells Helen, is that the staff at the hotel is more likely to cook his vegetables properly: “No private cook can cook vegetables” (93), he proclaims. Mr. Pepper’s concerns about the quality and safety of his vegetables reflects two important issues in tropical medicine with regards to diet and hygiene: the need to consume light, wholesome foods to preserve one’s digestion and vitality, and the need for clean water and proper handling of food to prevent disease. As vegetables grow directly from the soil, they were closely associated with dirt and disease, particularly typhoid, malaria, and cholera. At the same time, vegetables were increasingly associated with the maintenance of good health, especially in hotter climates.¹⁹ In *Climate and Health in Hot Countries* (1904), G.M. Giles writes, “in the Tropics, where it is desirable to restrict the amount of meat consumed, English folk might [introduce] to their tables vegetables,” as long as they were “well cooked, and served piping hot” (57). Mr. Pepper’s concern that the cooks at the villa will not cook his vegetables follows the concerns about diet and hygiene reported in the manuals of tropical medicine of the period.

Mr. Pepper’s preference to stay at the hotel, with its glass windows, high walls,

¹⁹ As Susanne Freidberg writes in “French Beans for the Masses,” tropical hygienists at the turn of the century promoted the consumption of fresh vegetables instead dried produced, provided they were well washed and well cooked. “Once germ theory made clear that fresh fruits and vegetables did not themselves cause typhoid or cholera,” she writes, “hygienists’ warnings shifted to the need for vigilance in the garden and kitchen, where native workers’ presumable dirty habits might contaminate the food” (26).

and locked gates also reflects the security measures that he resorts to in order to protect his body from the environment and thus secure it against tropical invasion. In contrast to the bounded space of the hotel, the villa is open to the elements and provides Rachel and the others with more direct physical contact with the air and landscape of South America. There are no walls encircling the property as “there was no ugliness to shut out” (91), and “there were no blinds to shut out the sun” (92). For Mr. Pepper, this degree of exposure threatens his very sense of physical and architectural boundaries: borders that are breached will inevitably lead to illness. When Helen chastises Mr. Pepper for leaving the villa for the sake of vegetables, he states, “If you all die of typhoid I won’t be responsible!” (90). Though others in the company think he is overly cautious about ‘careful living’ in the tropics, Mr. Pepper’s warning foreshadows Rachel’s death at the end of the novel. As the company struggles to comprehend how Rachel could have contracted the fever, Wilfred recalls Mr. Pepper’s warning about improper food hygiene and the dangers of typhoid: Mr. Pepper, he remembers, “left the house because he thought them so careless. He says they never washed their vegetables properly” (359). For the company, Rachel’s death is a reminder of the consequences of opening oneself up to this new landscape and taking such dangerous risks in the tropics.

The task of the School of Tropical Medicine was to make tropical disease accessible at the level of the group and at the level of each individual in order to “identify the risk” for each particular disease threat, and the risk “of dying from it or being cured” (Foucault *Security* 60). The ability “to determine the risk of morbidity and the risk of mortality” (60) for the population was fundamental for the biopolitical management and protection of the population. For Foucault, the “notion of *risk*” is “absolutely crucial” (61

my emphasis). Foucault notes that calculating danger reveals that “risks are not the same for all individuals, all ages,” but rather, there are “zones of higher risk, and zones of lower risk” (61). When determining who was at greatest risk of contracting disease in the tropics, tropical medicine clearly identified women (and children) as exceptionally vulnerable to contagion, infection, and deterioration. Particular spaces, such as rivers and dense jungles, and specific activities, such as exercising in the sun and drinking water from questionable sources also constituted “zones of higher risk” (61), and were to be avoided, especially for women. Risk calculations were so important for the management of a population because one could “identify what is dangerous” and implement measures of governance and protection accordingly (61). Through extensive statistical analysis, experimentation, and data collection, the School of Tropical Medicine calculated and predicted the various levels of risk associated with specific activities in the tropics.

Members of the company insinuate that Rachel’s death was likely due to her careless living and unnecessary risk-taking during her time in the tropical port. Not only had she eaten the vegetables, but she also insisted on dangerous excursions upriver, long walks under the hot sun, and drinking water directly from streams and taps. Mr. Flushing states that Rachel “probably ran risks a dozen times a day that might have given her the illness” (359). According to the manuals of tropical medicine, each of these activities represented a risk to one’s health while in the tropics: the insects that swarmed the rivers and jungles harbored malaria and yellow fever; the hot sun caused sun-stroke and dehydration; and drinking contaminated water led to outbreaks of cholera and dysentery. In Manson’s *Manual*, he advises that “violent exercise, excessive fatigue, [and] want of sleep . . . are to be avoided,” especially in malarious regions (242). Davidson also advises

that “prophylaxis” against many forms of tropical illness, particularly waterborne diseases, includes ensuring “a pure water supply, in filtering and boiling this where the source is at all suspicious, [and] in avoiding uncooked fresh water animals and uncooked vegetables as food” (856). Within manuals of tropical disease, life is secured through restrictive regulatory and disciplinary mechanisms of security. If *life* within this system of disease management is reduced to statistics and formulas, then to *risk* life is to free oneself from the restraints imposed by technologies of security, territory, and population.

While others in the company view her actions as careless, Rachel is consciously and forcefully *risking* life in order to experience freedom from the constraints imposed upon her. From the moment she arrives in Santa Marina, Rachel becomes “profoundly excited at the thought of living” (84), and is overcome with the desire to “see life” (98). Instead of remaining indoors after dark, Rachel urges Helen to go “strolling through the town” (98) at night; in the dark, they may observe the real life that goes on behind close doors and windows, when the pretenses of the day fall away and laughter and intimacy are more freely expressed (99-100). After living such a sheltered life, Rachel is hungry for new experiences and unconcerned with the consequences of her wanderings, even as she trespasses the hotel gates to peer at the patrons inside from behind the bushes. The risk of being caught is thrilling to Rachel who, after fearing she has been seen, delights in running all the way back to the villa (102). Although the narrator notes, “no one molested them” (99) on their adventures, the real danger of being outdoors in the evenings was the risk of contracting malaria. Manson warns that being outdoors, particularly without protection, “should be avoided in the evening and early morning” (*Tropical Diseases* 147) when mosquitos are found in their greatest numbers. However, Rachel is not

concerned about such risks, as she finds the experience exhilarating and life affirming.

As Rachel begins to explore the surrounding landscape of Santa Marina, she continues to reject the disciplinary regimes of disease management that would otherwise limit her movements and experiences. During an excursion to the top of Monte Rosa, Rachel repeatedly violates the rules of tropical hygiene that prescribe strict adherence to water purification methods and avoiding direct sun exposure. Before embarking on the journey, the members of group agree to meet in a nearby grove next to a stream. As Terence Hewet approaches, he sees Rachel “kneeling by the stream lapping water out of her palms” (127). The image of Rachel crouching by the waters’ edge and drinking from the stream with her hands is striking. While such an action would be considered natural and healthy in landscapes running with clean, pure water, drinking directly from tropical streams carried the risk of contracting any number of waterborne illnesses. However, Rachel rejects the possible consequences of drinking from the stream. As she literally takes the tropical water into her body, Rachel risks life for the sake of living beyond the boundaries of security and restraint. After Rachel’s death, Mrs. Paley laments that she “ought not to have died” (362). Mrs. Paley says, “But people will drink the water. I can never make out why. It seems just a simple thing to tell them to put a bottle of Seltzer water in your bedroom. That’s all the precaution I’ve ever taken, and I’ve been in every part of the world” (362). Young people are risk takers; they “always think they know better, and then they pay the penalty” (361). However, for Rachel, whose life is so strictly controlled by her father, the risks of the journey are what provide the greatest pleasures and freedom: to *risk* life is the only possibility of living.

During their ascent to the top of the mountain, the company begins to worry about

the consequences of physically exerting themselves under the hot tropical sun. As they climb higher, “the midday sun” begins to “beat down hotly” (131). Due to the heat and the rugged trail, “rather more strain was being put upon their bodies than is quite legitimate in a party of pleasure” (131). As the group begins to fatigue, Mrs. Elliot warns, “expeditions in such heat are perhaps a little unwise” (131).²⁰ Although other members of the group complain during the climb, Rachel simply “smile[s]” (131) and continues to the top of the mountain. During the journey to Monte Rosa, Rachel finds herself caught between the sense of freedom and possibility symbolized by the vast horizons before her, and the confinement of marriage that threatens this freedom. This stark contrast is illustrated during a moment in which Rachel and Terence stumble upon Susan and Arthur kissing under a shade tree. While Terence is charmed by the scene and happy for the couple’s engagement, Rachel is startled and repulsed. Rather than sharing in Terence’s joy, Rachel experiences a very visceral reaction of fear and disgust. “I don’t like that,” she states (140). Unlike Terence, Rachel is filled with sorrow and pity and feels she has just witnessed a great crisis (141). To Rachel, the assumption that the couple will be married evokes a sense of tragedy, as she equates marriage with the very technologies of security exercised against her by her father: those mechanisms that restrict women’s bodies and freedoms and reduce them to reproductive entities. Terence’s insistence that marriage is “so enormously important” frightens Rachel as she imagines her own fate sealed by such an event (140). In response to this vision of the future in which she too would be subject to the patriarchal constraints of marriage, Rachel rejects Terence’s gaze

²⁰ Manuals of tropical medicine repeatedly warned against the dangers of the hot tropical sun, including heat stroke, dehydration, nerve strain, and for women, overall increased vulnerability to uterine dysfunction. Excessive physical exertion was also to be avoided, especially in the heat of the day, as the body was depleted of fluid and the muscles weakened.

and turns her vision to the landscape.

Cultivating an alternative conception of life beyond the boundaries of male control, Rachel imagines herself not as an object to be conquered, but as a supreme conqueror: “she looked at the ground; it pleased her to scrutinize this inch of soil of South America so minutely that she noticed every grain of earth and made it into a world where she was endowed with supreme power” (141). While Rachel embraces risk as an opportunity for life, the possibility of marriage poses an entirely different risk to her health, one that threatens to deny her life by limiting her freedom. As Rachel grows more confident and begins to take greater risks, she becomes increasingly aware of the danger marriage poses to her freedom and continues to reject Terence’s attempts to secure her, physically and emotionally. A key moment in which Rachel articulates her desire for open horizons over the closed domestic space of marriage occurs during an afternoon walk to a cliff overlooking the sea. When Terence proposes the walk, Hirst and Helen both decline the offer by echoing the advice of tropical medicine. “It’s much too hot to climb uphill” (204), they both state, and warn Terence against the exercise. However, Rachel is quick to embrace the opportunity: “I’d like to come” (204). Again, Rachel rejects the idea of remaining indoors, and disregards the threat to her health in favor of experiencing the wonder of the tropical landscape and sea that surround them. Perched at the top of the cliff, Rachel and Terence are poised between the expansive horizons of South America behind them, and the vast, infinite sea that spreads out before them. Turning her back to the continent, Rachel casts her vision out to sea. For Rachel, the calm, clear waters of the Atlantic appear at first untouched and unmarred by the history and exploits of mankind: “so it had been at the birth of the world, and so it had remained

ever since. Probably no human being had ever broken that water with boat or with body” (211).

In “Britannia Rules *The Waves*,” Jane Marcus argues that Rachel’s vision of the ocean as pure and whole reflects the young protagonist’s identification with the “virgin” landscape and a longing to maintain an “unbroken world” (162). However, Rachel’s response to this vision of the sea reveals an entirely different relationship to and understanding of the historic symbolism of the ocean. “Obeying some impulse,” Rachel “determined to mar that eternity of peace, and threw the largest pebble she could find. It struck the water, and the ripples spread out and out” (211). In *Imperial White*, Mohanram argues that within the context of hygiene and imperial expansion, water represents purity and cleanliness as well as mobility, trade, and Empire. Water, as symbol and substance, contains two important symbolic strains: “water as part of hygiene and the water of oceans, its current, its dominance, and its yielding of wealth” (94). “The wealth of the oceans,” writes Mohanram, “also becomes the rightful inheritance of the bourgeois white man” (94). The vast sea that captures Rachel’s vision and imagination is thus a highly masculinized space of power, conquest, and control. Rather than preserving the vision of purity, Rachel deliberately and forcibly marks the water with her own gesture of agency and inscription. Rachel’s desire to mar the symbol of peace serves also as a rejection of her own interpellation into the masculine worldview in which her body, like the sea, is imagined as pure and bountiful, an object and space to be controlled by men. For Rachel, the ripples that radiate outward symbolize her desire for an alternative conception of life in which she is no longer an object of exchange, but an essential creator and actor.

The effects of this inscription are imagined to extend beyond the limitations

imposed upon her in this tropical landscape as they penetrate life at the imperial center. The ripples will extend to England, the narrator notes, as “it was this sea that flowed up to the mouth of the Thames; and the Thames washed the roots of the city of London” (210). Terence fails to read Rachel’s gesture as an act of defiance and self-expression, and continues his attempts to re-inscribe her as an object of desire and a potential wife. As Rachel looks out towards the sea, Terence fixes his eyes upon her. The moment Rachel becomes aware of his penetrating gaze she immediately becomes “self-conscious” and feels as if she has “lost her freedom” (215). Rather than filling Rachel with excitement or pleasure at the prospect of romance, Terence’s attempts at intimacy suffocate her and make her feel “at once singular and under observation” (215), like a laboratory specimen. Although she imagines a world in which she might be free of the cultural constraints imposed upon her in England, and allowed to risk and thus live life in South America, Rachel is also painfully aware of the limitations she faces under what Terence so keenly identifies as “the masculine conception of life” (213). Within this system of patriarchal power and control, Terence believes men “must have the sort of power over [women] that [they]’re said to have over horses” (212). A woman’s life within biopower is valued merely as a beast of burden, as an object of reproduction and control.

Terence’s “masculine conception of life” frames and shapes his understandings of political citizenship. Terence tells Rachel, “I’m inclined to doubt that you’ll ever do anything even when you have the vote” (212). Women are simply too fragile, intellectually and physically, to enter politics and serve in the governing of the nation: “It’ll take at least six generations before you’re sufficiently thick-skinned enough to go

into law courts and business offices” (212). Reflecting the immunological rhetoric of boundary maintenance and biological defense, Terence’s statement suggests the feminine membrane is far too delicate to protect women from the invasions of public life. Rather, it is the responsibility of men to “bully and shove” to secure that boundary and protect “their wives and families” and maintain their business (212). Within this system of power, politics, and security, the women are merely relegated to the “background” (213) where they are to be protected and managed, and where Terence doubts the “vote will do [women] any good” (213). As Terence explains the nature of the world to Rachel (upon whom the irony is not lost), he experiences a brief moment of insight in which he wonders whether this patriarchal system of security might in fact harm women rather than protect them. He says to Rachel, “I’ve often walked along the streets where people live all in a row, and one house is exactly like another house, and wondered what on earth the women were doing inside” (215). The thought of being imprisoned within this highly regulated and disciplined domestic space immediately fills Terence with anger and disgust: “Doesn’t it make your blood boil?” (215). Terence answers his own question: “I’m sure if I were a woman I’d blow someone’s brains out” (215). Terence’s exclamation that this life of discipline and surveillance is no life at all, and would undoubtedly drive someone to murder reflects precisely the life of imprisonment Rachel has led thus far.

In response to Terence’s inquiry about her life in Richmond, Rachel finds herself “reviewing her past under the influence of his eyes” (214). She recollects that her days were highly regimented: “when she thought of their day it seemed to her that it was cut into four pieces by their meals. These divisions were absolutely rigid, the contents of the

day having to accommodate themselves within the four rigid bars” (214). The social constraints and domestic duties imposed upon women thus operate within the frame of surveillance, which functions to imprison women within the home as if behind bars. For Rachel, “looking back on her life, that is what she saw” (214). Therefore, as Terence attempts to secure Rachel under his gaze, her very immediate and visceral reaction is to reject his attempts to control her. His questions and lectures are invasive, and make Rachel feel that he is “placing demands on her” (215). In response, Rachel resolves that she will “not consent to be pinned down by any second person in the whole world” (215). Instead of returning Terence’s gaze, Rachel shifts her body away from his and casts her vision back out to the sea (215).

While the view from the top of the cliff affords Rachel a clear perspective on her life back in England as a life lived in isolation and confinement, the tropical jungles and riverscapes of South America provide her with an alternate vision of life and mode of being. After growing weary of life in the villa, Mrs. Flushing proposes the company embark on an expedition up the river. “I want to go up there and see things for myself,” she proclaims: “It’s silly stayin’ here with a pack of old maids as though we were at the seaside in England” (235). Besides, she continues, her “husband’s done it,” and there should be no reason she can’t either: “one would lie under the trees at night and be towed down the river by day” (235). Rachel finds the idea of journeying upriver exhilarating, and is extremely “enthusiastic, for indeed the idea was immeasurably delightful to her. She had always had a great desire to see the river” (235). For Rachel, the expedition into the jungles of South America represents an entirely new world of pleasures and possibilities. From the moment she tries to imagine the freedom and wonder she will

encounter in South America, Rachel's mind is filled with "visions of a great river" (86) and lush tropical landscapes. For Rachel, South America represents a space in which she can break free from the gendered constraints imposed upon her in the imperial center and just "be herself" (84): free from the "dreadful" lights of London (27) and "free of mankind" (27).

While the voyage upriver may promise new possibilities of freedom for Rachel, the men have an entirely different reaction to the landscape. For the men in the company, the dense, tropical jungle and vast flowing waters of the region are far more threatening than they are inspiring. The air is "unbearably hot," and the forest radiates a "hot steamy atmosphere, thick with scents" (269). As they ascend the river, "the country grew wilder and wilder. The trees and the undergrowth seemed to be strangling each other near the ground in a multitudinous wrestle" (267). The sands of the riverbank are similarly "thickly grown with trees" (267), and the foliage that arches over the river appears angular and sinister (268). Every aspect of this tropical landscape seems to defy borders and boundaries, leaving the men in the company feeling unnerved, insecure, and incredibly "small" (268). The invasive nature of the trees, the heat, and the pervasive scents seem to penetrate every pore of their bodies, leaving them feeling violated and insecure as if their membranes have been pierced. St. John Hirst is the first to articulate the malevolent affect the tropical scene has on his and others' mental and physical faculties. As the river narrows and the trees crowd the riverbank, Hirst remarks: "It makes one awfully queer, don't you find?" (275). Feeling increasingly uneasy, Hirst attributes his irritation to the heat and the mass of tropical foliage that infringe upon his vision and sense of space. "These trees get on one's nerves," he complains, "it's all so

crazy” (275). Mr. Flushing agrees that the scene is unnerving, prompting Hirst to conclude that exposure to such a landscape would inevitably drive a person mad: “I should go mad if I lived here – raving mad” (275).

Hirst’s experience of violation and suffocation in the tropical landscape, and his association of the tropics with madness reflects one of the most persistent fears concerning white acclimatization and mastery in the tropics: tropical neurasthenia. As historian Anne Crozier notes, medical accounts of nerve strain and general neurasthenia were well accepted as legitimate diagnoses within the metropole by the mid to late nineteenth century. However, by the 1860s, persistent fears that the heat of the tropical sun and miasmatic humidity of tropical airs and waters caused the refined white European body to ‘break down’ led to the emergence of the specific diagnosis of ‘tropical’ neurasthenia that was increasingly applied to those inhabiting the colonial periphery. Mental breakdown was believed to coincide with physical degeneration as the extreme temperatures and humidity weakened the body and excited the nerves, leading to ‘nerve strain’ and mental fatigue. In 1914, a contributor to the *British Medical Journal* argued that “successful colonization does not wholly depend on the conquest of microbes,” but rather “there is something in the climate of the tropics that in time undermines efficiency and causes decay” of the mental and physical health of the white colonist (727). The invasive tropical scene represents a sexual violation for the men, for whom the tangled trees and heavy scents seem to penetrate their bodily membranes and contaminate their sense of physical integrity. For the men, the jungle is maddening precisely because it cannot be tamed and exists beyond their mastery and control.

For the women, the vastness of the jungle and the sensuality of the landscape

afford new freedoms, pleasures, and possibilities otherwise denied them. While Hirst finds the scene unnerving, Helen takes pleasure in the fecund abundance that surrounds her. Rather than being overwhelmed by the foliage, Helen thrills at “the way things massed themselves,” and bids Terence to “look at the amazing colours” and “the shapes of the trees” (275). For Rachel as well the jungle does not frighten or overwhelm her so much as it inspires a sense of confidence and agency. As she and Terence embark on a short walk through the forest near the river’s edge, both feel as though they have been swallowed up by the “elemental grandeur” (275) of the jungle. In England, Rachel’s life was that of “a creeping hedged-in thing, driven cautiously between high walls” (82). Here, in the jungles of South America, the closeness of the trees is not confining, but exhilarating and sexually freeing. As the couple walks further into the forest, the path becomes more narrow and “hedged in by dense creepers which knotted tree to tree, and burst here and there into star-shaped crimson blossoms” (270). Far from the high, sterile walls that secured and confined Rachel’s body in England, the erotic, tangled foliage and bursting red blossoms of the jungle epitomize the fertility and abundance of the tropics and reflect Rachel’s own sexual awakening.

The sensuality of the landscape invigorates Rachel, who begins to walk faster and hold “herself more erect than usual” (271). Struggling to find his voice, Terence asks Rachel if she is frightened (271). The ambiguity of the statement and the setting make it unclear as to whether he is referencing the strangeness of the jungle or the intimacy of their walk; in response to both insinuations, however, Rachel answers directly: “No. I like it” (271). Far from the nervous, sheltered creature who lived her life behind walls and hedges in England, Rachel quickly blossoms in this luxuriant jungle into a woman in

possession of her own imagination, passion, and sexual agency. In a direct inversion of the previous scene in which Rachel and Terence sat perched upon the cliff overlooking the sea, Woolf positions Terence as the object of desire and possession and Rachel as the conqueror. After the couple realizes they are in love and mutually agree to marriage, Rachel, rather than feeling pinned down and suffocated as she did before, feels “a curious sense of possession [come] over her” (282). Instead of recoiling from physical contact with Terence, Rachel extends her body outwards and touches him, claiming him as her own. Instead of evoking earlier feelings of anger and resentment, the prospect of marriage fills Rachel with a sense of opportunity and agency, leading her to conclude, “this is happiness” (283). Within the vast abundance of this tropical landscape, Rachel begins to imagine an alternative vision of life, one filled with wonder and possibility in which she can experience life beyond the confines of patriarchal anxieties of illness and regimes of control and surveillance. Woolf articulates an alternative mode of being for her female characters: one marked by openness and connection, not confinement and security.

During the river voyage, Rachel is strengthened and fortified by the tropical landscape and expresses a profound sense of happiness and hope for her future with Terence. In the depths of the jungle, in close proximity to the organic, unmediated environment, Rachel has grown stronger and feels more alive. This new life is one of connection and exchange, and of sensual engagements with the landscape and with Terence. As Rachel begins to imagine a new life with Terence, she is filled with a sense of power and agency, and thrills at the idea that she might now experience life through a different set of relations, in which she is free to love and feel. However, once the

company returns to the village, the patriarchal constraints of marriage and the reproductive role Rachel is to play within this tropical colony threaten her newly discovered self. As the once vast horizons and alternative vistas begin to shrink, Rachel asserts that she in fact “never fell in love” as Terence thought she had (293), and resolves that she will not be a mother. She declares that she “won’t have eleven children,” and “won’t have the eyes of an old woman” (294). Fellow traveler Miss Allan confirms Rachel’s fears that marriage and motherhood will subsume her and erase her individuality. Upon congratulating the couple on their engagement, Miss Allan makes Rachel feel “that although [Miss Allan] would scarcely remember them as individuals, she had laid upon them the burden of the new generation” (317). This burden of bringing forth a new generation of English children to expand the empire and re-populate this distant tropical colony evokes in Rachel a feeling of displacement and erasure. Far from the sense of possession and possibility she felt during her discovery voyage through the rivers and jungles, her vision of her future as a wife and mother within the colony makes her fear that all “marks of individuality” will be “rubbed away” (318), leaving her merely a conduit for the motives and will of others.

Although other members of the company are overjoyed with the prospect of Rachel’s marriage to Terence, Evelyn Murgatroyd recognizes the insidious nature of the union and the limitations it will place on Rachel. While watching Rachel with Terence, and Susan with Arthur, Evelyn begins to see the women as extensions of the men and no longer as individual people. Tied to these men who seek to confine them in rows and rows of identical houses, Rachel and Susan appear to have lost their power of movement. “They moved so slowly because they were not single but double,” Evelyn thinks: “and

for the sake of this one man they had renounced all other men, and movement, and the real things in life” (321). Doomed to a life behind high walls where they will be protected from the dangers of living, these women, thinks Evelyn, will not be living at all.

“Secluded and self-contained” (321) in brick houses, Rachel and Susan will be denied “the real things that were surely the things that happened, the causes, the wars, the ideals, which happened in the great world outside, and went on independently of these women” (321). For Evelyn, there must be more to life and to living than security and confinement: “Surely one could get nearer to life, one could get more out of life, one could enjoy more and feel more than they would ever do” (321). Overwhelmed by a sense of restlessness and a desire to risk life and thus to *live* life, Evelyn tells Rachel that she plans to journey to Moscow. She would love to join “a revolution against the Russian government” (321). A woman of action, Evelyn’s frenzy stems from the feeling of suffocation she feels when contemplating Rachel’s fate with Terence. Evelyn tells Rachel that she is “going to found a club – a club for doing things, really doing them” (321). In her exuberance, Evelyn “wanted to make Rachel see how thrilling it was” (321). When Terence announces that they must depart, Evelyn grabs “hold of Rachel’s skirt,” and begs her to stay (324). But Rachel cannot stay, Terence states, “we must go, because we walk so slowly” (324). Bound to Terence, Rachel has lost the physical freedom and power she had gained just days before.

In the jungle, Rachel’s physical openness to the sites, sounds, and scents of the environment serve to strengthen her body, rather than weaken it. However, once she returns to the domestic space of the villa as a changed (and engaged) woman, Terence finds her indecipherable and threatening and quickly seeks to undercut her newfound

agency. Reading from his novel on Silence, Terence summarizes his view of the relationship between men and women: “perhaps, in the far future, when generations of men had struggled and failed as he must struggle and fail, woman would be, indeed, what she now made a pretence of being – the friend and companion – not the enemy and parasite of man” (297). As Terence’s novel suggests, while women are necessary to the production and maintenance of the domestic and national body, their porous and vulnerable membranes nevertheless threaten to contaminate – through the breaching of borders – the very integrity of that body. Within the immunological rhetoric of biological and political defense, women remain objects to be disciplined and controlled within the secured boundaries of the domestic sphere. Terence’s aggressive inscription of Rachel as a parasite and burden to men strips her of her previously acquired strength and forecloses the possibility of her benefiting the colony with her “different philosophy of immunity” (Esposito 17). Rachel’s new sense of possession now makes Terence “wonder what the devil [she’s] thinking about” (298), which he finds dangerous. Rachel’s strength and openness threaten to destroy Terence, who fears “if we stood on a rock together, you’d throw me into the sea” (298). Terence’s proclamation of his views on women and marriage prompts them both to engage in a physical embrace in which they imagine themselves each struggling “for mastery, imagining a rock, and the sea heaving beneath them” (298). As Terence throws Rachel to the ground, he imagines her plummeting over the cliff into the sea, and claims victory. However, Rachel laughs and proclaims herself a mermaid who can simply swim away: “so the game’s up,” she states (298). While Terence’s fantasy of mastery seeks to force Rachel into submission, Rachel’s revision of the narrative is one in which she removes herself completely from the constraints that

Terence, and marriage, will impose on her. Rather than drowning, Rachel will simply swim away.

Rachel's fantasy of transforming into a mermaid and escaping to the sea suggests an entirely different relationship to both her body and the environment, one which defies the ontological conception of bounded life to which Terence and the men adhere. To become a mermaid is to change species and to become more than human. A mermaid is a creature of two worlds. She is a being whose dual-physiology allows her to appear as human to the eyes of men (her tail hidden beneath the water), while her aquatic limbs-turned-fins give her the power and mobility to traverse the world's oceans. The liquid ocean symbolizes mobility and connection, and allows Rachel to imagine a different mode of physical movement through and relation to space. Although the landmasses of the world are separated by vast expanses of ocean, for Rachel, the oceans and rivers connect all continents through an endless, pulsing cycle of movement and currents. For Rachel, the only escape from the static confinement Terence seeks to impose on her is to fantasize that she is beyond human, and beyond human reach. As a mermaid, Rachel is no longer a creature whom Terence can control, but a creature whose body is intimately integrated into the very currents of the world and of life. While Rachel may look like any other woman, in her fantasy of escape, Rachel imagines herself possessing an alternate physical dimension that puts her beyond the reach of human control. Rachel's fantasy of swimming out to sea and leaving Terence behind foreshadows her death by fever, which Woolf also describes as an oceanic escape.

Shortly after announcing her engagement to Terence, Rachel is stricken with a high fever and severe headache and takes to her bed. After suffering for nearly two

weeks, Rachel finally succumbs to the tropical illness and dies, leaving Terence bereft of his future wife, and fulfilling Rachel's earlier prediction that she will never bear children or become an old woman. The initial assumption is that the hot tropical climate was too much of a burden for her delicate body to bear. The day she falls ill is described as "very hot": the bricks of the terrace burned, the flowers wilted, and it was "too hot to talk" (326). Not long after retiring to her bed, Rachel begins to experience the intense hallucinations and delirium associated with a high fever, particularly the brain fever associated with malaria. The walls of the room seem to curve in on her and the window shades appear to move like strange animals, filling her with terror (328). The sounds of people moving about her room seem sinister to Rachel who struggles to identify the source of every intrusive, jarring voice and clamor. As she moves in and out of consciousness, Rachel's eyes remain half closed, allowing her to maintain a faint awareness of the "ordinary world" outside her body while simultaneously inhabiting the vast dream-scape of her fever. Many of the nightmares that accompany her delirium are violent and terrifying and filled with images of murder and death. As Terence leans over to kiss her, Rachel opens her eyes completely as if to see Terence fully; but instead of meeting his gaze, she sees only visions of an "old woman slicing a man's head off with a knife" (339). The gesture of intimacy in Rachel's febrile mind evokes a violent impulse and fantasy of decapitation, which here suggests a morbid allusion to castration.

As Rachel lies dying of tropical fever, her vision also alludes to the failure of men to protect women's bodies in the colonies, an impotence that ultimately prevents the healthy reproduction of imperial bodies in the tropics. Rachel's death is all too tragic precisely because of her recent engagement and her future prospects as wife and mother.

While the men in the village are distraught by Rachel's illness and death, their grief also stems from anxieties about how she contracted the fever. Some of the men believe she must have been exposed to the illness in the village and not on the expedition. Mr. Pepper, we are reminded, was so upset by the lack of proper food preparation and washing that he left the house and moved to a hotel for the duration of his stay (359). However, Arthur suggests that Rachel undoubtedly contracted fever during the river voyage: "You can't expect Englishwomen to stand roughing it as the natives do who've been acclimatized" (361). Regardless of the source of Rachel's contamination (be it tainted water, the hot sun, or parasitic infection) or where she may have contracted the fever (in the jungle or village), her death is read as a significant insult to the security and authority of the men in this tropical port. Rachel's death represents a defeat to the men in the company, who have ultimately failed to protect the very object upon which the future health and vitality of the Empire depends.

Rather than mourning Rachel as an individual, a woman who once possessed her own dreams and desires, the men in the company understand Rachel's death primarily in relation to Terence. Rachel's death is figured as Terence's own personal loss. For Terence, Rachel's illness is a direct affront to his own sense of power and security. As Rachel's fever becomes more intense, Terence begins to feel a greater loss of control. In a moment of panic, Terence fears there may be "no limits to the power of this illness," and that "everything [will] go down before it" and the world crumble beneath him (346). The confidence and control he once felt with Rachel has vanished in the wake of her illness: "Never again would he feel secure; he would never believe in the stability of life, or forget what depths of pain lie beneath small happiness and feelings of content and

safety” (345). The only comfort Terence finds is through an obsessive discussion on the nature of fever and illness, as if to understand the disease would ensure its cure. In an attempt to regain control over this tropical fever, Terence spends hours talking to St. John Hirst about “Rachel’s illness, discuss[ing] every symptom and its meaning, and, when this subject was exhausted, discuss[ing] illness of all kinds, and what caused them, and what cured them” (332). Terence’s attempts to regain control and his sense of security is in vain, however, as Rachel’s fever becomes more intense and she soon dies. For Terence, Rachel’s death is a mark of his failure and is read merely as his tragic loss. “This has not happened to me,” he states, “It is not possible that this has happened to me” (352). Although Terence continues to inscribe Rachel, even in death, within the confines of the masculine technologies of security and constraint, Rachel’s own experience of death by fever reveals an entirely different understanding of illness and relationship to her body and individuality.

Similar to Rachel’s fantasy of evading Terence’s grasp by turning into a mermaid, Rachel’s death by fever is also figured as an escape to the sea. As she falls deeper into her delirium, Rachel begins to imagine that a “glass, cool, translucent wave” (330) surrounds her body, enveloping her and separating her from the world outside which threatens to suffocate her. As the doctors repeatedly examine her body and analyze her fever, and as Helen and Terence continually pass in and out of her room, Rachel finds comfort in escaping to the bottom of the sea. In the depths of her fevered mind, a new horizon opens before her. Instead of the constant voices and frenzied spectacle of observers in her room, “She saw nothing and heard nothing but a faint booming sound, which was the sound of the sea rolling over her head. While all her tormentors thought

that she was dead, she was not dead, but curled up at the bottom of the sea” (341). Here, in the depths of the ocean, Rachel is once again removed from the securities that would otherwise restrain her movements and passions. Even in illness, Rachel gains strength from this fantasy of escape, a fantasy that parallels her experience in the jungle. While walking with Terence in the depths of the tropical jungle, Rachel also felt that she was “walking at the bottom of the sea” (270). Unlike the land, the ocean symbolizes an alternative, feminized space that defies borders and boundaries and that cannot be constrained. For Rachel, to live at the bottom of the sea is to imagine a mode of being that is not predicated upon the patriarchal technologies of security, but rather boundless and open to all forms of contact and exchange.

Through the heightened sensitivity of fever, Rachel begins to experience an alternate relationship to her body, her mind, and the world around her. Rather than being bound to her sick bed, Rachel imagines “her body floating on the top of the bed and her mind driven to some remote corner of her body, or escaped and gone flitting round the room” (347). Through she tries to engage with the solid, noisy world inhabited by Helen and Terence, Rachel’s fever leads her to new, untrodden territories far beyond their reaches: “She found that her heat and discomfort had put a gulf between her world and the ordinary world which she could not bridge” (329). In the world Rachel now occupies, “all landmarks [are] obliterated, and the outer world so far away” that she feels herself “completely cut off, and unable to communicate with the rest of the world, isolated alone with her own body” (330). Rachel’s isolation is not debilitating, however, but emancipatory. In her heightened state, Rachel’s body is intensely sensitive to both the surrounding environment as well as the wonders of her own mind. Though isolated,

“every object in the room, and the bed itself, and her own body with its various limbs and their different sensations were more and more important each day” (330).

Rachel’s fever foreshadows Woolf’s description of the effects of illness on the body and mind in her essay, “On Being Ill.” In the essay, Woolf describes the new horizons that are revealed to those in the depths of illness, and marvels at the “undiscovered countries that are then disclosed,” and the “precipices and lawns sprinkled with bright flowers” that an “attack of influenza [and] a little rise of temperature reveals” (3). When one lies ill with fever, she writes, the whole “world has changed its shape” (8); the invalid is left to lie motionless, isolated within the world of her own body “while the whole landscape of life lies remote and fair, like the shore seen from a ship far out at sea” (8). The “ordinary world” from which Rachel feels isolated is the world Woolf describes in “On Being Ill” as that belonging to the “army of the upright” (12). To those who inhabit this world, the sensations of the body, the smell of the air, and the dramatic dance of clouds across the sky are utterly foreign and forgotten (13). To the individual in bed with fever, however, the sensations experienced are those that heighten the mind and free it from the ordinary world. In both *The Voyage Out* and “On Being Ill,” Woolf depicts this ‘ordinary world’ as the screen that merely hides the real nature of life and living. “In illness,” she writes, “this make-believe ceases” (12) and the horizons of the mind and sensitivities of the body connect to reveal a world that “has been going on all the time without our knowing it” (13). Rachel’s fevered body thus becomes the medium through which she can experience a different way of being, one in which she is free from the disciplinary regimes and securities associated with marriage that threaten her life emotionally and physically. Although Rachel ultimately dies in the tropical port, her

death is not figured as a tragic loss for the victim, but rather an emancipatory escape from a life not worth living.

Within the modern system of biopower, life is reduced to its biological function, and the body is merely an organic object to be managed and cultivated by the state as a (re)productive organism. Within the security apparatuses of biopower, life is no longer a process of individual experience and will, but a function of state power. This “modernized body,” writes Ed Cohen,

arises as an artifact of intense human interest and investment. Informed by a confluence of finance capital, philosophical reflection, and scientific theory, not to mention military formations, colonial relations [...] technological advancements [...] educational regimes, health care protocols, among many other factors, the modern body aspires to localize human beings within an epidermal frontier that distinguishes the person from the world for the duration which we call a life. (7)

While the “modern body” is both defined and restricted by its “epidermal frontier,” the “pre-modern” body possesses an entirely different relationship to the surrounding world and to the processes of living more generally. If the modern body is a “proper body,” writes Cohen, then the “non-modern or pre-modern body” is equivalent to Mikhail Bakhtin’s ‘grotesque body’: “a body radically open to the world both temporally and spatially, simultaneously eating, shitting, fucking, dancing, laughing, groaning, giving birth, falling ill, and dying” (7). While Woolf’s fevered body is not the degraded, “grotesque body” as defined by Bakhtin, it is a body “radically open to the world,” one

that finds pleasure in dancing, laughing, illness, and even death, and one that refuses the boundaries that construct and define the modern body.

In *The Voyage Out*, Woolf critiques the limitations imposed upon these modern bodies by offering an alternative vision of life and living, one in which the pre-modern body is privileged as an open, sensual organism connected to the environment. “Less modern ideas about living beings,” writes Cohen, “ensconce organisms in a material world whose vital elements form – and whose fluxes and flows inform – their aliveness” (8). In *The Voyage Out*, the pre-modern body is that which is most alive precisely because it exists in constant exchange with the world at large. In order to imagine this alternate mode of living, Woolf returns to the Elizabethan age, when the world was “fresh and flowing, unexplored, and of infinite richness” (“Traffics” 333). During the Elizabethan era, Britain was not a “circumscribed mound, eternally burn, eternally scarred” (18), but a “precious stone set in the silver sea” (Shakespeare) whose horizons extended to the mysteries and wonders of the New World. For Woolf, the Elizabethan voyages of Sir Walter Raleigh and Sir Francis Drake among countless others stimulated the imagination of an entire nation. In an essay on “Sir Walter Raleigh” (1917), Woolf writes, Raleigh’s “adventures by sea and land, his quest for Eldorado and the great gold mine of his dreams” and his many travels to “unknown land[s] inhabited by savages” combine to give the reader “a sense of the space and opportunity of the Elizabethan age” (92).²¹ For Woolf, the Elizabethan travel narratives represented a different “attitude of

²¹ For Woolf, one of the most prolific and inspiring Elizabethan travelers was Sir Walter Raleigh, whose famous expeditions to South America depicted the continent as full of infinite wonder and treasure, and cast Guiana as the highest prize in the burgeoning English imperial imaginary. In “Sir Walter Raleigh,” she writes, “no man was a truer representative of this Elizabethan world than Sir Walter Raleigh” (92). Though the article was published two years after *The Voyage Out*, Woolf’s fascination with the famous explorer is well documented in her earlier essays on Richard Hakluyt. Woolf’s familiarity with Raleigh’s *Discovery of*

mind, large, imaginative, unsated” (“Traffics” 333). This pre-modern era, writes Woolf, was an era of unprecedented wealth and grandeur precisely because pre-modern minds privileged open exchange and imaginative (re)production: an era which stands in stark contrast to the closed borders and petty minds of the modern age.

In *The Voyage Out*, South America is repeatedly depicted as Elizabethan in nature. Santa Marina appears much as it did “in Elizabethan days” (89). The river that carries Rachel and Terence into the heart of the jungle also appears as it did when Raleigh first arrived: “Since the time of Elizabeth very few people had seen the river, and nothing had been done to change its appearance from what it was to the eyes of the Elizabethan voyagers” (264). As the company travels upriver, the jungle and waterscapes they see increasingly reflect similar scenes described by Raleigh three hundred years prior.²² For Evelyn, the landscapes and rivers of South America make her long to be an Elizabethan soldier. Evelyn expresses her desire to return to an earlier age when the world was still new and the future of the British Empire had yet to be written: “I’d raise a troop and conquer some great territory and make it splendid. You’d want women for that” (136). Evelyn, like Rachel, consistently rejects the discourse of disease and the technologies of security that seek to protect her body from the dangers of the tropical landscape. Evelyn also refuses to marry and prefers instead to cultivate alternate relationships with both men and women predicated upon exchange and mutual

Guiana is evident in her 1906 article on Hakluyt, and her later diary entry suggests her first encounter with the inspiring text occurred when she was still a teenager.

²² In an earlier version of the novel, Hirst goes on to remark, “I feel just like the late Sir Walter Raleigh” (54). Terence Hewet completes the link between their modern voyage and Raleigh’s earlier expedition when he responds, “Sir Walter Raleigh – now was this the river they discovered when they came to South America?” (54). Although the direct reference to Raleigh is omitted in final edition of *The Voyage Out*, the allusion remains, as Hirst rightly concludes that the river, the jungle, “the profusion of leaves and blossoms and prodigious fruits” must be “where the Elizabethans got their style” (268).

fulfillment. In the concluding pages of the novel, after Rachel's death, Mr. Perrot asks Evelyn to marry him. Evelyn rejects the proposal, but expresses a desire for intimacy and companionship beyond the limits of marriage. She acknowledges that she cares deeply for Perrot, but she tells him, "I think I want more" (366). Rather than marriage, she delights in the prospect of remaining friends: "we'll go on being friends, what ever happens," she says; "I never see why one shouldn't go on being friends . . . friendships do make a difference, don't they? They are the kind of things that matter in one's life?" (367). Evelyn's own proposal undermines the very foundation of the social regime that will constrain and confine her. Her desire for companionship and intimate friendship is one that suggests a different type of sexual desire and passion that is not predicated upon the surveillance, management, or pathologizing of women's bodies. Woolf's fantasy that women may be strengthened by an alternative immunological relationship to the world, in which their bodies are connected to, rather than defended against, outside forces does not die with Rachel.

Cast as a pre-modern body, Evelyn is strengthened, not made ill, by her openness and intimate connection to the landscapes and people in this New World setting. As the most forward-thinking and intellectually fertile body in the novel, Evelyn constantly craves new experiences and relationships and refuses to be contained by modern men who seek to limit her movements and creativity. Evelyn arrives in Santa Marina alone, without the company of a husband or father. When asked about her family, she replies that she is "the daughter of a mother and no father" (190), and that she "looked after [herself] mostly" (191). Woolf constructs Evelyn as free from the constraints of any patriarchal authority and as a woman who refuses a narrative of patriarchal lineage. Her

fertility is not dependent upon marriage and biological reproduction; rather, her unbounded connection to the world stimulates her intellectual and creative reproduction and inspires her “to really *do* something” (192) and to *live* life “as it ought to be” (136). In *The Voyage Out*, Woolf refigures the role of women and illness in the conquest and cultivation of the tropics. Throughout the novel, Woolf engages with concepts of immunity that were redefining women’s bodies in the tropics as vulnerable and in need to protection and enclosure. However, by depicting Rachel and Evelyn as empowered by their contact with the jungles and rivers of South America, Woolf offers an alternate vision of immunity predicated on an ethos of symbiosis and community. By removing women’s bodies from the constraints of a masculine regime of security, Woolf redefines the female body “as a functioning construct that is open to continuous exchange with its surrounding environment” (Esposito 17), and which is strengthened, not enfeebled, by new forms of contact and exchange.

**Concerning the “Contaminated” Native:
Tropical Medicine and Colonial Economies in
Evelyn Waugh’s *Ninety-two Days, Travels in Guiana and Brazil***

There are hordes of natives in many centres who have little chance of medical treatment and the untreated sick become a menace to the rest of the community.

Natives in Medicine and Public Health 1928

If we can increase the productivity of the African natives, they will buy more things from us.

Advisory Committee on Colonial Development, 1929

The native is the reservoir from which the white man, who is obliged to live in close proximity with him, becomes infected.

Reports on Public Health for the Year 1931

[The Machushi Indians] are a highly cosmopolitan and contaminated lot.

Evelyn Waugh, *Ninety-two Days* 1933

In 1924, millions of people flocked to Wembley to witness one of the most spectacular and costly displays of Empire ever constructed: The British Empire Exhibition. The official Guide to Wembley advertised the event as an extraordinary demonstration of British power and ingenuity, where the entire Empire was represented in miniature and made accessible to the public. King George V declared the event officially open on St. George’s Day, April 23rd.²³ The *British Medical Journal* praised the King’s inaugural speech for its emphasis on the importance of medicine and health to the success of the Empire. “The King spoke of health as one of the most vital imperial interests,” the author states, “and in many buildings throughout the Exhibition there are records of great

²³ This speech was also the first large-scale public broadcast of the British Broadcasting Corporation, and King George’s declaration of the event reached more than ten million people (Briggs 265). See Asa Briggs, *The History of Broadcasting in the United Kingdom: The Birth of Broadcasting*. Oxford: Oxford University Press, 1961. 265

achievements which were only rendered possible by the preliminary conquest of some disease” (“Health” 1012). Included among the hundreds of displays celebrating the vast holdings and success of the Empire was the Tropical Health exhibit. Situated in the Government Pavilion within the Overseas Branch of the Board of Trade, the Tropical Health Section provided a vivid visual history of tropical medicine and its role in the expansion of the British Empire. From placards celebrating the success of Sir Patrick Manson and Sir Ronald Ross and their contribution to malaria research, to large displays educating visitors on the nature of dozens of tropical diseases, the expansive Tropical Health exhibit made visible to the British public the importance of tropical medicine to the current and future success of British imperial and economic expansion.

The primary motivation behind the staging of the Wembley Exhibition was the need to boost economic growth at home and abroad after war. The official Exhibition *Guide Book* declared that the main purpose of the Exhibition was “to find, in the development and utilization of the raw materials of the Empire, new sources of Imperial wealth,” and “to foster inter-Imperial trade and open fresh world markets for Dominion and home products” (qtd. in Mackenzie 214). The ability to open markets in the West Indies, India, Africa, and South America and expand British power throughout much of the globe depended in large measure on the advancements made in tropical medicine during the late nineteenth and early twentieth centuries. During the opening of the Exhibition, the *British Medical Journal* observed that “the Wembley Exhibition would be only an incomplete record of the history and achievements of the Empire if it did not include some demonstration of those researches into the prevention of disease” and advancements in “sanitary science, without which in many places there could have been

but little European colonization” (“Exhibition” 675). Advancements made in sanitary science, hygiene, parasitology, and bacteriology provided the means by which white British (and other European) colonists could cultivate virile, immune bodies and protect themselves from disease, thus enabling British settlement and cultivation throughout regions previously known as ‘the white man’s grave’.

In 1924, Great Britain joined forces with the United States in the war against tropical disease. The collaboration was marked by the merging of the Johns Hopkins School of Hygiene and Public Health with the London School of Tropical Medicine to form the new London School of Hygiene and Tropical Medicine. With substantial financial backing from the Rockefeller Foundation, the new London School opened its doors to students in 1926 and became, along with Johns Hopkins, the dominant center for the study of tropical medicine during the 1920s and early 1930s.

In 1932, Evelyn Waugh traveled to British Guiana and northern Brazil. He spent three months exploring the jungles, savannahs, and townships of a region that had long been considered one of the most valuable yet diseased reaches of the Empire. During his journey, Waugh travels from Guiana’s capital, Georgetown, through the cattle ranches of the Rupununi savannah, and to the once-prosperous town of Boa Vista on the Brazilian border before finally turning back again. Waugh’s *Ninety-two Days* (1932) recounts his travels through Amazonia, and has been examined within the genre of 1930s travel writing. Scholars have particularly focused on Waugh’s use of anti-adventure as a means to critique a fading Empire in the face of deepening economic depression.

However, the descriptions Waugh provides of the effects of development schemes and medical campaigns on indigenous populations in Guiana and Brazil reveal a much

more complex and critical picture of the state of the tropics under imperial control and the effects of recent health initiatives on native bodies and environments in the region. As Waugh explores this tropical colony, he finds much of Guiana and northern Brazil riddled with fever and in the throws of economic decay. What remains, however, are remnants of corporate development schemes and medical campaigns designed to improve economic productivity in the region and increase international trade with Britain and the US. In this chapter, I argue that *Ninety-two Days* serves as a commentary on the transitions that occurred in tropical medicine during the 1920s when the motives for disease eradication and investments in native health were largely driven by economic and corporate interests. By the early 1930s, the Great Depression had begun to impact Britain and the US more broadly, and corporate investors and government bodies largely withdrew from the region due to limited funds. Written from the vantage point of the early 1930s, *Ninety-two Days* functions as an acerbic commentary on both the efforts of disease campaigns in the 1920s as well as the deleterious effects of these campaigns, and their dissolution, on native bodies and environments. This chapter examines Waugh's engagement with the developments in tropical medicine during the period that is framed by the deaths of two of the most important men in the history of tropical medicine, Sir Patrick Manson in 1922 and Sir Ronald Ross in 1932.

By 1914, the discipline of Tropical Medicine had been firmly established in Great Britain and throughout much of Western Europe. In addition to the London and Liverpool

Schools of Tropical Medicine, the Pasteur Institute in Paris, the Institute of Tropical Medicine in Hamburg, the Koch Institute in Berlin, and the School of Tropical Medicine in Brussels all contributed to advancements in parasitology, bacteriology, and tropical hygiene. In *Networks in Tropical Medicine*, Deborah Neill notes that in the years leading up to the First World War, interconnectivities and scientific collaboration between different European nations “flourished, despite the imperial, political, and military rivalries that characterized the relationships between European states in this period” (2). The reciprocity exhibited in the application of parasitology and bacteriology – established by Koch and Pasteur – to the discovery of the malaria parasite and its mosquito vector – attributed to both Ross and Manson – is indicative of the intellectual networks necessary for scientific and medical advancement. The science of tropical medicine in particular depended upon “vibrant networks” that were both “intra-colonial as well as international” (Neill 3). These scientists were part of an “epistemic community” of tropical medicine and were united by a shared commitment to scientific advancement, research, and the spread of Western medicine (specifically bacteriology and parasitology) throughout their respective colonies (7). The solidarity of tropical medicine specialists was based in a shared belief in “the superiority of European technology, science, and culture” (7), and the role of medicine in the betterment of society and the civilizing mission.

During the First World War, work in tropical medicine in Europe largely came to a standstill. Laboratory research in particular came to a complete stop as physicians redirected their resources and services toward military service and providing care for troops at home and abroad. However, lines of communication between various tropical medical networks, including those between Britain, France, and Germany remained open,

at least initially. Yet, by 1916, as the war dragged on and death counts rose beyond anything Europe had ever seen, the “cultural, scientific, and social networks that had formerly linked doctors, scientists, and the wider populations” disintegrated (185). While the study of tropical medicine largely stagnated in Europe during the War, across the Atlantic in the United States a new institutional body dedicated to tropical diseases was growing. In 1914, the International Health Commission was founded under the guidance and financial support of the Rockefeller Foundation. The International Health Commission worked “for the prevention and cure of disease with the world as its field of operation” (qtd. in Farley 75). The Internal Health Commission divided its ambitious field of operations into three main geographical areas: Latin America, the West Indies, and the East (75). Due to the success of the Hookworm campaign in the US South, and the ambitions of the Rockefeller Trust to gain international influence, Board members of the Foundation determined that the United States required an official centralized institution for the study of tropical medicine and public health.

While various Medical Schools across the U.S. housed research departments in parasitology, helminthology, and medical entomology, a dedicated branch of public health and tropical medicine had yet to be established. By the 1920s, Johns Hopkins emerged as one of the most powerful bodies of tropical medicine in the world.²⁴ As early as 1911, J.D. Rockefeller had gifted millions of dollars to the Johns Hopkins Medical School in Baltimore for the development of clinical and research departments.

²⁴ Farley notes that the Johns Hopkins School of Hygiene and Public Health did not in fact have a specific department dedicated to tropical medicine, despite the School’s expertise in the topic. However, due to the combined specialties of protozoology, helminthology, medical entomology, and filterable viruses, the research undertaken at the School undoubtedly focused on issues related to tropical medicine. In 1919 Robert Welch emphasized, “The extension of the work of the International Health Board to tropical countries might be aided by the representation of tropical medicine in the School of Hygiene and Public Health” (qtd. in Farley 84).

Rockefeller believed strongly in the research mandate of the school and its dedication to laboratory science and philanthropy. In 1915, the Foundation granted additional funds to the school for the establishment of a School of Hygiene and Public Health “for the advancement of knowledge and training of investigators, teachers, officials, and other workers in these fields” (qtd. in Farley 83). With substantial support from the Rockefeller Foundation, the School opened in 1918 and continued to grow throughout the 1920s, receiving nearly \$8 million from the Foundation for research and laboratory facilities. By the early 1920s, the Johns Hopkins School of Hygiene and Public Health arguably had become “the single most important center for tropical medicine in North America” (Farley 72). Just as the London School of Tropical Medicine projected international influence in the early part of the century, the School at Johns Hopkins helped shape international health policy and held great influence over the League of Nations own Health Committees during the inter-war years.

From the start of the First World War through the interwar years, the International Health Board of the Rockefeller Foundation “dominated the field of tropical medicine” (Farley 72). From 1916 to 1940, the Rockefeller Foundation developed programs to eliminate hookworm, malaria, and yellow fever in large parts of Latin and South America, including Panama, Columbia, and Brazil, as well as Guiana and the Caribbean. The Foundation was most active in Brazil between 1916 and 1924. During this period, Brazil functioned as a testing ground for experiments in disease eradication, a practice that historian Marcos Cueto describes as “one of the most ambitious and controversial concepts in modern public health” (222). In 1924, the Foundation ended its investments in hookworm eradication in Brazil (after achieving mixed results), and turned its attention

to combating yellow fever and malaria by means of vector eradication. By the early 1920s, both Great Britain and the League of Nations had joined forces (and finances) with the International Health Board and Rockefeller Foundation. Although the Foundation and the League of Nations would come to disagree on the practice of vector eradication, the Rockefeller Foundation successfully expanded its power and influence (and extended US interests) throughout the British colonies during the 1920s.

In 1919, the International Health Board announced its intentions to establish schools of hygiene and public health in Toronto, London, Budapest, São Paulo, and Warsaw. These schools were to be modeled on the Johns Hopkins School for the purpose of improving public health on an international scale and expanding US medical initiatives and economic interests worldwide. Due to the great success and international influence of the London School of Tropical Medicine, the International Health Board set its sights on London as the next home of US tropical medicine. The International Health Board understood the “importance of London as a strategic center” for “spreading the message of [US] scientific medicine into the British Empire” (87). Since Great Britain was still suffering from the War, the British government was more than willing to entertain proposals from the International Health Board. A Medical Committee was established to evaluate the current conditions at the London School of Tropical Medicine, which had recently been relocated from the Albert Docks to Endsleigh Gardens near University College. Since the London School was already in transition, the Ministry of Health approved the proposal from the International Health Board that the London School serve as a single institute for the study of tropical medicine *and* public health, with the understanding that the Rockefeller Foundation would fund a large portion of the new

School and its research initiatives. In 1921, the International Health Board pledged two million dollars for establishing a school of hygiene in association with the School of Tropical Medicine, and later committed to providing \$25,000 per year towards maintaining and operating the School (Farley 88). In April 1924, the new London School of Hygiene and Tropical Medicine received Royal Approval, just as the British Empire Expedition opened in Wembley. Two years later, Neville Chamberlain, Minister of Health and son of Joseph Chamberlain, laid the foundation stone at the new School, a symbolic nod to his late father who established the first London School of Tropical Medicine with Patrick Manson twenty-five years prior.

The new London School operated much like the Johns Hopkins School: the “London School of Hygiene and Tropical Medicine,” writes Farley, “had become the Johns Hopkins of the British Empire, carrying with it the mandate of the International Health Board to extend the benefits of scientific medicine to the British colonies” (89). The “scientific medicine” celebrated by the Johns Hopkins School determined the ways in which “public health” was defined in the US and in Britain during the 1920s and early 1930s. “Scientific medicine,” as defined by Johns Hopkins and the International Health Board, was that which focused exclusively on the physiological effects of disease; the modes of infection; the life cycle of parasites; and the scientifically-proven, often chemical-based methods of vector and parasite eradication. As the Johns Hopkins School of Hygiene and Public Health was established for the purpose of promoting public health on a national and international scale, what constituted ‘scientific medicine’ thus came to define what constituted public health. In *Disease and Discovery*, Elisabeth Fee notes that public-health training at Johns Hopkins took an exclusively disease-oriented approach.

According to the International Health Board, public health measures at Johns Hopkins would be designed to combat one specific disease at a time by focusing on parasite eradication, pharmacologic prophylaxis, and chemical experiments. Such widespread issues as “congestion of population in cities, the condition of tenement houses, the elimination of slums, recreational centers, alcoholism, prostitution, and the standard of living” did not concern scientists (qtd. in Fee 39). Rather, supporters firmly believed the eradication of mosquitoes and parasites would ultimately lead to a more efficient work force, which would in turn improve economic conditions and resolve underlying issues of poverty, hunger, and crime.

The success of the hookworm campaigns in the US South boosted the confidence of the Rockefeller Foundation and those working at Johns Hopkins, providing the evidence necessary to garner international support and influence after the War. According to Frederick Gates and other members of the International Health Board, public health could be achieved only if individual disease agents were eliminated. “Disease is the supreme ill of human life,” Gates declared, “and it is the main source of almost all other human ills – poverty, crime, ignorance, vice, inefficiency, hereditary taints, and many other evils” (qtd. in Farley 75). Therefore, eliminating hookworm or the mosquito vectors for malaria and yellow fever would ensure that the “evils” of poverty, malnutrition, crime, and undesirable (racially coded) ‘hereditary taints’ would similarly be eliminated from society. By assuming that disease outbreaks were an exclusively biological problem, the new scientific theories of the 1920s largely ignored issues of poverty, malnutrition, and mounting social inequities. In the aftermath of the First World War, new international health organizations emerged, including the League of Nations Health

Organization and Malaria Commission, and the International Labor Organization (ILO). Each of these organizations joined forces with the International Health Board, which served as the main financial source for many of the organizations' health campaigns.²⁵

During the 1920s and early 1930s, Tropical Medicine was marked by the rise of social medicine with its commitments to social welfare and a general move away from the management of epidemic and infectious diseases on a larger population-based level. However, from a historical standpoint, the emphasis on social medicine and welfare was deceptive. Within the narrow definition of scientific medicine espoused by the International Health Board and practiced by the League of Nations Health Office, social medicine was limited to laboratory-based technical responses to individual disease agents thought to be responsible for larger social ills. During the 1920s, the methods proposed by the International Health Board for the eradication of hookworm, malaria, or yellow fever were generally met with great enthusiasm and received both national and international support. Not only were many of these campaigns relatively inexpensive, but also the many methods of eradication appeared to be wide reaching, required little cooperation from local and indigenous inhabitants, and did not require the building and maintenance of more permanent infrastructures (all of which would have more negative consequences than the initial campaign). Many eradication methods also seemed to work relatively quickly. In turn, the initial positive effects on the target population as reported

²⁵ Paul Weindling writes that the League of Nations Health Office received considerable financial support from the Rockefeller Foundation during the 1920s and early 1930s. Between one third and on half of the LNHO budget came from the RF, he writes. Between 1922 and 1927, the RF gave \$350,000 to the LNHO for epidemiological intelligence; between 1922 and 1929 the RF gave \$500,000 for the interchange of medical officers; and between 1930 and 1934, the RF granted the LNHO an additional \$700,000. The RF also contributed \$2 million to the League of Nations Library (137). See Paul Weindling, "Social medicine at the League of Nations Health Organisation and the International Labour Office compared." *International Health Organisations and Movements, 1918-1939*. Ed. Paul Weindling. Cambridge: Cambridge University Press, 1995. 137.

by the Rockefeller Foundation and the International Health Board served to further demonstrate the efficacy of the campaigns and helped solidify the role of the Rockefeller Foundation in medical policy internationally.

Earlier efforts made by Ronald Ross to identify the broader social forces responsible for the spread of malaria were abandoned in favor of policies that focused almost exclusively on the eradication of the mosquito vector during the 1920s. In “Social Medicine at the League of Nations,” Paul Weindling argues that ‘social medicine,’ as defined by the International Health Board, “was often tainted by eugenics with biologically based concepts of the poor and sick as an hereditarily degenerate and (so-called) ‘social problem group’” (136). Moreover, he writes, “the type of laboratory or statistically based studies supported by the Rockefeller Foundation masked immense socio-economic and gender inequalities. Much research was merely applied physiology rather than analyzing health as a complex result of living and working conditions” (137). Although the League of Nations Malaria Commission would object to the exclusive focus on eradication measures in 1924, the dominance of the Rockefeller agenda (now linked with the London School) meant that the focus on tropical medicine in the interwar years was largely based on managing individual bodies and environments to eliminate hookworm and the mosquito vector of malaria. The individual disease campaigns launched by the Rockefeller Foundation under the International Health Board as well as the League of Nations included systematic surveying, identification, and eradication of isolated disease elements in many regions where malaria or hookworm were believed to be endemic, and in regions in which both the US and Great Britain were invested economically. Due to the prevalence of these diseases in the Caribbean, West Indies, and

South America, and due to US and British economic interests in these tropical regions, the majority of the earliest and most invasive eradication campaigns were launched in these tropical spaces.

The management and control of tropical diseases in the 1920s focused on two main sources of disease: tropical environments and indigenous bodies. The primary methods used to control the mosquito population included a range of highly toxic chemicals and oils designed to kill insect larvae and render marshlands uninhabitable for mosquitoes; draining lands of stagnant water; stripping and burning bush land to eliminate mosquito breeding sites and prepare the land for cultivation; and the strict management of native bodies by means of segregation, chemical prophylaxis, and invasive hookworm treatments. The practice of oiling local streams, rivers, and wetlands was particularly common. Spreading oil such as kerosene or other petroleum products along waterways was thought to kill mosquito larvae by suffocating them, as they could not break the surface to breathe. The oil would also prevent mosquito eggs from hatching if they were laid on the polluted waters. Paris Green, a powerful insecticide, was also a popular choice. The volatile mixture consisted of copper acetate and arsenic trioxide and was often spread as a powder over wide areas of grass and marshland to destroy the insects (and all other life) in the treated areas. For the management of mosquitos in the air and inside homes, insecticides such as pyrethrum sprays were commonly employed. Pyrethrum, or Flint as it was commonly called, was a chemical derivative of the *Chrysanthemum* plant, which, when manufactured as an insecticide, could be safely sprayed as a fog or mist inside homes and around buildings. Aside from direct methods of insect eradication, the process of clearing land for the cultivation of European and

American cash crops such as cereals and corn was also believed to create a healthier environment, and therefore healthier people. In addition to chemical eradication, the use of mosquito netting, and building houses for optimal ventilation and screening also promoted healthier people and environments. Part of maintaining the health and immunological privilege of the white settler also demanded that he be removed from contact with the diseased native, who, because of his close relationship to the land, was inevitably a carrier of that very enemy that rendered the tropics dangerous to white bodies.

During the British Empire Exhibition at Wembley in 1924, the success of these tropical health initiatives and eradication campaigns are clearly celebrated in the displays of the Tropical Health exhibit. The use of modern chemicals, oils, housing, and cultivation techniques are highlighted in the exhibit in order to demonstrate how such methods in disease control have dramatically transformed the tropical landscape from ‘the white man’s grave’ to a prosperous, healthy, and profitable site for British travel and investment. The Tropical Health exhibit consisted of four main attractions, including two tableaus, a display of twenty-seven tropical diseases, and a depiction of important plant diseases. Of the exhibit, the two tableaus most strongly illustrate the history of tropical medicine and the vital role of medicine in the role of Empire. The displays at the Tropical Health exhibit provide a clear narrative of the history of tropical medicine and celebrate the advancements made in the field as central to the development of the tropics and economic health of the Empire and its Colonies.²⁶ The tableau featuring the white, virile

²⁶ The details of many of the most important discoveries in tropical medicine appear in the third section of the exhibit. Here, no less than twenty-seven diseases are depicted in an elaborate series of photographs, illustrations, models, and specimens. Each disease display also includes a full description of the nature of the illness; the parasite and vector involved; the discovery of the disease and its transmission; and the

male body conquering and cultivating this previously malarious tropical colony projected an image of biological and economic fertility to the British public. By equating scientific achievement with heterosexual reproduction and economic growth, the tableau functioned within the Wembley Exhibition to reinvigorate confidence in the imperial project.

The first tableau depicts a jungle scene from the late nineteenth century, prior to the work of Sir Ronald Ross and Sir Patrick Manson and the discovery of the mosquito vector of malaria. In the scene, an English explorer, wasted and skeletal with sunken eyes and yellow skin lies dying of malaria outside what appears to be a grotesque caricature of a primitive native hut. The dense, uncultivated jungle and profuse foliage overwhelm the scene and suffocate the English body at the center. A nearby stream is choked with vegetation, its waters stagnant and fetid. The air, water, soil, and native dwelling swarm with mosquitoes, which clearly mark this site as threatening to the non-immune, vulnerable white body. The second tableau depicts the same location twenty-five years later. The jungle has been cleared and primed for cultivation. The once swamp-like river has been cleared of weeds and now flows freely, and is no longer a breeding ground for mosquitoes. To further emphasize the elimination of mosquitoes, the waters of the stream are coated in oil, a common method of vector eradication introduced during the period. The now healthy-looking Englishman stands outside a large bungalow, which sports screens on the windows and doors and mosquito nets in every room. The man is now healthy, virile, and stands erect at the center of what is now clearly his domain.

means of eliminating the malevolent tropical foe through sanitation, eradication, and pharmacological prophylaxis. The display foregrounds malaria, yellow fever, typhoid, cholera, hookworm, filairus, and leprosy among others. Each disease is accompanied by information instructing the visitor on how to identify the parasite, its vector, and the constitutional symptoms of a person infected by each illness.

Significantly, the bungalow is positioned far away from the native dwellings, which have been replaced by what the *British Medical Journal* describes as “trim native huts of an improved sanitary type” (“Exhibition” 675). These protections against the mosquito and the diseased native have made the jungle prosperous and safe for white settlement and investment. These tropical spaces are now safe enough, the tableau suggests, for the Englishman to bring his wife, who stands with him outside the bungalow.

In *Ninety-two Days*, Waugh is frequently confronted by a variety of measures designed to control tropical diseases and secure the body against infection. One of the most immediate diseases of concern is malaria. Upon his arrival in Georgetown, the capital of Guiana, Waugh is met by a swarm of mosquitoes. At the hotel, Waugh notes that every effort has been made to protect guests from the fever-ridden mosquitoes by providing mosquito netting and chemical repellent. Waugh notes that the room he has rented includes “a large bed with mosquito netting,” and that the entire hotel is filled with “the faint smell of ‘Flint,’” which he finds reassuring (21). While mosquito nets have been used to protect against malaria for decades (and used against insects more generally for centuries), the use of ‘Flint’ as a chemical insecticide was a more modern invention. The pyrethrum spray was used as both an insect repellent and an insecticide, and was frequently used inside buildings to eliminate mosquitoes that would hide in dark, warm corners away from any wind. As Waugh gathers supplies for his journey, he is particularly concerned with acquiring the proper equipment to protect himself against malaria. In addition to purchasing food provisions, a hammock, and a gun, Waugh ensures he has a suitable mosquito net as well as a tarpaulin to protect himself from the rain and from insects. He writes that numerous local inhabitants repeatedly warn him

against exposing himself to infection, and that without netting and a tarpaulin he would “undoubtedly get fever” (31). In addition to netting, insecticides, and quinine, Waugh also remarks on a variety of rather dubious tropical medicine imports designed to protect against malaria, including such products as “crab oil and antiseptic soap” (80), and the popular though ineffective ointment known as “Radway’s Rapid Relief” (93), designed to relieve all forms of fever and ague. While Waugh finds many such anti-malaria commodities ludicrous, his concern about protecting his body against invasion from parasites and insects compels him to use both the oil and the soap in addition to the more traditional netting and quinine.

Waugh’s anxieties about contracting malaria or some other debilitating tropical illness are exacerbated by Mr. Bain, who serves as Waugh’s guide during his journey. Mr. Bain is chronically plagued by fever. Though “indefatigable in his duty,” Mr. Bain is “not strong,” as “frequent attacks of fever had left him bloodless and fleshless” (35). In addition to looking as if he has been literally sucked dry by the swarms of mosquitoes that haunt the region, Mr. Bain also suffers from “constant appalling bouts of asthma” (35), a chronic lung disease that is particularly aggravated by hot, tropical climates. While Waugh finds Mr. Bain’s incessant gasping and wheezing disturbing, he is more concerned with protecting himself from malaria. While sitting on a train destined for New Amsterdam, Waugh and Bain are attacked by a swarm of mosquitoes that enter through the carriage windows. Bain warns Waugh that the mosquitoes “were probably all infected with malaria,” and recommends “constant, large doses” (36) of quinine be consumed to manage the inevitable infection. Mr. Bain also adds his own theory about the negative effects of quinine, postulating that the drug undoubtedly “caused deafness, insomnia and

impotence” (36).

Throughout his journey, Waugh is constantly preoccupied by the innumerable insects that inhabit the grasslands, savannahs, rivers, and forests of the region. He is particularly concerned with those pests that manage to penetrate his protective netting and clothing and violate his bodily integrity by biting, stinging, pinching, and burrowing deep under his skin. “Insects played a fairly prominent part in my experience through all this period” (80), Waugh writes. The long passage through the grasslands and along the Essequibo River proves especially dangerous and cumbersome due to the swarming insect life. “It is quite accurate to say,” writes Waugh, “that in the weeks from leaving Kurupukari until some time after my final return to Georgetown, there was not a two-inch square on my body that was not itching at some time of the day or night” (80). During his journey, Waugh is assaulted by numerous species of flies, fleas, ticks, and worms. The *bêtes rouges* brush off leaves and onto Waugh’s clothing where they find their way to bare skin and cause “unendurable itching” (80). “My arms and legs were covered with these,” Waugh writes, “and I scratch until I was raw” (80). Ticks consistently attach themselves to his body, burrowing their heads “deep and tenacious into [his] flesh” and swelling “to the size of a pea” (80). Every evening one must spend a “half hour picking ticks off one’s body” (136). The cabouri flies are also a constant annoyance. The tiny black flies form dense clouds around their victims “completely covering every exposed surface” of their intended prey, such that Waugh must cover his hands and face with towels and handkerchiefs to try and protect his exposed skin. The flies constantly bite and consume his blood, leaving behind “a circle of burning flesh” (80). The constant invasion of insects nearly drives Waugh mad.

Waugh's body is repeatedly pierced and scarred by tropical parasites that drain his blood and threaten to infect him with fever, hookworm, and sepsis. As Waugh travels through the Ireng district, he finds his body under attack by a new invasive threat: *djiggas*. These small insects, Waugh explains, "live in and round houses; they work their way through one's boots to the soles of one's feet where they drill holes and lay their eggs, preferably under the toenails or any hard piece of skin" (161). Waugh spares no detail in conveying the horror and disgust of these insects to the reader. Within a few days the larvae begin to grow, he writes, "raising a lump which is at first irritating and later painful. If allowed to remain, they hatch out into maggots in the foot and serious poisoning sets in" (161). Waugh continues to describe the process of removing the eggs before they hatch, lest they grow and infect the blood stream. The only way to remove them is to have another person take a sharp pin and open the skin at the site of invasion and remove the egg pouch, carefully, so as to not release the eggs into the blood. Waugh experiences numerous attacks by *djiggas*; Waugh's servant, Antonio, examines his feet every evening and removes the eggs. In one instance, a parasite remains, and the growing maggot causes a deep infection in Waugh's toe: "I was suffering from an inflamed toe where one of them had become slightly poisoned" (163). The infection is extremely painful and significantly limits Waugh's mobility. "It was astonishing and slightly ludicrous that so small a disability could effect one so much," he writes: "a single minute limb, shiny, rosy and increased by half of an inch at the most in girth, made one dead lame" (163). The mere act of walking "was acutely unpleasant; not only was every step very painful but the effort to the rest of the body was absurdly magnified" (163). The disability caused by these parasites and the horrific image of eggs, worms, and maggots

crawling underneath one's skin provoke a distinct feeling of unease in the reader.

Waugh's description of worms tunneling through the soles of one's feet and laying eggs also alludes to hookworm infection. Hookworm was one of the most prominent and devastating parasitic diseases associated with the tropics, and commanded significant attention from tropical medicine campaigns in the 1920s. The microscopic worm has an exceptionally horrific life cycle through the human body, the details of which contributed to the feelings of disgust and contempt among white workers towards indigenous and African bodies. The worm, spread through human feces, invades the body by attaching itself to the soles of the feet, where it bores a small hole and enters the flesh. Once inside, it enters the vascular system where it is then transported to the lungs. The irritation of the parasite in the bronchioles causes the victim to cough, transporting the worms from the lungs to the mouth where they are then swallowed and deposited in the intestines. Once the worms invade the intestinal mucosa, they begin to feed off the victim's blood and multiply, leading to increased blood loss and progressively worsening anemia. As the worms mature, they deposit eggs in the lower intestine, which are passed in the stool, hatch into larvae, and are in turn picked up by the next unsuspecting victim. The effects of hookworm infection are debilitating. The victim is often severely anemic, which leaves him fatigued, lethargic, and minimally functional either physically or cognitively. The infection also causes a curious compulsion to eat dirt, possibly due to a mineral deficiency, which led white colonists and physicians to refer to victims degradingly as 'dirt-eaters.' Because the parasite is passed through human feces, the working conditions on large farms and plantations provided an ideal site for infection and transmission. As only native and African laborers were employed to work the plantations,

whether sugar, cotton, corn, or other cash crops, the perpetual poverty and lack of sanitation measures (including proper clothing, shoes, and functional privies) ensured a vicious cycle of infection.

The devastating physical and economic consequences of hookworm infection in the US South and the British colonies prompted the Rockefeller Foundation and government officials to launch hookworm campaigns to eradicate the parasite in regions throughout South America and the West Indies. The Rockefeller Foundation financed hookworm campaigns in Brazil and Guiana from 1916 to 1924. These health initiatives, under the mandates of ‘medical science,’ were designed to eradicate the disease at the level of the parasite, and tended to neglect the sanitary and nutritional needs of the workers. Clinics were established to treat individual patients by forcing them to consume an elixir of Epsom salts and thymol, which poisoned the parasite (and the host) and caused profuse vomiting and diarrhea, thus expelling the worm from the victim. The lack of privies and proper footwear was known to contribute to the cycle of transmission and infection; however, building privies and increasing incomes for workers to purchase shoes proved too expensive, leading tropical health workers to focus on chemical expulsion of the parasite from the intestines. Although the hookworm campaigns showed promise initially, the inability to fully eradicate the parasite and maintain healthy workers prompted the Rockefeller Foundation to abandon the campaigns in favor of focusing their resources and energy on malaria and yellow fever eradication. However, concerns regarding parasitic infection in humans as well as domestic animals, such as cattle and horses, continued to dominate discussions of tropical health and economic growth.

While traveling through Boa Vista, Waugh encounters a scientist and tropical

medicine specialist who continues to work on parasitic diseases while stationed in this tropical outpost. The man is a veterinarian who was sent to the town to manage parasitic infections, including those that endanger valuable horses and cattle. The veterinarian has “fitted up a laboratory,” where he investigates “a prevalent form of paralysis in horses which he attributed to worms” (111). The laboratory is filled with “jars of worms,” which capture the attention of local children who stand “gaping, hour after hour” at the specimens lining the shelves (112). The veterinarian also spends much of his time travelling among the various ranches in the region, conducting research and managing the health of the domestic animals. When Waugh first arrives in the region, he remarks on the centrality of the cattle industry to the local economy and the British markets at home. Waugh observes that before the First World War “cattle were sold over the border into Brazil” (28) and to local markets in Guiana. “Then with the outbreak of war came a sudden demand for beef” (28). He notes that development schemes, including building roads and employing veterinarians, were quickly implemented to ensure the transfer of healthy product from Rupununi to the Georgetown market, where the cattle could be slaughtered or transported overseas (28). Waugh connects the veterinarian’s research into parasitic worms to the economic health and vitality of the region and the Empire.

By the end of the War, “economic factors began to play an increasingly important role” in the management and control of tropical diseases (Farley 116). If Britain was to recover after the War, and continue to grow and benefit from its colonial possessions, the most bountiful reaches of the Empire needed to be fully cultivated and made economically profitable. In the Wembley guidebook designed to showcase British Guiana, the author states: “It is probably true to say that of all the British tropical

possessions there is not one richer in possibilities of so varied a character as British Guiana” (111). The author then questions why the region has not been fully developed, and posits that this is due in part to the lack of dependable labor forces, as well as the “persistent reputation which at one time British Guiana possessed of being unhealthy” (111).²⁷ In order to realize the “limitless possibilities” for business investment and profit in the region, development schemes needed to be implemented that could transform the region into a healthy, productive colony for the benefit of the Empire, as well as the colony (112). Tropical medicine specialist Adolpho Lutz makes a similar argument in 1927 regarding the need for improved medical intervention and corporate investment in the tropics. In an article entitled, “Problems in the Colonization and Settlement of Tropical South America,” Lutz writes, “Of all the problems in the development of tropical America none is more important than the prevention of certainly highly fatal diseases” (151). In order to render these regions profitable, diseases must be managed and investments made in development schemes. “If big corporations started irrigation and planting on a large scale together with canneries for fish and fruit, and established a few good roads,” writes Lutz, Brazil (and Guiana) “might become very flourishing” (142). However, Lutz adds, “this would require much more capital than could be furnished by the native population” (142). To profit from the region, Lutz suggests, British and US corporations must invest in development schemes that could transform areas such as northern Brazil and Guiana into healthy, thriving centers of capital.

The economic focus of tropical medicine research is evident in the extent to which various corporate interests financed large centers for tropical medicine. During the

²⁷ See *British Guiana: British Empire Exhibition, Wembley 1924*. London: Baynard Press, 1924.

1920s, “many private companies doing business in the tropics, or recruiting laborers from there, came to realize that profits could be enhanced by recruiting medical staff, by building hospitals, and by sanitizing work camps for their employees” (116). The consequences of hookworm infection on indigenous and African laborers were more than physiological; they were economic. Because of extreme anemia and lethargy, hookworm (as well as chronic malaria infection) was associated with worker inefficiency, which in turn led to decreased economic productivity and loss of profits for the landowner or corporate investor. Large corporate interests in favor of boosting worker productivity and profits predominantly directed tropical medicine research and disease campaigns. Four dominant centers of tropical medicine in Britain and the US were financed by business investments. The Liverpool School of Tropical Medicine received support from various Liverpool trading companies; the United Fruit Company invested heavily in research conducted by Tulane and Harvard; the Rockefeller Foundation (which presided over dozens of business interests) financed the Johns Hopkins School of Hygiene and Public Health; and in South Africa, various mining companies invested in the Institute of Medical Research. Due to the dependence on corporate investment for tropical medical research, the veterinarian Waugh encounters in Boa Vista, with his laboratory dedicated to parasitic diseases, was undoubtedly commissioned by outside investors whose profits depended upon healthy cattle production.

During his three-week sojourn, Waugh learns that a powerful and wealthy entity, simply referred to by the locals as “the Company,” had descended upon the town in the late 1920s. The Company set its designs on Boa Vista in an attempt to “bring prosperity and self-respect” to the remote town (108). The Company wanted to transform Boa Vista

into “a thriving city, a beacon of culture illuminating the dark lands about it, a center from which they could educate and evangelize the Indians, a place that might typify the now very dubious superiority of civilized life” (109). More importantly, Boa Vista’s location made it an ideal town for investment, as it promised enormous returns to those who could successfully develop it. “Geographically and politically,” Boa Vista “held the key position to the whole, immense territory of the Northern Amazon tributaries” (108). As Boa Vista was ideally located near large cattle ranches, the Company’s design to modernize the town was centered on building a factory for the production of tinned beef. “Instead of cattle being transported to the slaughter-houses at Manaus,” writes Waugh, “they were to be butchered on the spot and tinned” (109). The result would be the production of “cheap corned beef,” which “would provide a more valuable and more manageable export than live cattle” (109). To modernize and civilize Boa Vista demanded corporate investment and the management of indigenous populations through health, work, and education.

As transporting live cattle from Boa Vista through the savannahs and down to Georgetown proved incredibly expensive, time consuming, and dangerous to both people and cattle, the concept of producing factory-made beef that could be shipped quickly by boat or train promised immense profits. Not only would ‘the Company’ benefit from selling the tinned beef, a product that would fetch higher profits in British and US markets, but so too would the British benefit economically from buying products produced in its own colonies. Earlier in his journey, Waugh comments directly on Britain’s economic interdependence with the Colonies when he makes light of the ubiquitous marketing campaigns established during the 1920s urging Britains to purchase

colonial products. While traveling through Annai, Waugh stumbles upon two English naturalists “who for some years had been tramping about tropical America” in the service of the “Empire Marketing Board” (64). The Englishmen are tasked with procuring local products that can be sold back to the Empire while also opening up markets in the region for the sale of British goods. The Empire Marketing Board was established in 1924 “to encourage consumption of imperial products” as a means to improve “imperial economic development” (Farley 144). Popular advertisement campaigns during the period include posters and pamphlets encouraging consumers to purchase imperial products. One such poster reads: “Every Time You Buy Empire Produce, You Help the Empire to Buy From Us!”²⁸ Advertisements also suggested that purchasing goods produced in Britain’s tropical colonies was of particular benefit to the home country. One such poster proclaims: “Jungles to-Day are Gold Mines To-Morrow: Growing Markets For Our Goods.”²⁹ In Boa Vista, the Company’s design to build a factory and modernize the town is envisioned as a revitalization of both the local economy and overseas markets.

In *Imperial Medicine*, historian David Arnold argues that “capitalism’s internal contradiction between the pursuit of labor efficiency (and thus worker’s health) and the pursuit of profit impelled European colonial regimes and the commercial and industrial enterprises that worked under them towards greater involvement in indigenous health care” (15). The Company’s design required the exploitation of cheap labor. The Company’s reliance upon healthy native workers is evident in the types of material investments the corporation makes in Boa Vista. Given the long history of hookworm,

²⁸ See Margaret Clark. *Empire Marketing Board Industrial Series*. 1924. National Library of Ireland, Dublin. *National Library of Ireland*. Web. 1 October 2012.

²⁹ See *Empire Marketing Board, Poster*. Museum of London, London. *Museum of London*. Web. 1 October 2012.

malaria, and yellow fever in the region, strict control over the health of native workers was required if any manufacturing or developments schemes were to be successful. The management of corporate profit thus required the management of native bodies. Waugh notes that the hospital was one of the first buildings opened in the town under the Company's direction. In addition to building a hospital, the Company also invested in infrastructure that reflected more European styles of housing and working arrangements, including new brick buildings with separated, ventilated rooms, as well as cafes and theaters. Such buildings were designed to uphold strict separation between living quarters, sleeping spaces, eating quarters, and spaces designated for toileting. The traditional native huts with central fires, hanging posts for hammocks, and space for communal living were often replaced by corporate developers who favored isolating native bodies from white workers and from each other to discourage the spread of disease.³⁰ This manufactured control over native bodies and calculated management of native life reflects the ways in which the Company sought to limit disease exchange and ensure profitability.

Waugh observes that one of the most difficult aspects of employing indigenous labor is that "labor was scarce, for the Indians only come out to work when they need some specific object" (84), and then disappear back into the bush once it is acquired. It is incredibly difficult to get "Indians" to perform work, Waugh writes; instead, they merely "drifted into camp with their wives and children, worked for a month or two until they had acquired the object they coveted, usually a gun, and then drifted back to their homes"

³⁰ For a more extended analyses of the transformation of native life and culture in the Americas, particularly in the Philippines during the building of the Panama Canal, see Warwick Anderson, *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines*. See also David Arnold, "Introduction." *Imperial Medicine and Indigenous Societies*; and John Farley, *Bilharzia: A History of Imperial Tropical Medicine*.

(173). Securing reliable labor from these populations thus demanded more permanent infrastructure, such as that provided by the Company, which could limit the mobility of native workers and create a more consistent, manageable supply of labor. From the perspective of the Company, the mobility of native bodies puts them (and corporate profits) at risk, as traveling beyond the secured confines of the corporate town leaves the native worker open to diseases that were otherwise well controlled in the town and modern hospital. To supply the labor needs of large corporations, tropical medicine needed to protect the health of the native body while also manufacturing a new form of life and living that radically transformed native communities and populations. David Arnold writes, “As imperial economic and administrative systems expanded and sought a more comprehensive hold over the lives and labour of the people tropical medicine developed a central agency for the acquisition of knowledge and the extension of control” (“Introduction” 17). Tropical medicine, as wielded by corporate interests, “registered the imperial determination to reorder the environment and to refashion indigenous societies and economies in the light of its own precepts and priorities” (17).

The Company transformed the local environment and native traditions of Boa Vista, reconstructing it in the image of a modern European city. The Company transformed Boa Vista into a shining example of modern luxury: “The canning factory was built and installed with the best modern machinery; an electric plant was set up, providing the streets and the houses with light; a fine church, a hospital and a small school were built” (109). In addition to these amenities, Waugh writes, “liberal wages were paid out; two hotels and a cinema opened,” and “a refrigerator provided Boa Vista with the first ice it had ever seen” (109). “Following the best tradition of big business,”

the Company sought to “provide the necessaries and amusements on which their wages should be spent” (109). Under the direction of the Company, Boa Vista became an entirely self-sustaining entity wherein every modern convenience the native inhabitants could (conceivably) need or desire was supplied by the Company. The circulation of workers’ wages were to be confined to the shops, theaters, and other amusements supplied by the Company, which would in turn absorb workers’ wages back into its own profit holdings. The Company also determined that the manufactured beef would effectively “take the place of the unnourishing *tasso*” (109), which formed the basis of local traditional diet. By employing the indigenous population in mechanized labor and by transforming their diet away from traditional sources and towards a reliance on manufactured goods, the Company’s design for the town reflects the ways in which corporate interests in the tropics sought to manage natives by transforming their very relationship to the environment and to each other. The need for or reliance upon more traditional forms of indigenous life, including hunting and gathering, communal housing, or traditional medicines, were thus eliminated. By ensuring the indigenous workers had every amenity necessary for ‘modern life’, the Company effectively rendered the native bodies immobile, while producing mobile commodities.

The management of native populations by the financial interests of the Company in Boa Vista is premised upon ensuring efficiency, productivity, and profit. For a time, Waugh writes, “everything seemed to be going admirably” in the newly modernized township (109). The factory was built, cafes and theaters had opened, and a new hospital and school provided the necessary care for the growth and development of this new life. However, due to a confluence of events, including a rival development scheme from an

American investor and the start of the Great Depression, the Company went bankrupt and abandoned Boa Vista entirely. Prior to the departure of the Company, Boa Vista was celebrated as one of the most modern and luxurious towns in the region. From the beginning of the journey, Mr. Bain arouses Waugh's interest in Boa Vista by telling him it is one of the "most important towns on Amazonas" (56), though Mr. Bain had never seen it himself. When Waugh approaches the region, he recalls that ever since Mr. Bain "had first mentioned its name, Boa Vista had come to assume greater and greater importance" to him (99). Everyone he meets along the way describes Boa Vista "as a town of dazzling attraction," a site of "modernity and luxury," with "electric light, cafes, fine buildings" (99). Waugh confesses that such descriptions of the town piqued his interest immensely, and he had come to "regard it as Middle Western Americans look on Paris, as Chekhov peasants on St. Petersburg" (99). After spending weeks traveling through the bush and grasslands and being constantly bitten by countless insects, Waugh begins to fantasize about the "soft living" (99) that awaits him in Boa Vista.

However, upon his arrival, Waugh's fantasy of modern urban living, electric lights and vibrant cafes is destroyed. As he approaches the town, Waugh imagines that it is "perched on a citadel" (100), raised above the surrounding plain in geography and progress. But as he draws nearer, he sees that the town, rather symbolically, is "at the same dead level as the rest of the plain" (100). Within moments, the stark reality of Boa Vista sinks in. The modern amenities are nowhere to be found. Instead of bright lights and modern, new buildings, Boa Vista is merely a collection of empty, decaying buildings scattered along broad, "mud-cracked" streets (101). The inhabitants of the town are equally unwelcoming, and stare at Waugh "with eyes that were insolent, hostile, and

apathetic” (101). The only electric lights appear in the form of “an overhead electric cable” that has fallen to the ground and “lay in coils and loops about the gutter” (101). The bright lights of modernity and the vision of Boa Vista’s future – as imagined by the Company – now lies, literally, in the muddy gutter of a town now forgotten. When Waugh inquires about the hotel, he is scoffed at. There is no hotel now, he is told, and “there has not been a hotel for two years” (101). There is no need for a hotel, as “strangers do not come to Boa Vista” (100). Any movement in and out of the town is rare, as Boa Vista has been rendered completely stagnant. Instead of coming across the most modern town in Amazonas, Waugh finds himself in a town in the throes of decay. “There used to be a hotel, in the days of the Company,” he is told; “there was all kinds of foolishness in the days of the Company” (100). But “there is nowhere now”: nowhere to stay, nowhere to go, nothing to buy, and nothing to do (100).

With the departure of the Company, all the plans and money devoted to modern progress and development stopped, and Boa Vista was left to stagnate among the ruins of the Company’s deserted schemes. Some of the infrastructure from “the days of the Company” remain, including the laboratory where the veterinarian conducts research on parasitic worms; the hospital; the empty factory; and various storefronts and cafes, all of which are but skeletal remains of past attempts to modernize the town. When the Company left, all plans for development were interrupted, and Boa Vista was abandoned in a state of perpetual limbo. To Waugh, everything and everyone in the town seem to have come to a standstill. No one works, no one purchases anything from the local shops or cafes, and no one uses the school or the hospital. Time has stopped in Boa Vista. Modernity has been interrupted. However, what is revealed in this pause, and what

Waugh glimpses in this moment of interruption, is something far more revealing about the true consequences of the Company's development schemes and its effects on native bodies and environments. Without the glamour and glitter of the Company to distract from the realities of the medical and economic campaigns previously implemented in the town, Waugh is able to see the violence and brutality that underpins the medico-corporate management of life and culture.

While the Company premised its maintenance of health of the native population and the control of native bodies for the economic betterment of the region, its modernizing campaign has left indigenous people more impoverished and more vulnerable to disease than before the 'benevolent' interventions of corporate capital. Farley notes that companies "often did very little to better the health conditions of the Latin American poor" (152). Many of the health measures implemented were often highly limited and focused predominantly on eradication methods and not on broader social issues such as poverty, sanitation, or malnutrition. Local streams and rivers were polluted with oil; native crops were razed to clear land for the cultivation of marketable cash crops; insecticides poisoned landscapes and people; and repeated dosages of thymol, Epsom salts, and quinine often sickened as many people as these medications treated.³¹ Companies did not actually better the lives or health of native communities; rather, the methods implemented to control the movement of bodies and transform environments "actually made their conditions worse" (152). They did so "by creating social conditions in which diseases flourished" (152). The altered living quarters, the confinement of people to factories or farms where disease flourished, the disruption of traditional diets

³¹ See Warwick Anderson, *Colonial Pathologies*; John Farley, *Bilharzia*; and Julyan Peard, *Race, Place, and Medicine*.

and hygiene practices, and the attempts to render native bodies immobile as to ensure their isolation from other disease contacts all combined to drive native populations into deeper cycles of disease, malnutrition, and poverty.

The attempts made by the Company to create an immune, self-sustaining community of workers whose life forces could be managed and controlled in service of economic development have instead left the town destitute and its inhabitants infected with malaria. “Most people were sick in Boa Vista” (100), writes Waugh. The “malaria of that district takes a peculiarly disagreeable and persistent form,” and “everyone in the town seemed to spend at least three days a week in fever” (118). With the factory empty, and traditional means of subsistence and community interrupted, the population of Boa Vista has been left devoid of any true means of occupation or purpose. Waugh observes that the “inhabitants seemed to have no occupation of any kind”; everyone is “caught up in the vicious cycle of semi-starvation which makes people too apathetic to exert themselves for more” (105). The majority of the “thousand-odd inhabitants,” writes Waugh, “spent the day lying indoors in their hammocks and the evenings squatting on their doorsteps gossiping . . . But it was far from being the carefree, idyllic improvidence one hears described of the South Sea Islands. Everyone looked ill and discontented” (107). By the time Waugh arrives in Boa Vista in 1932, he sees that the departure of the Company has left the population more vulnerable to the diseases it sought to remedy. The population of Boa Vista is now malnourished and sick as a *result* of their immobility. The irony of the situation is not lost on Waugh. The very social ills that the Company sought to alleviate have been fortified by the Company’s transformations of indigenous life and culture.

In contrast to the image of the healthy, happy, productive native featured in the Tropical Health exhibit at Wembley, the native bodies Waugh encounters have been devastated by the ‘benevolent’ forces of tropical medicine as wielded by corporate and economic interests. In *Ninety-two Days*, Waugh exposes the violence underpinning the tropical medicine campaigns that, when wielded as a tool for corporate interest, resulted in destroying the very lives it claimed to assist. The creation of new life in Boa Vista has merely resulted in decay. Waugh records scenes of devastation, poverty, and illness throughout Guiana and northern Brazil. By the early 1930s, previous development schemes throughout the region had been largely abandoned. The village of Santa Marina had once been rather prosperous. However, “now there was only one house,” and the “desolation” of the village “was accentuated by the tattered ruin of a shelter. . . now reduced to a half-capsized skeleton” (165). The surrounding environment has been poisoned by previous attempts to cultivate the land and eradicate malaria. “There was no flowing water here,” writes Waugh; instead, only “a patch of marsh” remains which has been re-colonized by armies of mosquitoes, and “a variety of biting and stinging flies and a million or so ants” (165). The inhabitants are not only exposed to fever, but are also “remarkable in their poverty” (165). When Waugh reaches New Amsterdam, he similarly notes that the depressed state of the town is a direct reflection of the falling sugar markets and the malaria epidemic that plagues the port city. New Amsterdam used to be “a prosperous, if sleepy, town with a club and its own society” (37). However, now the town is largely abandoned, the residents “having been driven out by mosquitoes and the decay of the sugar trade” (37).

During his travels through Guiana and Brazil, Waugh bears witness to the

devastating impact that ‘public health’ initiatives and tropical medicine campaigns had on indigenous populations. As Farley and Arnold argue, the results of calculated vector control programs and strict population management as promoted by the Rockefeller Foundation in the 1920s often left indigenous populations more impoverished and unhealthier than they were prior to interventionist (and capitalist) health programs. With the collapse of the global economic market and the start of the Great Depression in the early 1930s, corporate and government interests in the region dramatically declined. With limited support from the British Crown, Guiana, writes Waugh, is now a “civilization in retreat” (192). There are no longer any “progressive young managers projecting more advanced stations of commerce, opening up new districts, pushing forward new settlements and new markets” (192). Instead, the vast resources of the region have either been exhausted or merely abandoned: “the beaches sifted of their treasure, the trees bled to death for balata,” and the “once busy” stations and stores are now “derelict” and “in process of evacuation” (192). Everything “has been abandoned in the retrocession,” and what is left is being pulled apart by insects and the encroaching, “omnivorous bush” (193). Despite attempts to eradicate disease and develop the region into a profitable tropical holding, the future of the Colony is now in question: “The Colony will resign itself to the limits of a single strip of seaboard and leave the huge territory at its back in the primeval integrity it has always maintained” (194). As Waugh makes his way down the coast to the ship that will take him back to England, the end of his journey is punctuated by mosquitoes: “it came to an end at last. . . The Demerara boat was at the quayside and we went on board at once and dozed in a swarm of mosquitoes” (200).

At the turn of the twentieth century, scientists, government officials, and the public at large celebrated the growing discipline of tropical medicine as a tool for future colonial conquest and economic growth. In 1904, the *British Medical Journal* declared, “tropical disease is one of the greatest obstacles to the consolidation of the Empire, and constitutes a standing menace to its preservation” (“Imperial” 1022). With the establishment of the London and Liverpool Schools of Tropical Medicine, and the rapid advancements in malaria research conducted by Manson and Ross, diseases of the tropics seemed far less formidable, and the treasures of Britain’s tropical holdings seemed within reach.

Advancements in bacteriology and parasitology in particular provided the knowledge necessary to combat tropical diseases. Discoveries made in relation to vector transmission and cell-based immunity also revolutionized understandings of the individual body as porous and vulnerable to invasion. In response, tropical medicine was celebrated as a system of scientific techniques and disciplinary regimes capable of cultivating an immunologically privileged colonial body and managing the diseased native body. In the obituary written for Joseph Chamberlain in 1914, the *British Medical Journal* commemorates the Secretary’s life in relation to his contributions to tropical medicine. Because of Chamberlain’s support of tropical medicine, the London and Liverpool Schools of Tropical Medicine “have grown into flourishing institutions, which have sent out large numbers of men to do battle successfully against the diseases peculiar to the tropics and have done much by investigations into the native haunts of these diseases to solve the problems of tropical hygiene” (“Chamberlain” 85).

By 1932, with the death of Ronald Ross, the last living ‘father’ of tropical

medicine, Waugh presents a very different picture of the consequences of tropical medicine campaigns on native bodies and environments in the colonies. In *Ninety-two Days*, Waugh offers a counter-narrative to the benevolent enterprise of tropical medicine as celebrated by the Tropical Health tableaux at the Wembley Exhibit. The second tableau depicts an image of a virile, white colonial man standing triumphantly outside his bungalow overlooking a cultivated, sanitized tropical landscape, while the nearby natives are smiling and healthy, having been segregated and secured in new modified dwellings far from the white settlement. Compared to the first tableau, this second image frames native life in a remarkably new way. The new huts, oiled waters, and clear-cut landscape suggest that medical campaigns and corporate investment in tropical development have brought health and prosperity to indigenous communities, and that these development schemes have proven equally beneficial to both the European colonist and native population. In its celebration of the success and influence of tropical medicine, the tableau ultimately obscures the violence inherent in the management and control of these native bodies and populations for the benefit of economic exploitation and imperial (British and US) profit. Waugh creates a far more devastating portrait, which functions as an indictment of the Empire's civilizing mission and corporate investment in indigenous health. In *Ninety-two Days*, neither the European bodies nor the indigenous populations are strong and healthy; rather, everyone he encounters is seemingly suffering from some sort of tropical malady, be it malaria, hookworm, tick bites, or *djiggas*. Waugh equates the disease burden of the native population with the devastating poverty he witnesses throughout the region, which, he suggests, is the result of development schemes that have ultimately "contaminated" the indigenous body and culture (67). The new form of life

created by the Company in Boa Vista has produced nothing but death. What Waugh exposes in *Ninety-two Days* are the very material consequences of these tropical medicine campaigns on the native bodies and environments of Guiana and northern Brazil.

During the first phase of tropical medicine (1880-1930), British literary responses to developments in tropical medicine reveal an active engagement with both the field itself, as well as the cultural and political consequences of the medical management of disease. The success of tropical medicine during the early twentieth century prompted a renewed optimism in the imperial conquest of the tropics, particularly the tropical reaches of South America, which had figured prominently in the British popular imaginary since Sir Walter Raleigh popularized the myth of El Dorado. This fantasy of conquest was intimately tied to the management of disease. In the literary texts discussed in *Imperial Fever*, each writer engages with the colonial project within the framework of disease exchange. In Doyle's *The Lost World*, Woolf's *The Voyage Out*, and Waugh's *Ninety-two Days*, colonialism itself is represented as a function and outcome of various disease processes. However, the history of disease exchange represented by these three British writers is not focused on death and mortality statistics; rather, these authors are concerned with the processes of disease management and the determinants of *life* within the disciplinary regimes of tropical medicine. The literary texts examined in *Imperial Fever* alternately celebrate and challenge the ways in which tropical medicine's disciplinary gaze functioned to create and control individual bodies and populations.

— Coda —

Medical Reflection

As I begin this medical reflection I am sitting in the anatomy lab at McMaster University's DeGroot School of Medicine. I am surrounded by a variety of plastic models and human specimens, both wet and dry. The shelves are lined with organs and limbs that have been preserved by plastination and which constitute the dry specimens. Against the wall there are numerous large metal tables that remind one of an autopsy scene in a television crime drama. Inside these "trolleys" are the wet specimens: formaldehyde-preserved human bodies in various degrees of dissection, wrapped in wet cotton cloth, and catalogued according to the anatomical feature on display. Specimens. In the space of the anatomy lab, the complete living body – and the biological and cultural signification it entails – is reduced to its musculature and organs and re-framed as an object of study for medical education. At the same time, the anatomy lab is a space of reverence, respect, and reflection. The sanctity of the space is marked by ritual and performance. Only those indoctrinated into medical education may enter; people speak with hushed voices; appropriate dress must be worn; and no photographs are allowed. Within this hallowed space of learning, respect for the dead is shown through active handling and careful dissection of the donated bodies so that we may learn to heal living bodies. Each body was somebody's at one time, and it is this knowledge that shapes the encounter between student and human specimen. Within this space, I am struck by the juxtaposition of the historicized and culturally constructed political body at the center of Foucault's bio-politics and the very literal, anatomical, yet no less politically or

metaphorically constituted body of flesh and bone at the center of bio-medical science. While various cultural historians have argued that scientific discoveries made in the laboratory often move outward to inform cultural formations of the body, my approach to this dissertation began with my engagement with poetic and metaphorical constructs of the body and moved inward towards the laboratory and the very literal body of Medicine.

Much of this dissertation was re-written and substantially revised during my first year of medical school. As a student of literature, my decision to pursue medicine may not appear at first to be a logical extension of my interest in the humanities. While it is one thing to study the ways in which literature and medicine inform one another, it is an entirely different step to bridge the disciplinary gulf that separates the practice of Art and Science and enter the medical profession. Yet, the anatomical workings and physiological processes of the body have always fascinated me. The interconnected web of proteins and chemicals that amass themselves to form the human organism is as elegant a subject of science as it is of art. Of course, this biological body cannot be separated from the cultural body of art and literature, as each inevitably shapes the other. The biological body was what inspired me in part to write this project, just as the cultural constructs of the body in literature inspired me to pursue a medical degree. What began as a dissertation on fever as metaphor in early twentieth century British literature evolved over the past year into a project that engages with the body and illness in ways that are at once more theoretical as well as more literal. Both the physical body and the body-politic are constructed through the medical discourse of immunology as objects vulnerable to invasion and in need of defense mechanisms to protect their borders and boundaries. The very literal effects and affects of this metaphor on the physical body have only recently

become apparent to me during medical school. As a result, my engagement with and understanding of this porous and immune body have changed dramatically, and have in turn influenced my approach to the texts discussed in the previous chapters.

In *A Body Worth Defending*, Ed Cohen writes, “we need to appreciate much more palpably the imaginary work that metaphor performs in and as science” (36). The language of medical science and the frameworks through which medicine comes to understand and construct the body are not merely descriptive, but inherently poetic. What this means, writes Cohen, “is that like poetry, bioscience is an imaginative activity” (36). For humanities scholars, the notion that scientific discourse often relies on poetry and metaphor to articulate phenomena that would otherwise escape comprehension is not a radical concept. Indeed, it is the subject of many influential works by cultural and literary theorists, including Esposito, Foucault, Bewell, Otis, and Cohen. The theory of gravity in physics is a commonly cited example. Cohen reminds us that gravity was not discovered per se, but that Newton’s use of *gravitas*, the concept of moral and spiritual weightiness, as a metaphor to explain observations of matter in the material world helped confer truth to the concept and make graspable an otherwise unintelligible phenomenon. In the realm of medicine as well, bioscience and poetry “create each other” (36). This is the case with biological and metaphorical understandings of Immunity, in addition to many other physiological and pathological processes. However, what I have learned over the past year as a medical student is that medicine and bioscience, “unlike poetry, [have] a deep investment in guaranteeing the ‘truth’ of its concepts,” and as such “often hesitates to acknowledge, let alone interrogate, this kinship” (36). In medicine, the subject of immunology arguably relies more heavily on metaphor to articulate its physiological and

biochemical mechanisms than any other aspect of medical science; it is also arguably the least open to the interrogation of these metaphors.

Metaphors of invasion and defense have become so naturalized in the scientific discourse of Immunology that it is difficult to imagine alternatives ways of conceptualizing this fascinating and complex biological function. Over the past few months I have had the privilege to study immunology in a scientific context in the domain of medical education. For me, the theoretical body I had been engaging with through cultural theory and philosophy had become an actualized body in the clinic. As I encountered a variety of patients with infectious or autoimmune diseases, I became increasingly aware of the very literal nature of the body's defense mechanisms and the processes that occur when these systems fail. As I helped treat patients with autoimmune diseases such as systemic lupus erythematosus, rheumatoid arthritis, or multiple sclerosis, I witnessed the ways in which metaphors of civil war, rogue soldiers, and domestic terrorism were consistently used to describe the horrendous attacks of self-on-self, a phenomenon Paul Ehrlich describes as "horror autotoxicus" (qtd. in Esposito 163). In addition to seeing patients, I read numerous textbooks on immunology and neoplasm (cancer). I was repeatedly struck by the thoroughly naturalized use of metaphors of war, surveillance, protection, education, and regulation that proliferate throughout bioscientific descriptions of immunological function. I was also curious to find that the rhetoric used to describe tumor development relies solely on metaphors of breakdowns and lapses in surveillance, specifically the loss of "gate-keeper" genes at the cellular-genetic level.

The body, as these textbooks explain, is vulnerable to the invasion of countless

hostile forces including bacteria, parasites, viruses, noxious chemicals, pollen, and any other multitude of particles or organisms that may harm us. Our immune system has evolved to protect us from these adversaries, both foreign and domestic. The elegant and highly complex system of cell mediated, chemical mediated, and innate barriers are all described metaphorically as mechanisms of war. The body, medicine teaches us, is capable of both defensive and offensive maneuvers. Defensively, the thickness of our skin, the chemistry of our oils, the adhesive properties of our mucus membranes, and the acidity of our stomach contents all provide a first level of defense against foreign invaders. If these barriers are breached, a vast army of cellular and chemical mechanisms will come to the rescue. As these mechanisms fail, invasion or infection begins to spread and our bodies eventually weaken and die. These defense mechanisms include the patrol unit of macrophages, which function as their metaphor implies; assassination cells, or natural killer (NK) cells which recognize cancer and cells that have been invaded by viruses and signal them to self-destruct; the heavy artillery cells, or neutrophils, which attack the enemy invader with a blitzkrieg of chemicals equivalent to bleach or peroxide; and a variety of T cells and B cells which act as intelligence and memory systems.

The metaphors used to illustrate the functions of the immune system also include other disciplinary regimes such as education, training, and imprisonment. Before these T and B cells are allowed to enter the blood stream and perform their military function, they must be educated. Here, the disciplinary regimes of the school and prison as articulated by Foucault are mapped onto the body directly. T cells, we are told, must undergo positive and negative selection within the thymus before being released into the body as well-trained soldiers. In the thymus, each T cell is educated to distinguish between Self

and Other so that it will ‘know’ what to protect and what to attack. These cells are then exposed to various self and foreign antigens to test if this recognition is effective. If the cell attacks the body’s own cells, or fails to attack the foreign particle, it receives a signal to die. Roughly 97% of the T cells are signaled to die. If the cell proves to be a good soldier that can accurately identify an enemy while not attacking the body, it is signaled to grow and divide and sent out into the body to perform its duty. In this way, the vast, elite army that comprises the body’s immune system undergoes a life long cycle of education, reconnaissance, war, and death, all to protect the fragile borders of the human organism.

I recently attempted to discuss with my classmates and faculty preceptors the militaristic language and rhetoric upon which immunology as a discipline is constructed. I tried to bring their attention to the description of neutrophils as heavy artillery and the disciplinary language used to describe the “education” of T cells in the thymus. Everyone acknowledged the rather obvious use of military language. In fact, most thought this to be the most effective way to think about how each element of the immune system worked within the vast army and intelligence system of the body. However, the notion that these metaphors of war directly shape the ways in which we conceive of cell function and the relationship of the body to the environment is a far more difficult concept to grasp. The “truth” of immune function is war, according to bioscience. My classmates responded in kind. This is simply how our immune system functions, they replied: war is not metaphor, it is fact.

These metaphors of invasion have shaped medical understandings of the body so thoroughly that it is difficult to conceive of an alternative method of understanding the

immune system. Medicine is, after all, both an art and a science whose subject-object is the ailing body, the pathologies of which are a direct effect of the body's inability to "fight" disease. To understand pathology as anything other than the failure of innate defense mechanisms leading to the breakdown of bodily processes more generally would require a radical re-conceptualization of the body, both as organism and as human. How we as medical students are taught to manage these disease processes also reveals the ways in which Medicine has constructed the body as a pathological entity in need of specialized treatment. The body is a puzzle waiting to be solved. A complex, integrated, yet highly fragile system of chemicals and protein matrixes, the body is at once profoundly mysterious and easily deducible to the laws of physics and fluid mechanics. Medical education, I have learned, is an education in reading the body.

As future physicians, we are taught that a good clinician, like a good detective, is able to deduce an ailment or infection by literally *reading* the body. By eliciting a thorough history from a patient and by conducting a thorough and sensitive physical examination, we are expected to make an accurate diagnosis, often without the aid of laboratory or radiological investigations. The power of our trained eyes, touch, hearing, and even smell are considered the primary tools of investigation. We are taught that pneumonia may be diagnosed by careful listening through a stethoscope. Even without this auditory aid, we are taught to percuss the lung fields for sounds of consolidation. To do this, we tap loudly along the anatomical landmarks between the ribs and scapula and listen carefully for sound waves to tell us if the lung is resonant (air filled), dull (filled with fluid), or hyper-resonate (indicative of emphysema). We also lay our hands on patients' backs to feel for changes in sound vibration that would indicate fluid such as

pus, blood, or water in the lungs. These, we learn, are the diagnostic techniques for locating pneumonia or other lung consolidations. The chest X-ray simply confirms what we already deduced: thick consolidation in the lower left lobe, likely purulent and in need of antibiotics. We may ask the pathology department to culture the sputum to identify the precise organism to target our antibiotic therapies; or, based on the color of the sputum, the course of the fever, and the history of the event, we can determine the likelihood of the infection being bacterial or viral. The power of this clinical gaze, as articulated by Foucault, is the most important diagnostic skill we will develop and practice on our patients. If, and only if, these measures fail, may we turn to imaging and laboratory techniques that will enable us to clearly visualize and identify the pathology behind the chief complaint.

To touch, stretch, percuss, poke, and prod the body on investigation (not to mention surgical or pharmacological interventions) is to engage with the body as a pathologized biological organism. Of course, the body is a person who is more than their disease, and there have been dramatic and positive changes in the doctor-patient relationship over the past three decades. Undoubtedly the role of the doctor is to treat the patient as a whole person, whose anxieties, hopes, fears, and expectations all influence the approach to illness and the course of treatment. However, the position of power and authority granted to the medical practitioner based on her trained ability to manipulate the body as a biological system requires that Medicine construct this body as a pathological and a potentially discernable object of study. During our White Coat Ceremony, when we are officially welcomed into the medical profession (as future physicians), we are told that the skills we will learn come with significant social responsibility. It is an honor and

privilege to work with patients for the betterment of their individual health and the health of the community at large. However, we are told, what we are being trained to do in terms of examining and manipulating the body and conducting procedures would, in any other context and done by any other person, constitute assault and battery. In *The Birth of the Clinic*, Foucault writes, “[the doctor’s] intervention is an act of violence if it is not subjected strictly to the ideal of ordering of nosology” (8).

The acts of violence medical science enacts against the body extend beyond the physical investigations practiced in the actual clinic. As Foucault notes (and what this project examines in part), Medicine intervenes in the disciplining and regulation of the body at multiple levels of society and government.³² The construction of any non-normative individual body as deviant or pathological, for example, clearly constitutes an act of violence perpetrated against an ‘ill’ body by the disciplinary regimes of medical-science. The queer or transgender body continues to puzzle medical science, despite the increasing acceptance of non-heteronormative individuals in society. If an individual identifies as transgender, bio-science posits that the balance of maternal hormones must have affected the developing embryo’s adrenal function, in which an androgen surge altered the fetus’ brain chemistry and sex identification. However, because the precise biological mechanisms cannot be explained, Medicine regulates these deviant transgender bodies by positioning them within a different order of classification: the mentally ill. Only recently has the DSM V changed the diagnosis of transgender individuals from suffering from “Gender Identity Disorder” to displaying “Gender Dysphoria.” While the shift in language is designed to limit the pathologizing of individuals who do not comply

³² Public health policies, for example, have dictated for centuries the precise management of urban housing, architectural organization, clearance of personal and household waste, and mandatory vaccination as a means to decrease infectious diseases and improve the health (and productivity) of the population.

with societal gender norms, Medicine nevertheless continues to read, define, and treat the body as a biological organism whose neurocrine signaling pathways and hormone profile must be regulated in order to regulate behavior. Human expression and desire become lost in the search for the Truth: the individual remains a biological and chemical puzzle for medical science to solve.

At the DeGroote School of Medicine, physicians and curriculum planners have sought to transform the ways in which doctors interact with patients as individuals and not merely bodies presenting with isolated pathologies. One of the core foundations of our medical education is a course in Professional Competencies. For three hours each week, students meet to discuss issues in medical ethics, public health, end of life care, and social determinates of health. We are joined by a family physician and a social worker whose combined expertise help guide us in our discussion and understanding of the complexities of patient management and the social and cultural forces that shape the health of individuals and communities. What is unique about this program is its emphasis on ‘narrative medicine.’ As part of our medical training, we are taught to conduct thorough histories in order to properly diagnose a patient’s illness. To practice ‘narrative medicine’ is to go beyond inquiring about the onset of cough, or the color of sputum. Narrative medicine requires the physician to read the entire person, and to provide the space in which that person feels comfortable in expressing the story of her life and her illness. The physician must be adept at narrative analysis, and be able to detect shifts in language and tone that may reveal the underlying forces shaping a patient’s motivations, fears, or expectations for treatment. In this way, biological mal-functions are understood within the context of the human, and treatment of an illness becomes treatment of the

individual.

The DeGroot School of Medicine's innovative curriculum has inspired other medical schools across North America to adopt similar programs, including Harvard and John Hopkins. The goal of such programs is to improve the doctor-patient relationship and improve the quality of health care at every level of medicine. However, while the emphasis on the human may be taught in the classroom, Medicine as an institution continues to define the body as a set of biological processes. This is evident in the methods used to examine medical students' clinical skills. The OSCE, or Objective Structured Clinical Examination, is held every year and must be passed in order to obtain a medical degree. During the exam, the student is given ten minutes to interact with a patient and conduct a history, physical exam, or both. To perform the exam in full requires that students follow a precise script that effectively divides the body into systems from head to toe. The ten-minute time limit is strictly adhered to, and is meant to train students for real world encounters in the clinic where physicians rarely have more than ten minutes to meet with each individual patient. The only way to be effective during this time is to follow a script, and to focus on the biological body and not the human body.

However, a good physician who is attentive to the person and to narrative, and not focused on the disease, has the power to make time stand still. I recently had the privilege of witnessing an encounter between a physician and a terminally ill patient. Due to the advancing disease, the time had come to discuss a DNR order, which must be legally documented in the patient's chart. The language of this form has recently been changed from "do not resuscitate" to "allow natural death" (AND). This change in wording has had a profound effect on the ways in which physicians and patients are able to discuss

end of life care. The conversation with a dying loved one is no longer a question of *not* saving them, but rather letting them pass peacefully, without unwanted invasive procedures if they so desire. During the conversation I witnessed, the doctor never once mentioned the words “dying,” or “legal form.” Rather, the conversation revolved around the patient’s goals, fears, hopes, and wishes, and the way she wanted to be remembered by her children. As the doctor listened, the patient told stories about her children, and about how she wanted her family with her when she finally passed. She did not want to go to the ICU where she would be incoherent, filled with tubes, and where machines would physically block her family from her bedside. She wanted to be comfortable and awake. She wanted a “natural death.” Listening to this patient tell her story, it became clear what legal orders she desired. Yes, a form would need to be signed. But not now, not right this minute. What was important was listening to this woman’s story, and creating the space in which she felt supported in telling her story to the doctor. After what felt like hours, the doctor recognized the conversation had reached its natural end, for the time being, and graciously concluded by reiterating the patient’s desires, and ensuring her he would honor her wishes. When we left the room I glanced at the clock. The encounter had taken eleven minutes.

Despite the time limits imposed on students and physicians in clinical settings, the art of narrative medicine has the potential to radically redefine Medicine’s understanding of the ailing body and the social arrangements of that body. If scientific concepts rely on metaphor and poetry to confer truth and meaning, then the study of medicine necessitates an understanding of narrative, as both art and science. Art and Literature offer profound insights into medical constructions of the body and the nature of the human. To favor the

biological organism over the human is to perpetuate acts of violence that characterize Medicine's disciplinary and regulatory effects on the body.

I recently had a conversation with a well-known Canadian poet who expressed in very personal terms the violence inherent in this erasure of the human in medicine. This poet, I learned, had been diagnosed with Parkinson's disease, a degenerative neurological disorder in which declining levels of dopamine in the brain lead to progressive loss of motor control. He spoke openly with me about the physical changes he was experiencing, and the ways in which his body, with its tremors and muscle weakness, felt increasingly *other* to his mind and to his person. He also described his experience with neurologists and other physicians who wanted to treat his illness. He was deeply frustrated by the inability of doctors to see him as anything other than a Parkinson's patient. "I am not a body," he told me; "I am a soul, a spirit, merely inhabiting this remarkable flesh for a time." He felt he was being treated as a system of degraded circuitry and chemical malfunctions, and as a mere bundle of damaged neurons in need of synthetic, pharmacological treatment. As a poet, he believes his mind is not merely grey matter between his ears, but the source of beauty and creation. "Language, poetry, and art are what make us human," he said, and what connects us as humans to each other.

To reduce the body to an organic, immunologically defensible organism is to strip away this humanity in favor of chemical reactions. For Medicine to treat this body, therefore, the discipline itself must learn to recognize the metaphors and narratives that shape the body as healthy or ill, and attend to the metaphors and narratives that individuals use to express the lived reality of a particular illness. This project has focused on the construction of the body through tropical medicine and immunology during the

early twentieth century. However, I hope my work may also serve as a small contribution to future studies that seek to bridge the gap between art and science, medicine and literature, and reshape the ways in which the poetic, human body is understood in bio-scientific thought and practice.

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