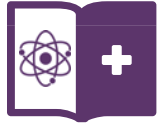




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# Empire Under the Microscope

Parasitology and the British Literary  
Imagination, 1885–1935

Emilie Taylor-Pirie

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Emilie Taylor-Pirie

# Empire Under the Microscope

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1885–1935

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*To David; when I'm with you, I'm home.*

## ACKNOWLEDGEMENTS

The germ of this book began with my dual honours BSc (Biology and English) in 2008. As I left my Victorian literature seminar and crossed into the laboratory to study *Drosophila*, I began what I hope will be a lifelong interest in the fruitful encounters between literature and science. This book would not have been possible without the support of many wonderful friends, mentors, and colleagues. I want to acknowledge the insight and encouragement of Dr Emma Francis who supervised the PhD upon which this book is loosely based (2012–2016), and who was, and is, a feminist role model; Prof Hilary Hurd, who first introduced me to parasitology and to Ronald Ross during my BSc; and Prof Sally Shuttleworth, whose generosity and support helped me to reach new potential during my postdoc (2016–2019). I want to thank Prof David Amigoni for encouraging me into a career in interdisciplinarity and for being an aspirational model for inclusive, collegiate, and respectful academic practice; and Dr Will Tattersdill for his boundless energy and encouragement—not to mention the hours happily lost to rambling coffee chats and dog walks—and for always holding open the door for those who come after. I am so grateful to my husband Dr David Taylor-Pirie for putting up with late-night inspiration, tearful outbursts, and myriad cups of half-drunk tea for nine long years and still wanting to marry me at the end. To my best friend Dr Thomasin Bailey for always being interested in what I had to say and for helping me to see the bigger picture when I couldn't. And to Matthew Varnham, who has championed me since our first five-hour coffee back in 2010.

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Finally, I am thankful to Prof Sharon Ruston for gently encouraging me to submit my first article to the *Journal of Literature and Science* in 2014, a much-developed version of which forms the first chapter to this book.

The writing up of *Empire Under the Microscope* was completed with support from the European Research Council under the European Union's Seventh Framework Programme (FP7/2007–2013), Grant Agreement Number 340121. It is also thanks to this grant that the book is fully Open Access.



## Praise for *Empire Under the Microscope*

“This work makes a powerful contribution to the field of medical humanities, showing in compelling detail how the emerging science of parasitology was closely interwoven with the imperial enterprise and literary culture. Drawing on extensive research, from the archives of Ronald Ross—the poetry-loving parasitologist—to the popular fiction of the fin-de-siècle, it demonstrates how literary tropes, such as the crusading knight or the doctor-detective, influenced both the self-fashioning of medical identities, and the literary culture and imperial politics of the era. The resonances for our own, pandemic-dominated, time need no explication; they sing out on every page.”

—Sally Shuttleworth, *Professor of English Literature, University of Oxford*

“*Empire Under the Microscope* parses a complex ecosystem of literature, empire, and parasitology. Extensively researched and brilliantly argued, it masterfully navigates an expansive archive of literary, periodical, and medical prose and poetry that will be generative across the fields of Victorian and postcolonial studies and literature and science. Readers will find an exemplary model of interdisciplinary scholarship. Taylor-Pirie delivers nothing short of a field-defining study of literature and tropical medicine.”

—Lorenzo Servitje, *Associate Professor of Literature and Medicine, Lehigh University*

“Deeply researched, this insightful treatment of empire and parasitology illuminates the rich connections between the arts and the sciences at the turn of the twentieth century, as the discovery of the malarial parasite initiates particular narratives of heroic medicine in the British empire. Taylor-Pirie details the period’s intricate interweaving of literature and science, attending to the intricacies of literary genre without losing sight of the fascinating stories of discovery surrounding malaria and sleeping sickness. Sourcing narratives as disparate as detective fiction and imperial romance, anthropological treatises and the poems of Ronald Ross, Taylor-Pirie shows how deeply Britain’s sense of its imperial project is embedded in the stories Britons told themselves about medicine, geography, the body, and the place of the human in the larger natural world.”

—Pamela K. Gilbert, *Albert Brick Professor of English, University of Florida*

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## **Microbial Empires: Active Transmission Strategies and Postcolonial Critique**

- Fig. 1 Punch Cartoon featuring Reginald McKenna as British Home Secretary asking Æsculapius for help with the microbe ‘Militancy’. (Reproduced with permission from the Wellcome Collection) 221



## Introduction: Stories of Science and Empire

This day relenting God  
Hath placed within my hand  
A wondrous thing; and God  
Be praised. At his command,  
Seeking his secret deeds  
With tears and toiling breath,  
I find thy cunning seeds,  
O million-murdering Death.  
I know this little thing  
A myriad men will save,  
O Death, where is thy sting?  
Thy victory, O Grave?

—Ronald Ross, ‘Reply’ in *Philosophies* (1911)

Britain’s first Nobel Prize belongs to parasitology. In India, in 1897, a Scottish pathologist named Ronald Ross (Fig. 1) identified a protozoan parasite called *Plasmodium* in the stomach of a mosquito. It was a Eureka moment.<sup>1</sup> This was a vital step in confirming that malaria was transmitted via the bite of an insect vector, the *Anopheles* mosquito. He rushed to his desk and drew out three slips of paper: the first to make diagrams of what

<sup>1</sup>In his autobiography, Ross writes that ‘when I awoke with my mind refreshed my first thought was: Eureka! The problem is solved!’ Ronald Ross, *Memoirs, with a Full Account of the Great Malaria Problem and Its Solution* (London: John Murray, 1923) p. 224.

**Fig. 1** Sir Ronald Ross with his microscope. (Wellcome Collection. Attribution 4.0 International (CC by 4.0))



he saw, the second to write to his wife with the news, and the third to pen a poem that would define the moment for years to come. As he dissected the mosquito, he also ‘cut the Panama Canal’.<sup>2</sup> This was the moment that Ross conquered ‘million-murdering death’ and ‘la[id] one of the stones upon which w[ould] rest the everlasting bastions of a strong and vigorous Empire’.<sup>3</sup> Or so the story goes. This book is about the story of parasitology. It is about science and empire, and *the stories we tell ourselves about science and empire*. In the following pages, I explore how the material and imaginative architecture of imperialism produced tropical medicine, which, in turn, reimagined empire in its own image.

<sup>2</sup>‘Death of Sir Ronald Ross. Life of Research into Tropical Diseases’, *Tamworth Herald*, Saturday 24 September 1932, p. 3.

<sup>3</sup>London, London School of Hygiene and Tropical Medicine (Hereafter: LSHTM). Ross Collection (Hereafter: RC) GB 0809 Ross/131/01/20. ‘Empire Leading Article—Imperial Bacteriology’, *The Financial News*, 23 January 1913.

As Gordon C. Cook claims in his 2007 study *Tropical Medicine: An Illustrated History of the Pioneers*, “[T]ropical medicine was [...] an integral part of Joseph Chamberlain’s plan for “constructive imperialism””. It would therefore be ‘accurate’, he argues, ‘to envisage colonial politics as exploiting a newly established discipline for its own ends’.<sup>4</sup> Michael Worboys upholds a similar opinion in his essay on the emergence of tropical medicine, recounting the ways in which research about tropical diseases directly facilitated colonial expansion.<sup>5</sup> John Farley goes as far as to claim that tropical medicine was so imperial in its concerns, discourses, and implementation that rather than a medical specialty, it became ‘a branch of political imperialism’.<sup>6</sup> This process was reciprocal: many historians including Worboys point out that father of tropical medicine, Patrick Manson, also exploited Chamberlain’s imperial vision to further his own ideas about the discipline, suggesting that while tropical medicine provided a legitimising narrative for British colonial dominance, Britain’s imperial project, at the same time, provided political authority for this emerging specialty.

Contemporary British parasitologist Frank Cox has explored how the question of what parasitology *is* has shaped the history of the discipline. Given that the parasitic lifestyle is common to helminths, bacteria, viruses, protozoa, fungi, parasitoid insects, some plants like mistletoe, and even birds like cuckoos, there is—and has historically been—a need to narrow down the subject of study. Cox uses the understanding of ‘discipline’ as a ‘social institution’ to trace the emergence of parasitology to the second half of the nineteenth century and specifically to the publication of the field’s first dedicated journal *Parasitology* in 1908. This social understanding of ‘discipline’ makes the formation of institutions, societies, and specialist journals (enabling like-minded individuals to meet and exchange ideas) a watershed moment. As Cox notes, the aim of the new journal of *Parasitology* was to encourage the publication of papers ‘relating to pathogenic and disease-transmitting parasites with particular reference to

<sup>4</sup>Gordon C. Cook, *Tropical Medicine: An Illustrated History of the Pioneers* (London: Academic Press, 2007) p. 34.

<sup>5</sup>Michael Worboys, ‘The Emergence of Tropical Medicine: A Study in the Establishment of a Scientific Specialism’ in *Perspectives on the Emergence of Scientific Disciplines* ed. by Gerard Lemaine, Roy McLeod, Michael Mulkay, and Peter Weingart (Chicago: Aldine Publishing, 1976) pp. 75–98.

<sup>6</sup>John Farley, *Bilharzia: A History of Imperial Tropical Medicine* (Cambridge: Cambridge University Press, 1991) p. 293.

protozoa, entozoa and arthropods'.<sup>7</sup> As he asserts elsewhere, since parasitic diseases (by this definition) 'occur mainly in the tropics, the field of parasitology tended to overlap with that of tropical medicine'.<sup>8</sup> Medical historians Michael Worboys and Helen J. Power have similarly argued that the histories of parasitology, vector biology, and tropical medicine are entwined, whilst John Farley recognises tropical medicine as the 'main impetus for the emergence of parasitology as a discipline in Britain'.<sup>9</sup>

I locate my study in this watershed moment at the cusp of the emergence of parasitology as a social discipline, and one focused on the parasite-host, and later parasite-host-vector relationship in colonial settings. Thus, for the purposes of this book, I use the terms *parasitology* and *tropical medicine* to refer broadly to the same discourse, which was often characterised and thus might be thought of as the 'science of empire'. Parasitology was not, however, simply the sum of its sciences. It was also shaped by stylistic, formal, and material exchanges with the humanities. *Empire Under the Microscope* navigates convergences and interdependencies between the fields of 'literature and science' and 'history of science' to illuminate and scrutinise the imaginative work that underpins the twin constructs of empire and empiricism in this period.

As a member of the Indian Medical Service, Ross championed the intertwinement of scientific research and the British imperial project. He published widely in the medical and lay presses, held a prominent position as a professor at the Liverpool School of Tropical Medicine, and gave a BBC radio lecture on malaria—broadcast to over a million—in 1924. He held a post as consultant on malaria to the War Office and later consultant on tropical diseases to the Ministry of Pensions. He was regularly heralded as a 'benefactor of the race' by journalists, considered a figurehead for the practical application of medical science, and was widely recognised for his expertise in the field of parasitology. And yet when English writer and

<sup>7</sup>F. E. G. Cox, 'George Henry Falkiner Nuttall and the Origins of Parasitology and Parasitology' *Parasitology* 136 (2009) 1389–94 (p. 1392).

<sup>8</sup>F. E. G. Cox, 'History of Human Parasitology', *Clinical Microbiology Reviews*, 15.4 (2002), 595–612 (p. 595).

<sup>9</sup>See: Helen J. Power, 'History of Parasitology' *eLS* (25 April 2001) <https://doi.org/10.1038/npg.els.0003074>; Michael Worboys, 'Emergence and Early Development of Parasitology' in *Parasitology* ed. by K. S. Warren and J. Z. Bowers (New York: Springer, 1983) pp. 1–18; John Farley, 'Parasites and the Germ Theory of Disease' in *Framing Disease: Studies in Cultural History* ed. by Charles E. Rosenberg and Janet Golden (New Brunswick: Rutgers University Press, 1992), p. 43.



critic Rodolphe Louis Mégroz described Ross's career in 1930, it was in the following words: 'after heroic and solitary labours, [he] earned undying fame as a medical scientist, [but he] had begun as a poet and remained essentially a poet'.<sup>10</sup> These unconventional credentials reflect not only Ross's attempts to sustain a career as an amateur poet and novelist (cultivating friendships with now canonical writers like Arthur Conan Doyle, H. Rider Haggard, and poet laureate John Masefield), but also his own conscious framing of his medical career in terms of not just scientific but also poetic inspiration.

For many, Ross's Nobel discovery was first accessed through his poem, 'Reply' (quoted at the beginning), which was republished in medical presses such as the *Indian Medical Gazette*, *The Lancet*, and the *British Medical Journal*; in national, regional, and colonial newspapers; in popular science books; and in biographies and obituaries.<sup>11</sup> The poem was even memorialised on a gate of commemoration near Ross's old laboratory in Calcutta, erected by the governor of Bengal in 1927 (Fig. 2).

For the *Yorkshire Post*, Ross's poem 'crystallis[ed] the spirit [of his work]', which

ha[d] saved not a million, but millions of men, made habitable a vast area of the earth's surface and made possible, it is scarcely an exaggeration to say, the continued existence of the British Empire.<sup>12</sup>

Ross continued to write and publish poems inspired by his sanitary work and his political views, especially regarding educational policy, the nature of scientific discovery, and the relationship between science and the state.

<sup>10</sup>R. L. Mégroz, 'Sir Ronald Ross as Fiction Writer' *The Bookman* 79.469 (October 1930) 14–16 (p. 14).

<sup>11</sup>See for example: 'Ronald Ross' *Birmingham Daily Post*, Monday 20 August 1917, p. 4; 'Malaria Secret in Verse' *Sunderland Daily Echo and Shipping Gazette*, Wednesday 13 May 1931, p. 9; 'Saviour of a Million' *Hartlepool Northern Daily Mail*, Wednesday 13 May 1931, p. 4; 'Conqueror of Malaria' *Dundee Evening Telegraph*, Wednesday 13 May 1931, p. 6; 'Saved a Million Lives' *Gloucester Citizen*, Wednesday 13 May 1931, p. 12; 'Saviour of a Million Lives' *Lancashire Evening Post*, Wednesday 13 May 1931, p. 4; 'Sir R. Ross's Birthday' *Aberdeen Journal*, Thursday 14 May 1931, p. 6; 'Celebrated in Poetry' *Gloucester Journal*, Saturday 16 May 1931, p. 16; 'Sir Ronald Ross Dead' *Dundee Courier*, Saturday 17 September 1932, p. 5; 'Sir Ronald Ross' *Western Morning News*, Saturday 17 September 1932, p. 7; 'Mosquito Day and the Man Who Conquered Malaria' *Yorkshire Evening Post*, Saturday 17 August 1940, p. 4.

<sup>12</sup>'Ronald Ross' *Yorkshire Post* Saturday, 17 September 1932, p. 10.



Fig. 2 Ross Memorial Gate in Calcutta. (Wellcome Collection. Attribution 4.0 International (CC by 4.0))

By the 1930s, even the prime minister, Ramsay MacDonald, had read Ross's poetry. Speaking to a reporter in 1932, he remarked, 'I have often confounded my scientific friends by taking from my bookshelves books of verse and showing them Ross's name on the title page'.<sup>13</sup> In 1911, Ross had published an anthology of his poetry in tandem with a textbook on malaria, perceiving the two works as complementary. Thus, the understanding of his discovery was constituted, in Ross's own hand, by the practices of both science and art. In the preface to his poetic anthology, he urges us to view the poems (which were written in India during his malaria researches between 1881 and 1899) as 'not a diary in verse, but rather the figure of a work and of a philosophy', suggesting that they do more than simply record his labours.<sup>14</sup>

For others, Ross's discovery was laid out definitively in his *Memoirs*, written in 1923, and the many biographies, histories, and journalistic op-eds for which it became a resource. Indeed, it was hugely influential, shaping histories of malaria, mediating priority disputes with Italian researchers, and informing the Royal Society's obituary of Ross, along with many and varied newspaper columns and, later, eulogies. In *Memoirs*—a genre-bending text that includes microscope drawings and clinical observations alongside his poetry, personal recollections, and letter correspondence—Ross promises to 'reconstruct the events [of his discovery] as exactly as [he] can out of [his] notebooks, letters, and memories'. Immediately following this promise, we are treated to a glimpse of the poetic subjectivity with which he understood his own research as he sets the scene for us: 'the sky was filled with a haze of dust through which the sun glared like a foiled enchanter' (217). This is followed by a characteristic diversion into verse before lapsing back into the taxonomy of mosquitoes. Throughout he draws on Ancient Greek myth and Romantic iconography to reconstitute his scientific discovery as a heroic feat of endurance culminating in a poetic denouement.

*Empire Under the Microscope* thus contends that the story of parasitology is incomplete without considering the significant encounters and exchanges that the field had with the literary and historical imagination. It considers the significance of the years 1885–1935, a 50-year period that takes the institutionalisation of parasitology in the Liverpool and London

<sup>13</sup> 'Sir Ronald Ross. Death of Pioneer in War Against Malaria', *The Scotsman*, Saturday 17 September 1932, p. 13.

<sup>14</sup> Ronald Ross, *Philosophies* (London: John Murray, 1911) p. iv.

Schools of Tropical Medicine (1898 and 1899) as its mid-point. This is also a period that maps almost directly onto what Cox has identified as the ‘golden age’ of parasitology (1875–1925), and a period dominated by the bellicose jingoism of the New imperialism.<sup>15</sup> Not only did research in parasitology filter through to inform literary and cultural understandings of empire, but literary-linguistic practices themselves became intrinsic to the production and reception of parasitological knowledge. In public and private communications, parasitologists reformulated the imperial contexts of their discipline by conceptualising their research using British myths of nationhood. By reaching back to the real and imagined past, they could manipulate the narrative power of British political and geographical dominance, whilst also distancing themselves from the more unsavoury aspects of contemporary imperial administration.

Invoking literary archetypes such as the Arthurian knight and envisaging their research within a quest narrative, they capitalised on the popularity and flexibility of the adventure mode to construct an association between scientific progress and national prowess that is often taken for granted. In addition to this role in popularisation and self-fashioning, forms and modes borrowed from literature became scaffolding with which parasitologists structured their own understandings of the discipline and their place within society. Likewise, parasitic diseases like trypanosomiasis (African sleeping sickness) and malaria were manipulated by novelists and journalists to imaginatively map the British Empire in relation to existing geopolitical ideologies about space and race. Using Ross and his colleagues as access points to a wider professional culture, I explore (and interrogate) literary and scientific forms of knowledge about tropical medicine, uncovering cross-fertilisations that had a lasting impact on our attitudes to scientists, on our conceptions of disease, and on our understandings of empire.

At the turn of the nineteenth into the twentieth century, parasites and parasitic diseases became protagonists in scientific narratives, plot devices in fiction, objects and subjects of government and educational policy, and poster children for the value of British imperialism. They provided a lens through which writers might scrutinise British global citizenship, a citizenship that was underscored by conversations about Britain and its global power structures. It is the shifting meanings of parasites and parasitic

<sup>15</sup> F. E. G. Cox, ‘The Golden Age of Parasitology—1875–1935: The Scottish Contributions’ *Parasitology* 144 (2017) 1567–81.

disease as they move across genres, modes, and audiences that most interest me. How do they operate as models for thinking about society, self, and nation? How are the ‘heroic’ narratives of turn-of-the-century parasitology reasserted in grand historical narratives of Western scientific progress? How do parasitology’s geopolitical stakes map onto fiction about the British imperial project?

## SCIENCEHUMANITIES

In 2016, James Castell, Keir Waddington, and Martin Willis developed the term *ScienceHumanities* as a blended version of the more traditional literature and science binary that ‘positions the disparate disciplines of the sciences and humanities in close proximity’. As they note:

[T]he elision of the space between “science” and “humanities” is emblematic of the transdisciplinary nature of the *ScienceHumanities*, which works across and between the disciplines and their methodologies, seeking to find new knowledge in the interstices of their joining together rather than in their separate spheres.<sup>16</sup>

In this book, I attempt to navigate this elided space, recognising that science—like the humanities—is culturally embedded and thus responds to, produces, and enacts the ‘social’ and ‘cultural’ in its own practices.

As N. Katharine Hayles argues, knowledge is encoded ‘not merely into words but also into practices, institutions, and material conditions’.<sup>17</sup> Therefore, *Empire Under the Microscope* examines the linguistic, social, and material networks that informed parasitology as a fledgling discipline immersed within, and thus formed by, an imperialist culture that supported particular understandings of the world. I am interested in the stories that emerge at the intersections of these networks. What happens when circulating ideas about parasitic disease move through and are interpreted by disparate organising principles like the methodologies of empiricism or the formal techniques of the novel? Or more specifically, what happens when parasitologists draw on literary forms to engage more

<sup>16</sup> James Castell, Keir Waddington, and Martin Willis, ‘ScienceHumanities: Introduction’ *Journal of Literature and Science* 10.2 (2017) 1–5 (p. 1).

<sup>17</sup> N. Katharine Hayles, ‘Introduction: Complex Dynamics in Literature and Science’ in *Chaos and Order: Complex Dynamics in Literature and Science* ed. by N. Katharine Hayles (Chicago: University of Chicago Press, 1991) p. 4.

meaningfully with the public? When readers of the *Indian Medical Gazette* are directed to an imperial romance novel for the aetiology of sleeping sickness? Or when journalists insist upon a likeness between tropical pathology research and the detective work of Sherlock Holmes?

Martin Willis has illuminated the ways in which medicine throughout the Victorian period was underpinned by a ‘richness of connections between literary culture and institutionalized science’, and much scholarly work has explored the multi-vocal intellectual landscape of the long nineteenth century in the context of a transition from a ‘predisciplinary’ to a more formally disciplinary culture.<sup>18</sup> In her foundational work, Gillian Beer drew attention to the ‘shared discourse’ of this period in which ‘not only ideas, but metaphors, myths, and narrative patterns could move freely and rapidly to and fro between scientists and non-scientists’.<sup>19</sup> The idea, as she contends elsewhere, that individuals ‘work with the metaphors and thought-sets historically active in their communities’ partly explains why, for example, parasitologists found themselves employing the concept of King Arthur and his knights to conceptualise their work—after all, the publication of Alfred Tennyson’s *Idylls of the King* (1859–1885) and the first modernisation of Malory’s compilation of Arthur’s tales had given Arthurian fantasy new cultural currency, as I explore in my first chapter.<sup>20</sup>

From Beer’s field-defining work *Darwin’s Plots* (1983), to George Levine’s *Darwin and the Novelists* (1988), to Devin Griffith’s *The Age of Analogy* (2016), scholars have been interested in not only the shaping function of language but also of form, and have found ample material in evolutionary theory. For Levine, nineteenth-century science and the

<sup>18</sup> Martin Willis, ‘Scientific Cultures and Institutions’ in *The Routledge Research Companion to Nineteenth Century British Literature and Science* ed. by John Holmes and Sharon Ruston (Abingdon: Routledge, 2017) pp. 30–40 (p. 30). This is somewhat of a false dichotomy, given that medical and scientific specialisms do, of course, predate the nineteenth century, and as Gowan Dawson notes, the Royal Society’s insistence on ‘self-consciously plain and non-figurative language’ in scientific communications in the late seventeenth century suggests a much earlier fragmentation of the ‘one culture’ model. However, the nineteenth century does provide fertile ground for exploring the imagined nature of disciplinary at a time when many writers and practitioners were concerned with demarcating professional identity. See: Gowan Dawson, ‘Literature and Science Under the Microscope’ *Journal of Victorian Culture* 11.2 (2006) 301–15 (p. 311).

<sup>19</sup> Gillian Beer, *Darwin’s Plots: Evolutionary Narrative in Darwin, George Eliot, and Nineteenth-Century Fiction*, 3rd Edn (Cambridge: Cambridge University Press, 2009) p. 5.

<sup>20</sup> Gillian Beer, *Open Fields: Science in Cultural Encounter* (Oxford: Oxford University Press, 1996) p. 8.

nineteenth-century novel are ‘cultural twins’ that share common assumptions and ideals.<sup>21</sup> He contends that ‘science enters most Victorian fiction not so much in the shape of ideas, as quite literally, in the shape of its shape, its form, as well as in the patterns it exploits and develops, the relationships it allows’.<sup>22</sup> Griffiths too focuses on the ‘shape’ of science, arguing that both novelistic interventions and evolutionary theory used analogy to facilitate encounters with the past. These twinned enterprises (of imagining historical worlds and of imagining inaccessibly theoretical ones) rested on the power of analogy to ‘establish a pattern of similarity between two different sets of relationships’.<sup>23</sup>

What Griffiths calls the ‘comparative turn’ of the nineteenth century was galvanised by the emergence of the historical novel as a mode that enabled a new historical sensibility to flourish. This historical sensibility is evident in textbooks regarding the prevention of malaria wherein parasitologists compared contemporary knowledge and intervention to that of historical empires, particularly Ancient Greece and Rome. In this way, comparative historicism contextualised parasitology research in relation to imperial practices through time. Political proponents also invoked this model; at a banquet held in honour of the London School of Tropical Medicine, Alfred Lyttelton, Secretary of State for the Colonies, toasted ‘the Empire’ and reportedly ‘contrasted its gigantic dimensions with those of the Roman empire’.<sup>24</sup> Indeed, parasitology as a branch of knowledge was deeply intertwined with historical commentary. From medical textbooks to newspaper columns, writers provided timelines of thought and discovery stretching back to Biblical times to preface current work in the field. Tropical medicine was often narrated in terms of discoveries made—a practice that demonstrated international collaboration, even as it was weaponised to legitimise individual priority claims.

When William Osler, Regius Professor of Medicine at Oxford, set up the History of Medicine section (later society) at the Royal Society of Medicine in 1912, Ross was a founding supporter. He was personally invited to join by Osler and served as vice-president, alongside Regius Professor of Physic (medicine) at Cambridge Thomas Clifford Allbutt;

<sup>21</sup> George Levine, *Darwin and the Novelists: Patterns of Science in Victorian Fiction* (Cambridge: Harvard University Press, 1988) p. vii.

<sup>22</sup> Levine, p. 13.

<sup>23</sup> Devin Griffiths, *The Age of Analogy: Science and Literature Between the Darwins* (Baltimore: Johns Hopkins University Press, 2016) p. 28.

<sup>24</sup> ‘London School’ *Aberdeen Journal and Press*, Thursday 11 May 1905, p. 6.

two previous presidents of the Royal Society of Medicine (Henry Morris and William Selby Church); and Dr Richard Caton, former Lord Mayor of Liverpool and vice-chair of the Liverpool School of Tropical Medicine.<sup>25</sup> Tropical medicine was thus well represented on the committee. Ross's interests in the importance of history to contextualise science can also be seen in his editorship of *Science Progress* (1913–1932) in which he frequently published histories of medical and scientific specialities, as well as essays advocating the teaching of the history of science.<sup>26</sup> This is also an arena in which he laid out his ideas for a melded approach to science and art. As he argued in an article about the proposed opening of a national Shakespeare theatre, 'the real educators are not the schoolmasters but the poets, the men of science, and the historians'.<sup>27</sup> In a review of John Masefield's *Sonnets and Poems* published in a 1917 issue, he insisted:

Science and poetry are twin sisters whose office is to seek and to sum. Twice blessed is he who is inspired by both; for the man of science should be a poet, and the poet a man of science—not preposely perhaps, but in caste. The one sister gives the flame without which seeking is seldom successful; and the other such reality as will keep the mind from losing itself in the clouds. Thus the goddesses walk ever hand in hand—pure spirits lifting the mind of man, or, indeed, making it.<sup>28</sup>

In the same issue, he published Masefield's poem 'The Choice', which, he remarked, would be of interest to 'scientific minds'. In Masefield's poetry, Ross argued, we hear the 'pure harmony' of 'the voices of both the divine sisters singing together [...] it is a quest of the Holy Grail of Beauty by the Sir Perceval of poets' (444).

This last sentence demonstrates the kind of rhetorical encounters that I explore in my first chapter, where I trace the influence of the Greek muses and of Arthurian legend on projects of professional self-fashioning at the

<sup>25</sup> 'Royal Society of Medicine. Section of the History of Medicine' *The Lancet* 180.4657 (30 November 1912) 1504–09.

<sup>26</sup> Whilst *Science Progress* courted a predominantly scientific and professional readership, it was regularly reviewed in the literary supplement of *The Times*, the *Yorkshire Post*, the *Aberdeen Journal*, the *Oxford Chronicle*, and *Nature*, among other journals.

<sup>27</sup> Ronald Ross, 'A Shakespeare Theatre' *Science Progress*, 16.62 (October 1921) p. 285.

<sup>28</sup> Ronald Ross, 'THE SISTER OF SCIENCE by Ronald Ross on *Sonnets and Poems* by John Masefield' *Science Progress*, 11.43 (January 1917) 441–44. Masefield was himself interested in science and wrote a novel about sleeping sickness in 1909 called *Multitude and Solitude*, as discussed in later chapters.



turn of the century. Gawain and Galahad joined Perceval in the imaginations of parasitologists as they adapted historical and poetic models of chivalry to reconceptualise the relationship between medicine and empire. As I argue, parasitologists reached back to the real and imagined past to promote their research specialty as a source of national pride and so make the case for professional recognition and support. Capitalising on the narrative power of British myths of nationhood and the cultural currency of Greco-Roman mythology, parasitologists framed themselves as modern ‘knights of science’ fighting on behalf of imperial Britain. Individual researchers were lionised as national heroes and their research framed as labour that would command the longevity of legendary stories like those recounted in Homeric poems or medieval romance.

The success of these stories of science is reflected in the many newspaper articles, opinion pieces, and biographies that were written in the 50 years following Ross’s discovery. In 1910, a writer for British political weekly newspaper *The Nation* insisted that Ross’s poetic retelling of his discovery would become ‘part of our national heritage [...] to the man of science no song of triumph could be nobler’.<sup>29</sup> Meanwhile Sir Edward Russell, editor of the *Liverpool Daily Post and Mercury*, reinforced the rhetoric of the ‘knights of science’ by remarking: ‘it is as though Hector himself, in the pauses of the fight, had sung the siege of Troy’.<sup>30</sup> English writer Osbert Sitwell wrote a preface to Mégroz’s biography of Ross in 1931 in which he insisted that Ross’s dual nature as scientist and poet should be ‘a cause of pride and pleasure to all Englishmen’. Who can fail to feel a ‘stir of patriotism’ when reading of Ross’s achievements he asks—‘it is the achievements of such men more than football matches and battles that move those who love their country’.<sup>31</sup> For writers like Sitwell parasitology inspired the same a kind of patriotism as team sports and military victories.

When I employ the term *parasitology*, I do so to refer to a set of ideas and practices associated with the aetiology and control of human tropical parasitic disease, coextensive with projects of professional self-fashioning. As I demonstrate throughout, parasitologists employed literary and

<sup>29</sup> [No Title] *The Nation*, 15 October 1910, quoted in Ronald Ross, *Philosophies* (London: John Murray, 1911).

<sup>30</sup> Edward Russell, [No Title], *Liverpool Daily Post and Mercury*, 3 October 1910, quoted in Ross, *Philosophies*.

<sup>31</sup> R. L. Mégroz, *Ronald Ross: Discoverer and Creator* (London: George Allen and Unwin, 1931) p. 9.

historical forms of knowledge when conceptualising themselves and their subfield. In doing so, they often inscribed a form of white, Anglophone exceptionalism into the stories of parasitology and empire, using historical and literary ‘imagined communities’ to bolster their claims to the public purse and stabilise the authority of their profession. The legacy of this remains with us and continues to augment the relationships between science, society, and the state. I am indebted to Bruno Latour’s Actor-Network theory, which considers the critical role of not just people but also places, objects, and texts in the development and practice of science, and to Benedict Anderson’s concept of imagined communities, which offers a model for conceptualising how disparate individuals might imagine themselves as part of a community larger than themselves (e.g. a nation) through the circulation and consumption of printed media. Nationhood and nationalism, Anderson argues, are cultural artefacts that command ‘profound emotional legitimacy’ through individuals’ subscription to ‘imagined political communities’.<sup>32</sup> He identifies the novel and the newspaper, in particular, as ‘two forms that provided the technical means for representing the kind of imagined community that is the nation’ (25).

I consider how parasitology participated in the formation and consumption of such ‘imagined communities’ by analysing how tropical medical knowledge was articulated in articles and correspondence in the medical press (including the *British Medical Journal*, the *Lancet*, and the *Indian Medical Gazette*); in medical lectures and speeches; in travel writing such as Henry Morton Stanley’s *In Darkest Africa* (1890) and Edward Glave’s *In Savage Africa* (1892); in medical travelogues such as Arthur Torrance’s *Tracking Down the Enemies of Man* (1928); in medical biography such as Ross’s own *Memoirs*, as well as biographies of Ross by Rodolphe Louis Mégroz, John Rowland, and James Oram Dobson; and in popular medical histories such as Ronald Campbell Macfie’s *The Romance of Medicine* (1907) and Paul de Kruif’s *Microbe Hunters* (1926). Across this diverse range of texts—with disparate and overlapping readerships—writers mapped the contours of empire with reference to parasitic disease, triangulating a kind of imperial nationhood that valorised British geopolitical dominance through medicine and upheld a Carlylean ‘great man’ narrative of history.

<sup>32</sup> Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London: Verso, 2006) p. 4.

Quoting from A. E. Grant's *Indian Manual of Hygiene* (1894), Mark Harrison identifies how medical writers employed militarised language in Indian sanitary literature to frame sanitary officers as heroic figures: 'to win the doubting and careless ones to his side and to enlist them under the banner of hygiene; to fight continually and untiringly against all foes to the health of mankind'.<sup>33</sup> Harrison's own characterisation of these references as 'Kiplingesque' points to another entanglement that I explore throughout this book—that of the relationship between medicine and imperial romance.<sup>34</sup> In my second chapter, I consider how parasitology became rhetorically and materially entangled in the imperial imagination with travelogues, anthropological treatise, imperial romance fiction, and missionary biography. These modes jointly constructed the colonial encounter as a feat of manly endurance, using the linguistic enjoinder of medicine and exploration to frame parasitologists as modern heroes. Examining the influence of Thomas Carlyle's conceptualisation of the heroic in history, I demonstrate how tropical illness became a subject rhetorically associated with pioneers, poets and prophets, mapped onto the larger field of empire by the adventure mode.

Whilst in my first chapter I consider the temporal framing of parasitology, here I examine how parasitologists thought about their discipline in spatial terms. In Ross's *Memoirs*, he compares his discovery of the malaria parasite inside the salivary glands of the mosquito in 1898 to 'a geological prospector discover[ing] gold, or diamonds, or oil, somewhere in India' (314), a comment that demonstrates the shared geographical and medical vision of empire. By using analogies such as gold prospecting and geographical exploration, parasitologists signalled the political value of their discoveries by emphasising the similarity of their methodologies to geographers, cartographers, and commercial miners. Indeed, their work, which often involved accompanying explorers on expeditions, collecting specimens, and creating sanitary maps, facilitated slippages of profession that were highlighted through language and form. Mapping was a particularly flexible mode, which parasitologists manipulated to locate their research in relation to global politics—from the use of cartographic language in

<sup>33</sup> Mark Harrison, 'Towards a Sanitary Utopia? Professional Visions and Public Health in India, 1880–1914' *South Asia Research* 10.1 (1990) 19–40 (p. 21).

<sup>34</sup> I use imperial romance here as a placeholder for imperial adventure fiction more generally as well as to refer to imperialist fantasies that romanticised the colonial encounter.

medical lectures to the incorporation of mapping techniques in medical textbooks that sought to delimit tropical and temperate diseases.

A series of gold and diamond rushes in California, Australia, South America, and South Africa from the 1850s onwards provided a new motivation for colonial exploration, reframing the colonies in the popular imagination as spaces of endless bounty.<sup>35</sup> In 1883, the *Athenaeum* reported that the ‘closer knowledge’ of West Africa acquired since the second Ashanti war (1873–1874) had ‘revealed that the soil of the whole of the British protectorate is impregnated with gold, and that it may be also expected to supply copper, zinc, iron, and precious stones’.<sup>36</sup> Accordingly, treasure-seeking was increasingly incorporated into narratives of triumphant exploration. In imperial adventure stories—from Robert Louis Stevenson’s *Treasure Island* (1883) to Jules Verne’s *The Southern Star* (1884) to H. Rider Haggard’s *King Solomon’s Mines* (1885)—it quickly became a preferred plot device because, as explorer Richard Burton wrote in 1883, ‘geography is good but gold is better’.<sup>37</sup> The trope also infiltrated the medical imagination; parasitologists drew on it as a way of contextualising their research in relation to geographical discovery and themselves in relation to pioneering explorers—or even the fictional adventurers of imperial romance. By analysing the bodies of patients, already established to parallel allegorically the colonial landscape, parasitologists—like explorers—might find ‘treasures that for ages have been missed’, wrote one reviewer in the *Annals of Tropical Medicine and*

<sup>35</sup> Helen Goodman notes: ‘The “Star of Africa” diamond was found in Griqualand West in 1869, and in 1871 many more of the gems were found where the Orange and Vaal Rivers meet, leading to the British annexation of the Transvaal. Wilkie Collins’s *The Moonstone* (1868) had popularised the literary plot of the search for a diamond from colonial India, and Haggard’s *King Solomon’s Mines* combined mystery with heroic adventure, blending military nostalgia with the topical subject matter of real-life treasure hunts’. Goodman, ‘“A Story of Treasure, War, and Wild Adventure”: Hero-Worship, Imperial Masculinities, and Inter-Generational Ideologies in H. Rider Haggard’s 1880s Fiction’ in *Martial Masculinities: Experiencing and Imagining the Military in the Long Nineteenth Century* ed. by Michael Brown, Anna Maria Barry, and Joanna Begiato (Manchester: Manchester University Press, 2019) pp. 232–54 (p. 241).

<sup>36</sup> ‘To the Gold Coast for Gold. By Richard F. Burton and Verney Lovett Cameron. 2 vols. Maps and Illustrations (Chatto and Windus)’ *The Athenaeum* 2880 (6 January 1883) 11–12 (p. 11).

<sup>37</sup> Richard F. Burton, ‘Preface’ in *To the Gold Coast for Gold, a Personal Narrative* by Richard F. Burton and Verney Lovett Cameron, Vol I (London: Chatto and Windus, 1883) p. x.

*Parasitology* in 1910.<sup>38</sup> Ross makes similar comments in his *Memoirs*, recalling that he searched the bodies of mosquitoes for malaria parasites ‘with the same passion and care as one would search some vast ruined palace for a little hidden treasure’ (224). In his letters to Manson (written in the 1890s), he says that he feels like ‘Aladdin in the cave of the “lamp”—I can’t carry away all I can lay my hands on’ (261), and upon his eventual success, he asserts: ‘the door is unlocked, and I am walking in and collecting the treasures’ (301).

In 1897, a reviewer for Sydney Thayer’s *Lectures on Malaria* (1897) similarly invoked the concept of gold prospecting, but this time to critique medical knowledge about malaria:

The biography of the malarial fevers has by now assumed enormous proportions, for although many important veins remain to be followed up, the malarial mine has already been very thoroughly worked. In the process, much pure metal has been extracted. A great deal of valuable material is still mixed, however, with baser mineral, and unfortunately the literature also is encumbered with quantities of spurious ore...<sup>39</sup>

By using the image of a ‘malarial mine’, the writer implies a correspondence between the intellectual and material resources of the tropics, making the prevention of malaria synonymous with the notion of ‘striking gold’. This dynamic not only critiques the currency of the wealth of intellectual material about malaria but also reminds us that research in parasitology, like the mining of geological resources, was an activity that supported imperial power. Ross makes this political connection even more explicit in his *Memoirs* when he criticises the lack of government response to his malaria work by comparing it to the response that would undoubtedly have followed if he had indeed discovered gold, or—placing malaria in the position of an imperial enemy—‘if, let us say, a hill tribe had committed some depredation’. Then, he argues, ‘the authorities would have brought up an army against them at a cost of a million rupees’ (314).

The euphemistic use of ‘treasure’ in medical writing finds a parallel in a subset of imperial romance stories where tropical illness and its cure began to displace other subjects as the focus of plot. In such stories, treasure and

<sup>38</sup> ‘Annals of Tropical Medicine and Parasitology by The Liverpool School of Tropical Medicine’ *British Medical Journal* 2.2595 (1910) p. 880.

<sup>39</sup> L. F. B. ‘Notes on New Books’ *John Hopkins Hospital Bulletin* 8.81 (December 1897) 265–67 (p. 266).

medical progress become synonymous—as in Henry Seton Merriman’s *With Edged Tools* (1894) in which the characters seek a secret African drug called ‘Simiacine’, which grows at a plateau in the forests and promises to be a lucrative, cure-all. John Masefield’s *Multitude and Solitude* (1909) and Joseph Hocking’s *The Dust of Life* (1915) offer similar plots: in the first, the characters travel to Africa with the intention of finding an experimental cure for sleeping sickness, and in the second, the British protagonist, Cedric, catches sleeping sickness and is saved by a native African who knows of a cure hidden in the African interior. This cure becomes Cedric’s passport into high society, securing him riches and winning him a wife. By switching out treasures for cures, these imperial romance novels play out a medicalised version of rediscovering the Garden of Eden. As Charlotte Rogers has explored, European writing about the tropics had long been composed with reference to biblical place-myths. When Christopher Columbus discovered the South American continent (a result of his self-reported obsession with finding ‘gold’), he announced that he had discovered a terrestrial paradise.<sup>40</sup> Ross uses Columbus as a guiding metaphor for scientific discovery and its disruptions, writing ‘for the second time I was to be interrupted just as I had the conclusion of the human malaria work within easy reach [...] Columbus having sighted America was ordered off to discover the North Pole!’ (318). When his experiments proved successful, he exclaimed that he had ‘found the Treasure Island [...] the Promised Land’ (239). As I explore in my first chapter, the concept of the ‘promised land’ was also invoked in acclimatisation debates to conceptualise resource-rich Africa. Such analogies were not only communicative strategies but also informed the practical methodologies of the discipline by positioning microscopic analysis as akin to imperial cartography and geographical exploration.

As a primary methodological tool the microscope came to emblematised the field’s concern with hidden worlds. The challenges inherent in conceptualising the microscopic produced a vocabulary that emphasised the superior visual capabilities of the parasitologist, which found a popular parallel in the techniques of the police detective. In my third chapter, I trace the cultural encounters between the parasitologist and the scientific detective in the medico-popular imagination, revealing how such meetings positioned parasites as the ‘invisible assassins’ of empire, and helped

<sup>40</sup> Charlotte Rogers, *Jungle Fever: Exploring Madness and Medicine in Twentieth-Century Tropical Narratives* (Nashville: Vanderbilt University Press, 2012) p. 6.

to embed the figure of the doctor-detective in public understandings of science.<sup>41</sup> Scottish doctor and poet Ronald Campbell Macfie (1867–1931) followed a popular tradition by referring to the parasites of malaria and sleeping sickness as ‘murderers’ and ‘criminals’ with ‘chequered and adventurous career[s]’ in his 1907 book *The Romance of Medicine*.<sup>42</sup> Likewise journalists routinely invoked Sherlock Holmes as a frame of reference when reporting on research in tropical medicine.

Consequently, parasitologists were associated with a cultural fantasy about the scientific method that was itself informed by the ‘romance’ of medicine embodied by assertions like Macfie’s that ‘the history of science is the history of a few great men fighting single-handed to establish truth’ (5). I examine Sherlock Holmes and kindred archetypes of the scientific detective in the context of tropical medicine to reflect on cross-pollinations that helped to consolidate the imagined power and authority of science as a tool of legal, moral, and social control. Holmes continues to have cultural currency in clinical and diagnostic medicine, as numerous articles in medical journals attest. Here, and at the fin de siècle, he operates, not just as an aspirational model for the objectivity of science, but as a complex and contradictory shorthand that reflects the messiness of the scientific method even as it attempts to stabilise the authority of science. By placing the formal strategies of detective fiction in dialogue with the representational strategies of parasitology, I disentangle some of the threads that continue to underpin our fraught cultural understandings of the scientific method, explicating the joint imaginative work and shared vocabularies of literature and medicine.

Whilst some authors—like Arthur Conan Doyle, H. Rider Haggard, and, to a lesser extent, John Masefield—had first-hand experience of parasitic disease drawn from their time spent in the colonies, for other writers, their knowledge of tropical disease was begotten in more indirect ways and based on assumptions that had become naturalised. This ‘unread’ knowledge, this second-, third-, fourth-hand science is often the knowledge that asserts itself most forcefully. As George Levine notes, despite its apparent upending of anthropocentric hierarchies, evolutionary theory was widely engaged with in part because it told a compelling and already-extant narrative. It, Levine contends, ‘found ostensibly scientific form for

<sup>41</sup> Paul de Kruif, *Microbe Hunters* (New York: Harcourt, Brace, and Company, 1926) p. 137.

<sup>42</sup> Ronald Campbell Macfie, *The Romance of Medicine* (London: Cassell and Co., 1907) pp. 144–46.

the ideologies that dominated Victorian society'.<sup>43</sup> This is much the stance I take for parasitologists, whose theories and practices appeared to offer a 'scientific form' for imperial and national ideologies. In my fourth chapter, I examine how one particular tropical disease, sleeping sickness, was conceptualised as a form of tropical violence across a range of medical and nonmedical genres. I reveal how Henry Seton Merriman's sensational literary depiction of sleeping sickness in *With Edged Tools* (1894) made its way into newspaper reports and clinical case studies, augmenting debates about racial susceptibility. For writers like Merriman, tropical disease provided a rhetorically flexible scaffold for mapping the moral and emotional fault lines of empire. By collapsing several aetiological modes into one multivalent metaphor of atmospheric 'irritability', *With Edged Tools* reveals how geopolitical anxieties about imperial administration were embedded into conceptualisations of health and disease.

In *Unfinished Empire*, John Darwin argues that 'more or less organised violence played a huge part in British expansion'. He draws attention to War Office paperwork in 1902 that, in compiling a list of the principal British wars between 1857 and 1899 settled on 15—a not insubstantial number, despite leaving out many lesser conflicts including those in Kenya, Uganda, Nigeria, and the Eastern Cape of South Africa.<sup>44</sup> In my final chapter, I analyse the enduring and mobile metaphor of medicine as war to illuminate how imperial military forms encoded violence into narratives of parasitology and vector biology in ways that legitimised equally violent political interventions. The broad analogy of medicine as warfare enabled readers and listeners to gain access to a new conceptual domain—the microbiological.

Scholars such as Lorenzo Servitje, Michael Brown, Anne Marie Moulin, and Roger Cooter have explored the historical and rhetorical intertwinement of medicine and war.<sup>45</sup> The 'war and epidemics couplet' (Cooter)

<sup>43</sup> Levine, *Darwin and the Novelists*, p. 3.

<sup>44</sup> John Darwin, *Unfinished Empire: The Global Expansion of Britain* (London: Penguin Books, 2012) pp. 117–18.

<sup>45</sup> Lorenzo Servitje, *Medicine Is War: The Martial Metaphor in Victorian Literature and Culture* (Albany: SUNY Press, 2021); Michael Brown, 'Like a Devoted Army: Medicine, Heroic Masculinity, and the Military Paradigm in Victorian Britain' *Journal of British Studies*, 49.3 (2010) 592–622; Anne Marie Moulin, 'The Defended Body' in *Medicine in the Twentieth Century* ed. by Roger Cooter and John Pickstone (London: Routledge, 2003), pp. 385–98; Roger Cooter, 'Of War and Epidemics: Unnatural Couplings, Problematic Conceptions' *Social History of Medicine* 16.2 (2003) 283–302. See also: Paul Hodgkin,



and the broader ‘figurative construction of medicine as war’ (Servitje) owe their dominance, in part, to the contexts of the development of microbiological knowledge, much of which was produced in or around military medical establishments, and which ‘gave enormous ground to the metaphor of “war on disease” both in medicine and society’.<sup>46</sup> Moreover, the biopolitical interventions of public health naturalised practical and theoretical entanglements between warfare and medical practice. Mark Harrison has referred to these entanglements as the medicalisation of the military and the militarisation of medicine, asserting that as a ‘mode of discipline’ medicine ‘contributed to the emergence of modern forms of military organisation’ and was ‘valued as an administrative and managerial resource’.<sup>47</sup> Many parasitologists, especially before the establishment of schools of tropical medicine, worked in the Colonial Medical Services (e.g. Ross, George Giles, Leonard Rogers, David Douglas Cunningham, and Charles Donovan), or the Royal Army Medical Corps (e.g. David Bruce and William Leishman). Ross was also consultant in malarialogy to the British War Office in 1917, and so it is perhaps unsurprising that military language was one of the forms that he reached for when discussing malaria.

By close reading texts such as H. G. Wells’s *The War of the Worlds* (1898) and Bram Stoker’s *Dracula* (1897), alongside Manson and Ross’s

‘Medicine is War: and Other Medical Metaphors’ *British Medical Journal (Clinical Respiratory Education)* 291.6511 (21 December 1985) 1820–21; Scott L. Montgomery, ‘Codes and Combat in Biomedical Discourse’, *Science as Culture* 2.3 (1991) 341–90; David Cantor, ‘The Diseased Body’ in *Medicine in the Twentieth Century* ed. by Roger Cooter and John Pickstone (London: Routledge, 2003), pp. 347–66 (especially, p. 349); Laura Otis, *Membranes: Metaphors of Invasion in Nineteenth-century Literature, Science, and Politics* (Baltimore: Johns Hopkins University Press, 1999); Roger Cooter, Mark Harrison, and Steve Sturdy (eds), *War, Medicine and Modernity* (Stroud: Sutton Publishing, 1998); Roger Cooter, Mark Harrison, and Steve Sturdy (eds), *Medicine and Modern Warfare* (Amsterdam: Rodopi, 1999); Mark Harrison, *Public Health in British India: Anglo-Indian Preventive Medicine* (Cambridge: Cambridge University Press, 1994) and ‘Medicine and Management of Modern Warfare’ *History of Science* 34.4 (1 December 1996) 379–410; David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth Century India* (Berkeley: University of California Press, 1993). For more general scholarship on how conceptual metaphors are organising principles for our understanding and experience of the world, see: George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago: Chicago University Press, 1980).

<sup>46</sup> Cooter, ‘Of War and Epidemics’, p. 293.

<sup>47</sup> Mark Harrison, ‘The Medicalization of War—The Militarization of Medicine’ *Social History of Medicine* 9.2 (1 August 1996) 267–76.

characterisations of parasite-vector-host relationships, I examine how the microbiological imagination made its mark on anxious imperial fictions in which ontological uncertainty and declining confidence in the longevity of British geopolitical dominance were aggregated. *Dracula's* 'blood and soil' motif, for example, plays on the doubleness of blood as a symbol of heredity and as a medium for disease, and soil as a symbol of homeland and as a culture medium for parasites. Implicit in both figurations is a conceptual and rhetorical confluence between British and microbial 'colonies'—a dyad that embodies related anxieties about cultural and biological reverse-colonisation, as explored by critics like Stephen Arata and Laura Otis. By excavating the medical and political contexts of popular cultural forms like the vampire, this chapter historicises lexes of contagion and parasitism that persist in contemporary political discourse surrounding immigration.

\* \* \*

Throughout this book, I invoke several established models from the field of literature and science in order to chart a course through what is a very messy landscape. When I talk of exchanges and encounters, Gillian Beer's 'two-way traffic', the 'shape' of science, the 'form' of the novel, it is with the caveat that what is happening here is not neat, linear, or easy to distinguish. The models rarely map the reality faithfully because the reality is plural, overlapping, mobile, and contradictory. When we speak of literature and science, it is tempting to assume two well-defined monoliths with equal and opposite directions of flow. Much more helpful is the image of multiple, loosely defined hubs of sciences and literatures engaging in unequal amounts of active and passive exchanges and assimilations. To co-opt Darwin's oft-borrowed metaphor, we might contemplate the relationship between these forms of knowledge as like an entangled bank—with 'empire' and 'parasitology' as 'the plants that grow, the birds the sing, the insects that flit, and the worms that crawl' within this complex ecosystem, and literature and science as part of a subsoil of ideas, metaphors, and narrative patterns that are sometimes difficult to disentangle but which provide rich nutrients and support fruitful encounters.<sup>48</sup> At the intersections

<sup>48</sup> Darwin closes his *On the Origin of Species* with the now-famous metaphor: 'It is interesting to contemplate an entangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through

of plot and form, we find new ways of understanding the world that do not always respect boundaries of genre, as when novelistic encounters with disease are referenced in medical magazines, when literary reviewers of novels praise the novelist's role as a communicator of science, or when Ross eulogises his colleagues' contributions to the science of empire using literary archetypes from the Knights of the Round Table.

### MEDICINE, GENDER, AND NATION

*Empire Under the Microscope* is explicitly about race, gender, and nationhood, and—because the writers and readerships I examine are predominantly middle class—it is also implicitly about class. It is about the power of language and the authority of science, the stories we tell ourselves and the images we find meaning in. A significant proportion of the book is concerned with professional self-fashioning. Heather Ellis has outlined the symbiotic evolution of the 'man of science' and professional discourses of masculinity throughout the nineteenth century. Changing ideas about gender and science in this period created the potential for new models of scientific masculinity; two such models were the 'scientific poet' and 'scientific hero', both of which come to form part of Ross's professional identity in the late century.

Ellis describes efforts to rehabilitate the reputation of the man of science with the establishment of the British Association for the Advancement of Science (BAAS) in 1831. She argues that the BAAS drew much of its aesthetic direction from poet-scientist Humphrey Davy, who longed to realise Francis Bacon's vision of a 'masculine' science. Although historians of science have often engaged with the idea of the masculine authority of science in this period, Ellis argues that they tend to present it as an enduringly stable phenomenon. Challenges to this authority are the exception rather than the rule. This, she contends, is not reflective of reality. Davy and his contemporary Alexander von Humboldt, for example, were seen not only as models of masculine virility but also as 'dandies' by some of their peers. Proponents of the BAAS continually fought against persistent

damp earth, and reflect that these elaborately constructed forms, so different from each other, and dependent on each other so complex a manner, have all been produced by laws acting round us'. Charles Darwin, *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (1859; London: The Folio Society, 2006) p. 388.

notions of the scientist as reclusive and effeminate or self-indulgent and foppish.<sup>49</sup> Like Ellis, I focus on the important role that self-fashioning played in attempting to stabilise the authority of science and follow Jan Golinski's direction by investigating how the identity of the scientist was 'formed from a variety of cultural resources, including those used to shape masculine identity in society at large'.<sup>50</sup> These resources include depictions of the 'warrior ideal', 'chivalric knight', and 'soldier hero', models which scholars such as Michael Paris, Mark Girouard, and Graham Dawson have explored in relation to imperial masculinity.<sup>51</sup>

Given that my focus is predominantly on a mode of self-fashioning that privileged a masculine ethos of self-sacrificing heroism, it is perhaps unsurprising that the texts I examine are mostly composed by male writers and about male researchers. This is not to say that there weren't female writers, researchers, or travellers—perhaps most famously, Mary Kingsley (1862–1900) explored Africa as an anthropologist, ethnographer, entomologist, and outspoken social reformer. In her *Travels in West Africa* (1897) she speaks of tropical disease at length. Indeed, in 1903, the Liverpool School of Tropical Medicine instituted a medal in her name, which was awarded to many of the parasitologists and administrators that I discuss, including Patrick Manson, Robert Koch, Alphonse Laveran, Joseph Chamberlain, William MacGregor, George Nuttall, Malcolm Watson, and David Bruce.

Parasitologist David Bruce, who was touted as the 'Sherlock Holmes of science', had a major scientific collaborator in his wife, microbiologist Mary Elizabeth Bruce (née Steele) (1849–1931), with whom he published more than 30 technical papers (Fig. 3). As his obituary noted:

They were never apart, she accompanied him during all his foreign service, and worked daily with him at home and abroad, in the laboratory, in the hospital and in the field, taking part in all his investigations. Bruce always

<sup>49</sup> See Heather Ellis, *Masculinity and Science in Britain, 1831–1918* (London: Palgrave Macmillan, 2017) p. 125.

<sup>50</sup> Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science, with a New Preface* (Chicago: Chicago University Press, 2008) p. xiii.

<sup>51</sup> See Michael Paris, *Warrior Nation: Images of War in British Popular Culture, 1850–2000* (London: Reaktion Books, 2000); Mark Girouard, *The Return to Camelot: Chivalry and the English Gentleman* (New Haven: Yale University Press, 1981); Graham Dawson, *Soldier Heroes: British Adventure, Empire and the Imagining of Masculinities* (Abingdon: Routledge, 1994).

**Fig. 3** Parasitologists Lady Mary and Sir David Bruce. (Reproduced with permission from Royal Society of Tropical Medicine and Hygiene)



laid stress on the great services his wife rendered him and when he lay on his death-bed he very definitely expressed the wish that any notice of his scientific work that might be made should include a statement of how much he had been indebted to her in the prosecution of all his work. She excelled in all laboratory technique as well as in drawing and she had taken care to learn methods in Koch's laboratory in Berlin, where she and her husband worked for some time during a leave period on return from Malta in 1888.<sup>52</sup>

Newspaper coverage highlighted Mary Bruce's scientific expertise in discussions of her husband, insisting that she was his constant companion

<sup>52</sup> J.R.B., 'Sir David Bruce (1855–1931)' *Obituary Notices of the Fellows of the Royal Society* 1.1 (1 December 1932) 79–85 (p. 80).

and that ‘he was always anxious to pay tribute to the assistance and encouragement he received from his wife’.<sup>53</sup> As records show, she was not merely ‘encouraging’, but rather a collaborator with considerable technical skill—‘it was with her invaluable assistance on the microscopic side that he discovered the causative organism [of Malta fever]’.<sup>54</sup> She was awarded an O.B.E. for her work on the aetiology and control of trench fever and tetanus during the First World War.

Another member ‘of the small band of pioneer women scientists in a not-too-appreciative masculine world’ is parasitologist Muriel Robertson (1883–1973), who carried out important research on trypanosomes in Ceylon.<sup>55</sup> She later joined the Lister Institute of Preventative Medicine as a member of staff and was appointed protozoologist to the Protectorate of Uganda in 1911. She did extensive work in the field of veterinary parasitology, as a lengthy obituary in the *Biographical Memoirs of the Fellows of the Royal Society* attests, as well as work on gas gangrene for which she was sought after for advice by Royal Army Medical Corps bacteriologists. She was awarded a Doctorate of Science from Glasgow University in 1922. Two of her sisters also qualified in medicine, one taking up general practice in Limavady, Northern Ireland.

Mary Bruce, Mary Kingsley, and Muriel Robertson were all praised for their femininity—the first described as ‘all that is associated with the word womanly’, the second as ‘a womanly woman in every sense of the word’, and the third as ‘thoroughly feminine’.<sup>56</sup> This complicates the idea of scientific authority as the sole preserve of the masculine realm in this period and deserves sustained and separate attention, which is, regrettably, outside the purview of this book.<sup>57</sup> Bruce, Kingsley, and Robertson constitute just three of the many female scientists and researchers who lived and worked within the period I investigate. As the *Lancashire Evening Post*

<sup>53</sup> ‘Sir David Bruce Dies During Wife’s Funeral Service’ *Daily Mirror*, Saturday 28 November 1931, p. 6.

<sup>54</sup> Weldon Dalrymple-Champneys, ‘Wives of Some Famous Doctors’ *Proceedings of the Royal Society of Medicine* 52 (3 June 1959) 937–46 (p. 945).

<sup>55</sup> Ann Bishop and Arnold Ashley Miles, ‘Muriel Robertson, 1883–1973’ *Biographical Memoirs of the Fellows of the Royal Society* 20 (1 December 1974) 317–47 (p. 317).

<sup>56</sup> J.R.B., ‘Sir David Bruce (1855–1931)’, p. 81; Edmund D. Morel, *Affairs in West Africa* (London: William Heinemann, 1902) p. xiv; Bishop and Miles, ‘Muriel Robertson, 1883–1973’, p. 344.

<sup>57</sup> A study of the many women who blazed trails as tropical pathologists in the nineteenth century is overdue.

pointed out in 1899, there were almost ‘200 lady doctors on the Register from the London School of Medicine for Women alone, and nearly 40 institutions—such as hospitals, lunatic asylums, &c.—have women doctors on their staffs’.<sup>58</sup> The writer insisted that the ‘lady doctor’ had justified ‘her status by clever and self-sacrificing work. She has shown her fitness for the calling in which grit, determination, patience, and pluck are almost essential to success by plodding and fighting on’, perpetuating the inscription of a kind of martial endurance in medical science that is more often seen as the ‘natural’ preserve of men. *Empire Under the Microscope* explores how parasitology produced narratives that encouraged a predominantly white, predominantly male understanding of medicine, which finds a legacy not only in the persistent gender disparity in STEM but also in gender biases in histories of science and medicine.

In their professional self-fashioning, parasitologists made use of modes and forms traditionally associated with masculine action: war, adventure, hunting, and sports. This was continuous with what Ellis identifies as attempts to ‘rebrand’ the man of science more generally from the mid-century. Examining the role of the X Club (1864–1890)—a dining club that is thought to have wielded wide influence over scientific thought—she explains how there was a shift away from placing emphasis on ‘birth, wealth and inherited status’ and towards ‘individual merit, moral worth and self-discipline: from nobleness of birth to nobleness of character’.<sup>59</sup> Scientists like Thomas Henry Huxley aimed to reform science, to free it from the ‘trammels of religion and politics’ and instead champion a more active, democratic, and secularly moralistic type of practice.

From the BAAS to the X Club via historian Thomas Carlyle’s writings on heroism and hero-worship, Ellis delineates consistent efforts to

reinvigorate the man of science in the public mind—as a figure of masculine authority connected to the real world, entrusted to the public to inform them about scientific progress and to lobby government on their behalf about the need to fund science appropriately. (8)

This ideal resonates with parasitologists’ efforts to elevate their discipline in the public mind as well as their appeals to politicians and colonial administrators for funding and support. However, unlike Huxley, many

<sup>58</sup> ‘Our Lady Doctors’ *Lancashire Evening Post*, Friday 18 August 1899, p. 2.

<sup>59</sup> Ellis, p. 125.

parasitologists combined this emphasis on action with a performative Christian sensibility and an overtly political motivation. This is reflected in Ross's poetic appeals to 'relenting God', his many subsequent biographies—which were often written and published by Christian student movements—and his insistence on the geopolitical role of parasitic diseases:

malaria is a great enemy of the explorer, the missionary, the planter, the merchant, the farmer, the soldier, the administrator, the villager and the poor [...] profoundly modif[ying] the world's history [...] It is essentially a political disease.<sup>60</sup>

Ronald Campbell Macfie similarly wrote of the 'vast political importance' of microbes in 1907. For Macfie, the two 'most important' microbes—those of tuberculosis and malaria—'not only slay individuals but build empires'.<sup>61</sup> Macfie demonstrates the racism that underpins the entanglements between tropical medicine and empire by privileging nationalist politics over global health, insisting that microorganisms are themselves 'prince[s] of Imperiali[sm]' who have 'connived at our designs [and] plotted for us' (156). He upholds a standard Western narrative of medical and imperial progress by asserting that the 'conviction of the mosquito' opened up continents to 'the conquest of the Caucasian'; however, by conceding that without epidemics Europeans would have been 'checkmated' by the 'black problem all over the world', he also reveals a microbially inflected eugenicism that invokes disease as bioweapon (155–56).

Whilst many cultural historians and literary scholars have focused on the use of disease as a marker of foreignness—as a way for Western writers to label global others as threats to national health and culture—Macfie's words demonstrate an awareness of the destruction wrought by colonialism on those othered communities. As Margaret Delacy observes 'armies carried syphilis and typhus that proved deadlier than fire and the sword; and a handful of explorers and settlers slaughtered millions of indigenous people with measles and smallpox'.<sup>62</sup> Not much has changed; in 2010, United Nations aid workers travelling to Haiti following a devastating earthquake brought still more devastation with them in the form of

<sup>60</sup> Ronald Ross, *The Prevention of Malaria* (London: John Murray, 1910) p. viii.

<sup>61</sup> Macfie, *The Romance of Medicine*, p. 155.

<sup>62</sup> Margaret Delacy, *Contagionism Catches On: Medical Ideology in Britain, 1730–1800* (London: Palgrave Macmillan, 2017) p. 3.



cholera, which prompted an epidemic that killed thousands of Haitians (3). The global Covid-19 pandemic that rages whilst I write this introduction illustrates once again how we reach for blame narratives that assign homelands to illness. Whilst relatively little is known about the origins of SARS-CoV-2, the viral pathogen responsible for Covid-19, its first appearance in Wuhan, China, has led to a global political discourse that has demonised Chinese people, governance, hygiene, and cultural practices. From bat soup to secret laboratory experiments, speculations about the emergence of this novel coronavirus and its subsequent politicisation as ‘the Chinese virus’, ‘Wuhan virus’, and even ‘kung-flu’ (names reminiscent of the ‘yellow peril’ narratives of the late nineteenth century) have coincided with reported rises in anti-Asian hate crimes globally.

Disease does not ‘belong’ to any one community and yet, as this book seeks to demonstrate, the stories we tell about disease are invariably bound up with ideas about political and national identity. In her recent book *Malaria and Victorian Fictions of Empire* (2019), Jessica Howell argues that malaria narratives are principally narratives of ‘place’ and ‘displacement’, with medical and nonmedical writers alike re-scripting malaria, particularly during the period of the New Imperialism (1870–1914), as ‘a disease of “out there” rather than “right here”’.<sup>63</sup> Authors of fiction, she argues, use the cyclic and remittent forms of malaria to structure chronology, plot, and characterisation, whilst malaria’s narrative displacement as a disease of ‘out there’ is borne out in the ‘mapping of subjects’ national characters and health in relationship to ‘malarial geographies’ (8). This process of othering malaria was part of a larger project of renegotiating British and imperial nationhood in the wake of a changing medical, disciplinary, and political landscape. In his 1910 book, *The Prevention of Malaria*, Ross re-scripts malaria precisely in this way, insisting that malaria was not endemic to Ancient Greece or the Roman empire, but rather was introduced from ‘without’:

Mr Jones, following a tentative suggestion of mine, gives many reasons in favour of the view that [malaria] may have entered [Greece and Italy] from without during historical times, and may subsequently have exerted considerable influence upon their civilisation.

<sup>63</sup>Jessica Howell, *Malaria and Victorian Fictions of Empire* (Cambridge: Cambridge University Press, 2019) p. 6.

He considers it unlikely that malaria could have been prevalent in Greece because ‘the people were too vigorous and warlike’; the figures on the tombstones, ‘though evidently idealised’ do not suggest to his medical mind ‘a malarious race’ (2). He clearly sees malaria as playing a role in the history of civilisation, asserting that once it was introduced it ‘sapped the vigour and physique of the race’. If malaria is a threat to civilisation, it makes political and ideological sense for Ross to map this threat as a historical import rather than an endemic problem.

Mark Harrison argues that the dominant belief in ‘the distinctiveness of the tropical environment and its maladies’ was part of a process of conceiving difference and hierarchy that facilitated European expansion.<sup>64</sup> The extreme version of this narrative involved thinking in binary oppositions: tropical and temperate, salubrious and pathogenic, primitive and civilised. Such forms are, for Caroline Levine, portable organising principles that pervade fictional and nonfictional texts alike.<sup>65</sup> Both Laura Otis and Stephen Arata have recognised the function of such binaries in constructing imperial metropolitan identity. Self and other—perhaps the ultimate binary—are categories that do ideological work in fictional texts. In different ways, Otis and Arata identify how the translocation of foreign ‘others’ to British space in novels articulates an anxiety about the integrity of British racial and political privilege, invoking fears of metropolitan degeneration. In fictional stories of empire, tropical disease is similarly not simply a technology of realism, but a malleable placeholder for foreignness, itself an ‘other’ that threatens British protagonists. For Arata, imperial narratives at the fin de siècle are often underscored by the fantasy that primitive forces—which ‘originate outside the civilised world’, or can even ‘inhere within the civilised itself’—might reverse the power relationship between the coloniser and colonised.<sup>66</sup>

Such primitive forces are often encoded by the aetiologies of tropical disease, which, in fiction, foresee a Britain epidemiologically compromised by its imperial practices. Whilst Arata highlights imperial romance—and what he calls ‘imperial Gothic’—as genres that bespeak a pairing of

<sup>64</sup> Mark Harrison, “‘The Tender Frame of Man’: Disease, Climate, and Racial Difference in India and the West Indies, 1760–1860” *Bulletin of the History of Medicine*, 70.1 (1996) 68–93 (p. 70).

<sup>65</sup> See: Caroline Levine, *Forms: Whole, Rhythm, Hierarchy, Network* (New Jersey: Princeton University Press, 2015).

<sup>66</sup> Stephen Arata, *Fictions of Loss at the Victorian Fin de siècle: Identity and Empire* (Cambridge: Cambridge University Press, 1996) p. 108.

colonial fear and imperial guilt, Otis identifies the detective narrative as a mode that enacts a kind of ‘imperial immune response’ policing the borderlands of empire.<sup>67</sup> As she argues, developments in neurology and cell biology provided a vocabulary in which to articulate nationhood as bounded by ‘semi-permeable membranes’, a notion that conceptualised the commercial possibilities and political pitfalls of global citizenship.<sup>68</sup> Howell enriches this scholarship by identifying what she calls ‘malarial Gothic’, a mode that ‘displac[es] visions of illness onto racial and national others’.<sup>69</sup> In this book, I interrogate how the stories we tell ourselves about science and empire are mediated by such fictions, excavating how stylistic choices like these not only distil geopolitical anxieties about Britain’s tropical possessions but also engage with and help to shape the shifting terrain of parasitic theories of disease transmission.

## MAPPING EMPIRE

Finally, a word about empire. Several bodies of knowledge converged to form the clay out of which conceptions of empire were built. From human anthropology to climatology, from tropical medicine to evolutionary theory, from politics and commerce, to fiction set in colonial space, discussions of native peoples, flora, and fauna were in conversation with each other and with dominant ideologies of Britishness. Mary Louise Pratt, for example, identifies a kind of ‘monarch-of-all-I-survey’ discourse in the writings of British Nile explorers in the 1860s. Their travel writings become a form of ‘verbal painting whose highest calling was to produce for the home audience the peak moments at which geographical “discoveries” were “won” for England’.<sup>70</sup> Such stories were mirrored by the Boy’s Own Adventure genre, from which many young men would learn a form of jingoistic chivalric masculinity that would also come to underpin the rhetoric of tropical medicine. Together such writings were part of a process of what Pratt calls ‘euro-imperial meaning-making’, a practice that was particularly fraught during the period that this book examines.

<sup>67</sup> Laura Otis, ‘The Empire Bites Back: Sherlock Holmes as an Imperial Immune System’ *Studies in 20th Century Literature* 22.1 (1998) 31–60.

<sup>68</sup> Laura Otis, *Membranes: Metaphors of Invasion in Nineteenth-Century Literature, Science and Politics* (Baltimore: Johns Hopkins University Press, 1999).

<sup>69</sup> Jessica Howell, *Malaria and Victorian Fictions of Empire*, p. 9.

<sup>70</sup> Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (London: Routledge, 1992) p. 202.

The years 1885–1935 encompass a period in which the moral, social, and political stakes of Empire were particularly visible amid anxiety about the continued viability of England’s ‘global prowess’ and unease about the political, economic, institutional, and social relationships that supposedly facilitated it. The partition of Africa, the granting of self-rule to the ‘settler’ colonies, and increasing tensions following the Indian Rebellion (aka Indian Mutiny) (1857) and the Jamaica Rebellion (1865) form a backdrop to this book and in many respects galvanised the self-validating racism inherent in what Patrick Brantlinger has called the ‘myth of the Dark Continent’.<sup>71</sup> This myth was perpetuated by viewing Africa and Britain through a lens of dichotomies—darkness versus light, savagery versus civilisation, pathology versus salubrity. That is not to say, however, that imperialism was a unifying force or an ideology subscribed to universally. Rather, that the very destabilising of what Martin Green has called the ‘energising myth of English imperialism’ in this period—through global political competition, colonial concessions, and anti-imperial resistance movements—made the polarising rhetoric of colonial difference even more salient.<sup>72</sup>

The scientific racism that underpinned this rhetoric was manifested in a form of medical cartography—a type of ‘story-telling’ that, for Tom Koch, represents ‘neither the world nor an objective record of our worldly experience, but a means whereby we come to understand aspects of it’.<sup>73</sup> The mapping of the tropical world by the West in the nineteenth century encoded a paradox borne out, as David Arnold notes, of the simultaneous perception of the tropics as landscapes of natural abundance and fertility, and of disease and poverty: ‘Europe’s engagement with the tropics contained, almost from the outset, a duality that made the tropics appear as much pestilential as paradisiacal’.<sup>74</sup> When I refer to the ‘tropics’ throughout this book, I follow James Duncan in recognising that

[t]he “tropics” was simultaneously a set of material facts (an area of the globe, characterised by certain climates, peoples and organisms), a set of

<sup>71</sup> Patrick Brantlinger, *Rule of Darkness: British Literature and Imperialism, 1830–1914* (Ithaca: Cornell University Press, 1988) p. 174.

<sup>72</sup> Martin Green, *Dreams of Adventure, Deeds of Empire* (New York: Basic Books, 1979) p. 3.

<sup>73</sup> Tom Koch, *Cartographies of Disease: Maps, Mapping, and Medicine* (Redlands: ESRI Press, 2005) p. 6.

<sup>74</sup> Arnold, ““Illusory Riches””, p. 8.

discourses (ideas and ways of thinking about this part of the globe and its relation to humans), and a set of projects (imperial, bureaucratic, commercial, religious and gendered ways of interacting, in part shaped by local structures, and in part by imperial structures that transcend the tropics).<sup>75</sup>

The tropics of fin de siècle parasitology were co-produced by diverse political, institutional, commercial, and social networks. Ross's mosquito-malaria work, for example, was precipitated by a desire for the investigation from members of the Indian Medical Service—supported by British specialists at home like Manson and spurred by a sense of international scientific competition—as well as by a desire from the Patiala government, the governor-general and sanitary commissioner of the Madras government, and the United Planter's Association of Southern India.<sup>76</sup> The investigation and subsequent investigations into other parasitic diseases like sleeping sickness and kala-azar were also supported by institutions like the Liverpool and London schools of tropical medicine, and benefactors like Alfred Lewis Jones, Edwin Durning-Lawrence, and Lord Leverhulme. These professional networks were often inseparable from the personal relationships and politics that structured them; Leverhulme had a vested interest in tropical medical research owing to his commercial ventures with Sunlight Soap, which relied on palm oil obtained in Africa and Asia. Moreover, he was personal friends with Ross, supporting his application for a 'special' pension from the Under Secretary of State for India, swapping self-penned dramas, and hosting a reading of Ross's poetry at his home in Hampstead.

Ross chose to view his time in India through a poetic lens, detailed in his poetry collection *Philosophies* (1911). At the end of seven years stationed with the Indian Medical Service in Madras, Bangalore, Burma, and the Andaman Islands, Ross remarks that he 'began to be drawn toward certain thoughts which [...] had occurred to [him] in [his] profession'. These thoughts soon began to 'shape themselves into a kind of sonnet of three short stanzas' (iii). In the following poems, he draws on his professional and poetic authority to delimit India as an ancient fallen civilisation which, he fears, might foretell Britain's own imperial future: 'Here from

<sup>75</sup>James S. Duncan, 'The Struggle to be Temperate: Climate and "Moral Masculinity" in Mid-Nineteenth Century Ceylon' *Singapore Journal of Tropical Geography* 21.1 (2000) 34–47.

<sup>76</sup>See: London, LSHTM. RC. GB 0809 Ross/04/54/01 and 02. Letter correspondence, June 1897.

my lonely watch-tower of the East/An ancient race outworn I see—/With dread, my own dear distant Country, lest/The same fate fall on thee' (1). *Philosophies* tells the story of his struggle to forestall that fate through tropical medicine, invoking a complementarity between science and sentiment that encapsulates the inherent tensions of this book. How can we write histories of medicine and empire that are sensitive to the cultural embeddedness of 'objective' knowledge and the narratives we use to communicate it?

It is important that we critically reflect on the intertwined histories of medicine and empire, especially now in the wake of a series of political and politicised episodes about nationalism, race, and so-called woke culture exemplified by recent backlash against postcolonial scholar Corinne Fowler's book *Green Unpleasant Land* (2020). The book, which examines 'four centuries of literary response to explore how race, class and gender have both created and deconstructed England's pastoral mythologies', prompted defensive retorts from the mainstream media misleadingly claiming that the book dubs 'gardening racist'. Such critiques are enmeshed within the wider contexts of the heritage 'culture wars', set against global Black Lives Matter protests and the dethronement of the statue of nineteenth-century slave trader, Edward Colston, in Bristol.

In the aftermath, many historians and academics of empire, like Fowler, have been accused of 'rewriting history'. Fowler co-edited a report by the National Trust investigating links between their properties and the slave trade which attracted criticism from conservative MPs who also disparaged Fowler's Colonial Countryside project, undertaken in collaboration with the National Trust and British primary schools. Former Cabinet minister Lord Peter Lilley demonstrated the emotional resonance of the debate and the deep ideological ties between place and identity when he insisted that Fowler 'has insulted her country by her book whose very title—Green Unpleasant Land—tells us what she thinks of her fellow citizens'.<sup>77</sup>

Lilley suggests that criticism of England's colonial past is unpatriotic. Certainly, evidence that 'the slavery business [...] shaped philanthropy and philanthropic giving in this country' is uncomfortable.<sup>78</sup> But we must

<sup>77</sup> Mark Edmonds, 'Academic says GARDENING has its roots in racial injustice' *Daily Online*, 16 January 2021 <https://www.dailymail.co.uk/news/article-9153499/Academic-says-GARDENING-roots-racial-injustice.html>.

<sup>78</sup> Hardeep Matharu, 'Anti-Woke Crusade Igniting Threats to Safety & Careers' *Byline Times*, 11 February 2021 <https://bylinetimes.com/2021/02/11/anti-woke-crusade-igniting-threats-to-safety-and-careers-theres-so-much-hatred-projected-at-women-in->

face this discomfort because, as Sathnam Sanghera illustrates in *Empireland* (2021), imperialism has shaped modern Britain. From our language to our architecture, and from curry to cups of tea, the legacies of our colonial past, for good and for ill, are irrevocably part of the fabric of Britain in 2021.<sup>79</sup> Science is no exception, and neither are the stories we tell about it. As an interdisciplinary study of the history of British parasitology, *Empire Under the Microscope* deepens our understanding of the cultural investments of scientific practice and reveals the multiform entanglements between science, empire, and the literary imagination at the turn of the century.

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<sup>79</sup> See: Sathnam Sanghera, *Empireland: How Imperialism Has Shaped Modern Britain* (London: Viking Books, 2021).

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# The Knights of Science: Medicine and Mythology

When parasitologist Joseph Dutton died of African Relapsing Fever on 27 February 1905, his obituary in the *British Medical Journal* concluded:

He was a true Knight of Science [...] the Galahad of that group of enthusiastic young men who, with so little recompense for themselves, have pushed forward the cause of tropical medical science at such a rapid rate.<sup>1</sup>

The accolade ‘Knight of Science’ reflects tellingly on the author, fellow parasitologist Ronald Ross, and gestures more broadly to the romantic construction of scientific research at the fin de siècle. The implication here is that Dutton, who helped elucidate the aetiology of relapsing fever and discovered one of the causative agents of African sleeping sickness (the parasite *Trypanosoma brucei*), fought on behalf of science, risking his own life to propagate and advance tropical medicine as a discipline. Ross frames Dutton as the legendary knight, Sir Galahad, and scientific discovery as the holy grail of Arthurian romance. By populating the discipline, not with researchers squinting over microscopes, but with heroes performing mighty deeds, Ross situates parasitology research within a set of ideals about British imperial citizenship. Colonial administrator Sir William MacGregor drew on a similar rhetoric to lionise the profession in an

<sup>1</sup> Ronald Ross, ‘Joseph Everett Dutton, M.B., Ch. B. Vict, D.P.H.’ *British Medical Journal* 1.2314 (1905) 1020–21 (p. 1021).



address given at the London School of Tropical Medicine in 1900, ‘you will in all probability be able to establish the existence of maladies at present unknown and unrecognised [...] can any man desire greater glory?’ he asks.<sup>2</sup> The ‘glory’ associated with scientific research, particularly research in the colonies, was a concept propagated by its association with the broadening of frontiers (both figurative and literal), but—for Ross—an unfulfilled ideal that he struggled with his entire career.

In his *Memoirs* (1923), Ross recalls ‘a witty friend of mine once remarked that the world thinks of the man of science as one who pulls out his watch and exclaims: “Ha! half an hour to spare before dinner: I will just step down to my laboratory and make a discovery!”’<sup>3</sup> Real science, however, is not such a brief or haphazard practice. This unrealistic image of success is precisely the reason he proposes for writing his *Memoirs*, which includes—as the subtitle boasts—a ‘full account of the great malaria problem and its solution’. He regards the public’s delusions regarding the man of science as a fault of the profession; ‘who, but men of science themselves are to blame for such a misconception?’ he writes, criticising the history of discovery as a ‘record of results’ that eschews ‘that sacred passion for discovery that leads to them’ (vi). Notwithstanding this claim, it is predominately this ‘sacred passion’ that we see so carefully stage-managed by proponents of parasitology and tropical medicine at the turn of the nineteenth into the twentieth century. Dangerous quests, hellish landscapes, and epic battles became the guiding metaphors for conceptualising the work of parasitologists, who—in political speeches, lectures, eulogies, journalistic essays, professional correspondence, and popular biographies—developed what amounts to a kind of modern epic poetics that framed parasitology as a story of heroic deeds performed by brave men.

In this chapter, I investigate how proponents of parasitology helped to embed a form of heroic masculinity in scientific research that still has currency in historiographical accounts of medicine today. As I explore, the rhetorical formulation of what I call the ‘knights of science’ narrative was informed by medieval chivalry, the warrior ideal, and heroic figures from Greco-Roman mythology. The medieval revival—marked by the enormous popularity of the historical novels of Walter Scott, as well as

<sup>2</sup>William MacGregor, ‘An Address on Some Problems of Tropical Medicine’ *British Medical Journal* 2.2075 (6 October 1900) 977–84 (p. 978).

<sup>3</sup>Ronald Ross, *Memoirs; with an Account of the Great Malaria Problem and its Solution* (London: John Murray, 1923) pp. v–vi.

numerous paintings, poems, romances, histories of chivalry, and moral instruction manuals—played a key role in the Victorian and Edwardian social and moral imagination. As historian M. Gregory Kendrick has noted, medieval knights were ‘heirs of Greco-Roman [...] tradition’ and ‘the Virgilian notion of the warrior hero as a loyal and selfless servant to his people [...] resonat[ed] through the centuries to come’.<sup>4</sup> By drawing on these historical models, parasitologists extended what Kendrick refers to as ‘Greco-Roman “heroic imperialism”’ to their discipline, using ancient Greece, the legends of King Arthur, and exploits of past empires to situate British parasitology in relation to an idealised national identity. The myths and metaphors that parasitologists appropriated in their public rhetoric and private correspondence became stories about nationhood that sought to instil western scientific authority in narratives of British imperial progress and create a modern mythology that celebrated the work of ‘great men’ of science.

In 1850, Robert MacKay had observed that ‘a remnant of the mythical lurks in the very sanctuary of science’.<sup>5</sup> The notion that the mythical ‘lurks’ within science suggests that it does not belong there, or is not wanted—left over from the bygone days of prescience, or as Ross terms it *nescience*.<sup>6</sup> However, this remnant of the mythical is not just lurking, but fully integrated into turn-of-the-century tropical medicine. As I demonstrate here, and throughout this book, fact and fiction are not polar opposites but rather complementary forms of knowledge that work together to inform our experiences of the world. The need to legitimise a newly emerging field of study, in addition to the desire to gain public support and funds, encouraged parasitologists to engage with the imaginative politics of nationhood. By appropriating iconic mythic narratives, parasitologists were able to communicate the practical and ideological importance of their work in ways that spoke to the public’s desire for an authoritative, stable, and idealised national identity, updating the chivalric ideal in light of modern medical science.

<sup>4</sup>M. Gregory Kendrick, *The Heroic Ideal: Western Archetypes from the Greeks to the Present* (Jefferson: McFarland, 2010) p. 70; p. 23.

<sup>5</sup>Robert William MacKay, *The Progress of the Intellect, as Exemplified in the Religious Development of the Greeks and Hebrews*, vol II (London: John Chapman, 1850) p. 172.

<sup>6</sup>Ross, *Philosophies* (London: John Murray, 1911) pp. 4–5. Ross refers to the ‘crime of nescience’, which he aligns with ‘irrationalism’ and ‘fakhrism’. However, for Ross, mythic language and imagery can be used to support science, as long as the science itself is based on empirical, reproducible experimentation.

## ARTHUR AND EMPIRE

When parasitologists were gaining their professional status at the turn of the century, two significant movements had risen to prominence in popular culture. The first of these, reflected in the proliferation of colonial adventure stories and the infiltration of empire as a plot device in British horror, detective, spy, and romance fiction, was the shifting power play of Britain's imperialist agenda.<sup>7</sup> Following the 'Scramble for Africa' in the 1880s, discussions of empire were beset by questions of moral, political, and commercial viability. One prominent obstacle to expansion, and one that parasitologists sought to highlight, was the problem of tropical illness. As Ross would assert in a lecture given at the University of Liverpool and reprinted in the *Journal of the African Society* in 1905, 'the ever present endemic diseases' of tropical regions are not only deleterious to health, but 'paralyze administration [...] paralyze commerce [...] vastly increase the cost and dangers of military expeditions; and check the missionary and explorer on the threshold of the countries which they come to open up'.<sup>8</sup> Father of tropical medicine and Ross's mentor Patrick Manson (1844–1922) argued that the systematic teaching of tropical medicine was particularly important to Britain 'because our country is at the centre of a great and growing tropical empire'.<sup>9</sup> And yet, as practitioners had bemoaned for decades, students of medicine before 1900 received almost no formal training to prepare them for the diseases that they might meet in the colonies and must instead learn by 'dearly bought experience' at the expense of patients' lives.<sup>10</sup>

<sup>7</sup>Victor Sage, arguing that the Gothic is 'the history of a set of cultural responses, not a genre', sees the late nineteenth century as producing a specific iteration of anxiety fiction called 'Empire Gothic'. See: Victor Sage, 'Empire Gothic: Explanation and Epiphany in Conan Doyle, Kipling, and Chesterton' in *Creepers: British Horror and Fantasy in the Twentieth Century* ed. by Clive Bloom (London: Pluto Press, 1993) pp. 3–23; Yumna Siddiqi recognises empire as a central plot device in a category of detective and spy fiction, which she calls 'fiction of intrigue'. See: Yumna Siddiqi, *Anxieties of Empire and the Fiction of Intrigue* (New York: Columbia University Press, 2008).

<sup>8</sup>Ronald Ross, 'The Progress of Tropical Medicine' *Journal of the African Society* 4.15 (April 1905) 271–89 (pp. 272–73).

<sup>9</sup>Patrick Manson, 'The Necessity for Special Education in Tropical Medicine' *British Medical Journal* 2.1919 (9 October 1897) 985–89 (p. 985).

<sup>10</sup>'Ignorance of Tropical Diseases' *British Medical Journal*, 2.1774 (29 December 1894), 1491–92 (p. 1491).

These professional concerns, as well as high death and invalidism rates among British missionaries and civil servants, precipitated the institutionalisation of tropical medicine in the Liverpool and London Schools of Tropical Medicine in 1898 and 1899, respectively.<sup>11</sup> Both were associated with ports, which provided unique opportunities to study tropical diseases in Britain. As the *Morning Post* pointed out in 1901:

the patients come in direct from the ships on which they have fallen ill, so that the man who is going out presently to the regions where these diseases are common sees them here exactly as he will see them there, and so he leaves this country already a man of wide experience.<sup>12</sup>

Indeed, the visibility of illness at British ports was part of the reason the schools won support. The Liverpool school was established with funding and collaboration from local shipping merchants John Holt and Alfred Lewis Jones. Jones, who was president of the Liverpool Chamber of Commerce, had considerable commercial interest in the colonies via his steam ship company Elder, Dempster, and Co. (formerly African Steam Ship Company), which—in addition to facilitating trade with West Africa—supplied ammunition and cargo to the Belgian Congo and provided transport of British troops to South Africa during the Anglo-Boer war.

Jones understood the political significance of an English school dedicated to research and training in tropical medicine in the context of commercial trade. As a reviewer for Patrick Manson's popular textbook *Tropical Diseases* argued in 1898, knowledge of tropical medicine would 'be useful, not only to those who intend to practice in the tropics, but to those whose lines are cast in our seaports or on our ocean steamboats'.<sup>13</sup> The London school, which was established with support from then Secretary of State for the Colonies Joseph Chamberlain, was similarly enmeshed within the politics of imperial finance, receiving a £200 donation from Belgian King Leopold II, in addition to government support.<sup>14</sup> A few years later the school appealed for donations to fund new buildings

<sup>11</sup>The London school was later renamed the London School of Hygiene and Tropical Medicine.

<sup>12</sup>'School of Tropical Medicine' *Morning Post*, Wednesday 6 November 1901, p. 4.

<sup>13</sup>'Tropical Diseases: A Manual of the Diseases of Warm Climates by Patrick Manson' *British Medical Journal* 2.1959 (16 July 1898) 157–58 (p. 158).

<sup>14</sup>'School of Tropical Medicine' *Dover Express*, Friday 28 April 1899, p. 3.

and laboratories via the national press. Alongside various donations from businessmen, they received £250 from the Castle Union Steam Ship Company and a much publicised £100 from King George V in endorsement of their work.<sup>15</sup>

Chamberlain wanted to ‘embrace the Greater Britain beyond the seas’ and perceived tropical illness as a key obstacle to the global dominance of English-speaking Anglo-Saxons.<sup>16</sup> Duncan Bell argues that Chamberlain ‘retool[ed] patriotism’ to support expansionist policies. We can certainly see this at work in regard to tropical medicine, which Chamberlain framed as a ‘work of mercy’ at a banquet hosted by the London School at Hotel Cecil in 1905. To be associated with the work of tropical pathologists was ‘a privilege and a duty [...] which [Britain] owed the empire’, he asserted, and ‘however violently [MPs] might be opposed on political matters, they could join hands in this useful work’:

We owed this duty to the vast population for which we had gradually made ourselves responsible, and we owed it still more to those of our own race who were daily risking health and life in order to maintain the honour and interests of this country.

Finally, in asking for support, he appealed to ‘national pride and Imperial patriotism’.<sup>17</sup>

Chamberlain’s emphasis on patriotic duty became a common rhetorical strategy that conceptualised the institutionalisation of formal schools of tropical medicine and parasitology in relation to British imperial progress. Tropical medicine provided the empire with a secular moral purpose that might be extended as not only a national duty, but a global one. At the same time, expansionist politics enabled parasitologists to raise the profile of their research and gain government funding and support. To this end, the progress of tropical medicine as a discipline was decisively tied to imperial politics and to the notion that the success of the British Empire relied on systematic knowledge of tropical disease. Thus, a writer for the *British*

<sup>15</sup> ‘London School of Tropical Medicine’ *Belfast News-Letter*, Friday 1 November 1912, p. 3; ‘London School of Tropical Medicine’ *Nottingham Evening Post*, Tuesday 22 October 1912, p. 7.

<sup>16</sup> Quoted in Duncan Bell, *Dreamworlds of Race: Empire and the Utopian Destiny of Anglo-America* (Princeton: Princeton University Press, 2021) p. 285.

<sup>17</sup> ‘London School of Tropical Medicine’ *Aberdeen Journal and Press*, Thursday 11 May 1905, p. 6.

*Medical Journal* in 1898 was able to claim that ‘the enemy of civilisation and colonisation in Africa is not so much Mahdism as malaria’.<sup>18</sup> This placed tropical disease on a par with anti-imperial resistance movements—a juxtaposition that politicised disease and insisted that medical research was fundamental to imperial administration. Indeed, the work of parasitologists was often made synonymous with the functional infrastructure of empire, as when William MacGregor drew an analogy between parasitologists and construction workers: ‘It appears to me to be more or less like this: Manson<sup>19</sup> was the surveyor, Laveran<sup>20</sup> made the road, Ross<sup>21</sup> built the bridges and laid the rails, and Grassi,<sup>22</sup> Bastianelli,<sup>23</sup> Bignami, and Celli provided the rolling stock’.<sup>24</sup> Deborah Neill has emphasised tropical medicine’s reliance on transnational networks in which ideas, theories, and people circulated. Notwithstanding the nationalist rhetoric that I analyse in this chapter, the elucidation of malaria was augmented—as MacGregor’s analogy implies—by relationships between British, German, French, Italian, and American researchers that were competitive or collaborative as the occasion suited. As Neill argues, ‘European tropical medicine experts successfully built a network of professional researchers and clinicians that helped them establish their collective authority as experts in a new field of scientific inquiry’.<sup>25</sup>

The second movement to register its prominence in popular culture was the, by this time well established, medieval revival, following the publication of Tennyson’s *Idylls of the King* between 1859 and 1885 (which sold 10,000 copies within the first week) and the first modernisation of Malory’s compilation of Arthur’s tales, which had six further editions and

<sup>18</sup> ‘Medicine in the Tropics’ *British Medical Journal* 1.1955 (1898) 909–10 (p. 909).

<sup>19</sup> Sir Patrick Manson discovered the mosquito vector for the parasitic disease elephantiasis or lymphatic filariasis.

<sup>20</sup> (Charles Louis) Alphonse Laveran discovered the protozoan parasite responsible for malaria (*Plasmodium* spp).

<sup>21</sup> Ronald Ross traced the life cycle of the *Plasmodium* parasite into the stomach of the mosquito and proved that the mosquito acted as a vector for avian malaria.

<sup>22</sup> Giovanni Battista Grassi demonstrated conclusively the vector transmission of malaria in humans and established that only the female *Anopheles* mosquito can transmit the disease.

<sup>23</sup> Giuseppe Bastianelli, Amico Bignami, and Angelo Celli studied the clinical symptoms of *Plasmodium falciparum* and recognised several stages of the development of malaria parasite within the blood.

<sup>24</sup> MacGregor, ‘Some Problems of Tropical Medicine’, p. 980.

<sup>25</sup> Deborah J. Neill, *Networks in Tropical Medicine: Internationalism, Colonialism, and the Rise of a Medical Specialty, 1890–1930* (Stanford: Stanford University Press, 2012) p. 3.

five competitors before the century ended.<sup>26</sup> As Mike Horswell has noted ‘crusader medievalism’ occupied a central place within the British imaginary ‘due to its ability to incorporate key cultural trends: it could serve the Romantic medieval revival, as well as aggressive imperialism and militant “muscular” Christianity’.<sup>27</sup> Chivalry and crusading flooded the Victorian imagination as concepts that could engage with a wide range of issues, including nationalism, imperialism, domesticity, race, and gender.<sup>28</sup> The hugely popular historical fiction of Walter Scott did much to demonstrate the dramatic potential of the crusades and helped to institute chivalry as an ‘important pillar of British imperial identity’.<sup>29</sup>

As I argue, parasitology became another crusading fiction, which practitioners manipulated to construct their professional identities, journalists invoked to communicate research developments, and proponents weaponised to justify expansionist policies. Between 1898 and 1914, the Liverpool School of Tropical Medicine sent 13 expeditions to the tropics, including to Sierra Leone, the Gold Coast, Nigeria, Brazil, French Senegal, and the Congo Free State.<sup>30</sup> *The West African Mail* reported on these expeditions using emotive titles such as ‘The Crusade against Tropical Disease and the Liverpool School of Tropical Medicine’. An article in *Good Words* likewise referred to Liverpool researchers as ‘crusaders’, and another in the *Sheffield Daily Telegraph* reported on Ross’s work as ‘the crusade against malaria’.<sup>31</sup> Journalists similarly styled Joseph Chamberlain’s involvement in the London and Liverpool schools of tropical medicine as

<sup>26</sup> David Staines, ‘Tennyson, Alfred Lord’ in *The New Arthurian Encyclopaedia* ed. by Norris J. Lacy (New York: Garland, 1996) pp. 446–49.

<sup>27</sup> Mike Horswell, ‘Creating Chivalrous Imperial Crusaders: The Crusades in Juvenile Literature from Scott to Newbolt, 1825–1917’ in *Perceptions of the Crusades from the Nineteenth to the Twenty-First Century. Engaging the Crusades*, vol 1 ed. by Mike Horswell and Jonathan Phillips (London: Routledge, 2018) pp. 27–47 (p. 27); Mark Girouard writes about a popular revival of chivalry throughout the nineteenth century that infiltrated diverse areas of middle-class life including education, politics, imperial administration, and sports. See: *Return to Camelot: Chivalry and the English Gentleman* (New Haven: Yale University Press, 1981).

<sup>28</sup> Megan L. Morris, ‘Introduction: Victorian Crusades Literature’ ([n.d.]) *The Crusades Project* <https://d.lib.rochester.edu/crusades/text/nineteenth-century-literature-introduction> [accessed 26 October 2020].

<sup>29</sup> Mike Horswell, ‘Creating Chivalrous Imperial Crusaders’, p. 31.

<sup>30</sup> D. H. Molyneux, ‘The Liverpool School of Tropical Medicine: 100 Years of Parasitological Achievement’ *Parasitology Today* 14.11 (1998) 440–43.

<sup>31</sup> Herbert Hamilton ‘Fighting Malaria’ *Good Words* 43 (December 1902) 188–93; ‘The Crusade Against Malaria’ *Sheffield Daily Telegraph*, Monday 2 September 1901, p. 5.

his ‘crusade against malaria’, whilst Regius professor at Oxford Sir William Osler was named a ‘health crusader’ by one Scottish newspaper, which informed readers that he was constantly ‘crusading against malaria and typhoid’.<sup>32</sup> In 1921, *The Daily Telegraph* reported on the ‘War on Disease’ being fought by tropical medicine experts worldwide and particularly by the Rockefeller Foundation. Winston Churchill, then Secretary of State for the Colonies, reportedly characterised the work as a ‘crusade of mercy [...] wonderful crusades [...] marching not only on the path of science but on the path of mercy’. The study of tropical diseases was carried out, he argued, with an urgency ‘similar to that which prompted men to hurry to the sea coast on a stormy night and take the lifeboat out to a ship in distress’.<sup>33</sup> Crusading was a concept, as Horswell notes, that could be ‘woven into a triumphal national story which culminated in an imperial nationalism’.<sup>34</sup>

References to crusading, particularly via the sea, were a characteristic component of both the public discourse and private conceptions of tropical medicine research. The revival of Arthurian legend, the popularity of travel writing, the visibility of explorers as cultural icons, and the burgeoning market for fictions of adventure provided rhetorical resources with which parasitologists conceptualised both the study and the mechanics of parasite-vector-host relationships. In letters to Manson, Ross invokes a quest motif by insisting that he will ‘follow the flagella’ and ‘pursue the plasmodium’, paralleling symbolically the parasite’s migration through its hosts, the letters themselves on their travels from Ross in India to Manson in England, and the expeditions of both contemporary tropical explorers and legendary figures like King Arthur’s knights. Using the trope of heroic campaign, Ross compares research to expedition by setting up parallels between the movement of parasites between and within hosts, and the conquest of foreign lands. Manson reiterates this use of the quest motif in a letter dated 21<sup>st</sup> June 1895:

I look forward to receiving [your letters] with the greatest interest and when a mail passed without getting one the other day I was terribly disappointed for I thought you had fallen sick, or that you had got a check, or that you

<sup>32</sup> ‘Personal Gossip’ *Evening Star and Herald*, Saturday 13 May 1899, p. 2; ‘A Health Crusader. Life of William Osler’ *Aberdeen Press and Journal*, Monday 18 May 1925, p. 3.

<sup>33</sup> ‘War on Disease’ *Daily Telegraph*, 14 June 1921, n.p.

<sup>34</sup> Mike Horswell, *The Rise and Fall of British Crusader Medievalism, c. 1825–1945* (London: Routledge, 2018) p. 3.



had given up the quest. Above everything, don't give it up. Look on it as a Holy Grail and yourself as Sir Galahad and never give up the search.<sup>35</sup>

As we have seen, Ross would use the Galahad reference again when eulogising Joseph Dutton in 1905. *The Times* would later characterise Ross's work in kind as a 'quest' in which he was 'so long and so gallantly' engaged, and which produced a legacy that 'glows with an imperishable lustre'.<sup>36</sup> Manson's use of crusading tropes in private correspondence and MacGregor's glorification of the profession to medical students suggests that what I have called the 'knights of science' narrative was not simply a rhetorical strategy but also an ideological position. Ross first met MacGregor at Liverpool in 1899 and was present at his London medical address in 1900. In his *Memoirs*, he writes, '[O]f all the men I have met I honour him the most' (444). MacGregor would characterise Ross's research in 1901 as 'unique and glorious labours'.<sup>37</sup> Whilst MacGregor promised 'glory' to the young tropical pathologist, a writer for the *British Medical Journal* promised 'novelties and surprises' which should 'prove highly attractive to the student grown stale over the threadbare subjects and over-refinements of European pathology'.<sup>38</sup>

In reimagining their research in terms of the hero's quest, parasitologists drew on and reinforced a cultural association between Arthurian legend and British expansionism. Stephanie Barczewski argues that supporters of British imperialism used the King Arthur legend to demonstrate that 'Britons have for centuries looked outwards towards their burgeoning empire and territorial expansion', associating a celebrated and venerated history with a promising imperial future.<sup>39</sup> She identifies the prominence of the sea (fundamental to colonial travel and commerce) in nineteenth-century reinterpretations of Arthurian romances as a motif that connects mythic journeys with imperial trade. Parasitologists consciously

<sup>35</sup> Patrick Manson, 'Letter 11. 02/004' in *The Beast in the Mosquito: The Correspondence of Ronald Ross and Patrick Manson* ed. by W.F. Bynum and Caroline Overy (Amsterdam: Rodopi, 1998) pp. 31–33 (p. 31).

<sup>36</sup> 'Sir Ronald Ross' *The Times*, 17 September 1932 [n.p.].

<sup>37</sup> William MacGregor, 'Notes on Anti-Malarial Measures Now Being Taken in Lagos' *British Medical Journal* 2.235 (27 July 1901) p. 680.

<sup>38</sup> 'Medicine in the Tropics' *British Medical Journal* 2.1969 (24 September 1898) 909–10 (p. 910).

<sup>39</sup> Stephanie L. Barczewski, *Myth and National Identity in Nineteenth-Century Britain* (Oxford: Oxford University Press, 2000), p. 201.

strengthened this association by representing themselves as embarking on ocean expeditions to explore unknown lands, and fighting valiantly against adversity to protect the empire, not with the sword, but with science.

Elly McCausland argues that, at the turn of the century, British and American adaptations of Arthurian adventure for children sought to ‘promote and subtly redefine chivalric masculinity for the modern age’.<sup>40</sup> Modern conceptions of knightly boyhood were situated in dialogue with the ‘soldier hero of adventure’, which Graham Dawson identifies as ‘one of the most durable and powerful forms of idealised masculinity’.<sup>41</sup> In these fictions, and in boy’s groups like the Scouts, there is, McCausland argues, ‘a curious juxtaposition between a modern vision of ‘gentleman’, divested of its class connotations, and adherence to a medieval value system far removed from contemporary British and American society’.<sup>42</sup> The formative role of medievalism and imperialism in this type of masculinity is made explicit by Baden-Powell’s original desire to name the Scouts the ‘Young Knights of the Empire’.<sup>43</sup>

Parasitologists sought to emulate standards of medieval chivalry by emphasising not only appetite for adventure, but the more stoic virtues of duty, perseverance, and self-sacrifice. In 1932, the Rover Scouts—developed in 1918 for those men who had outgrown the Boy Scouts—declared Ross a ‘worthy role model’, as reported by ‘Scout News’ in the *Coventry Evening Telegraph*. ‘In this man’s life’, they wrote, ‘is an example of self-sacrificing service for Rover Scouts to follow’.<sup>44</sup> Astronomer and soon-to-be editor of *Nature*, Richard Gregory published *Discovery; or the Spirit and Service of Science* in 1916 in which he argued that ‘worthy intention’ shaped the discipline as much as ‘brilliant achievement’.<sup>45</sup> Taking his cues

<sup>40</sup> Elly McCausland, ‘“Something Which Every Boy Can Learn”: Accessible Knightly Masculinities in Children’s Arthuriana, 1903–1911’ in *Martial Masculinities: Experiencing and Reimagining the Military in the Long Nineteenth Century* ed. by Michael Brown, Anna Maria Barry, and Joanne Begatio (Manchester: Manchester University Press, 2019) pp. 214–31 (p. 215).

<sup>41</sup> Graham Dawson, *Soldier Heroes: British Adventure, Empire, and the Imagining of Masculinities* (London: Routledge, 1994) p. 1.

<sup>42</sup> Elly McCausland, ‘Something Which Every Boy Can Learn’, p. 220.

<sup>43</sup> Stephen Arata, *Fictions of Loss at the Victorian Fin de siècle: Identity and Empire* (Cambridge: Cambridge University Press, 1996), p. 94.

<sup>44</sup> ‘Scout News. A Worthy Example. Sir Ronald Ross’ *Coventry Evening Telegraph*, Tuesday 20 September 1932, p. 4.

<sup>45</sup> R. A Gregory, *Discovery; or the Spirit and Service of Science* (London: Macmillan and Co., 1916), p. vi.

from the chivalric masculinity that characterised tropical medicine at the turn of the century, Gregory insisted that the qualities of ‘self-sacrifice, persistence, courage, duty, accuracy, humility and hope may all be abundantly exemplified from the careers of men of science’ (vii). Under a section entitled ‘Conquest of Disease’ he asserted that ‘laud and honour’ should be given to the ‘patient scientific investigators’ of tropical medicine and reprinted some of Ross’s poetry, perpetuating a narrative of one man set against ‘million-murdering death’ (225–26). When Ross reviewed *Discovery* for an issue of his journal *Science Progress* in 1917, he asserted that it had become ‘a classic between the date of issue and the date of review’, dubbing the book ‘a true history of mankind’.<sup>46</sup>

Gregory found ample material in the recent history of tropical medicine to demonstrate the virtues of the soldier hero. Writing of Dr Lazear, who died during an experiment with yellow fever, he asserts:

He gave up his life for others, and the plain record of his sacrifice upon a tablet erected to his memory reads: “with more than the courage and devotion of the soldier he risked and lost his life to show how a fearful pestilence is communicated and how its ravages may be prevented”. (228–29)

Gregory informs us that Dr Walter Myers also faced that ‘fearful pestilence’ and lost to it:

His death added another name to the roll of martyrs to scientific investigation. High courage and an unselfish spirit led him to accept the invitation to take part in a most dangerous expedition; and he died that others might live. (230)

Such imagery engages with a semantic project of professional self-fashioning that characterised tropical medicine as a new manful science of empire, where individuals were always brave and the stakes were always high.<sup>47</sup> Whilst writers frequently mobilised the metaphors of military warfare to do this, just as often they invoked the knightly adventure—a

<sup>46</sup> Ronald Ross, ‘Discovery; or The Spirit and Service of Science by R. A. Gregory’ *Science Progress*, 11.44 (April 1917) p. 691.

<sup>47</sup> Heather Ellis explores efforts to revitalise the public image of the man of science throughout the century, arguing that the authority of science stemmed from an unstable conception of masculinity that was constantly under threat. Heather Ellis, *Masculinity and Science in Britain, 1831–1918* (London: Palgrave Macmillan, 2017).

powerful image of one man up against an unassailable foe. This, and frequent appeals to myth, enabled parasitologists to distance their profession from the more unsavoury aspects of imperial administration.

Nathan K. Hensley points to the number of wars throughout the century (at least 228 separate armed conflicts) at a time often remembered for its ‘progressive idealism’, as precipitating an uncanny persistence of violence in cultural productions.<sup>48</sup> Hensley investigates the representational strategies that communicated to readers the problematic fact that ‘peace-keeping and war-making were not separate ideas but two aspects of sovereign power’ (2). The rhetoric of turn-of-the-century tropical medicine might be considered one such representational strategy. The martial language used by parasitology’s proponents was offset by the purported goal of producing a lasting and peaceful civilisation. Moreover, they often utilised an idealised, older form of military encounter in which the pathogen ‘foe’ was conquered by an archetypally heroic (and often lone) figure, shifting the focus of imperial violence from the colonial subject to ‘colonial’ disease—a placeholder for the imagined barbarism of colonial space. Their ‘triumphs’ were frequently communicated using a fairy-tale lexicon of sword fighting, dragon slaying, and giant killing. Thus, despite parasitology’s visible political interests, parasitologists were reimagined as figures engaged, not in the unsavoury wars of contemporary Britain, but in legendary battles. For example, following a lecture on Ross’s mosquito-malaria work given at the Bath Pump House in 1924, Rev J. C. Harris reportedly said that in listening to Ross’s work, they had heard ‘a new version of the old story of George and the dragon’.<sup>49</sup> Meanwhile another writer insisted that Ross ‘fought a pitch battle, single-handed, against an invisible dragon which has slain millions of human beings, the malarial parasite’ and that ‘just when he was abandoning hope, he found—in the stomach of the thousandth mosquito—the dragon he sought’.<sup>50</sup>

Parasitologist William G. MacCallum also drew on this mythic apparatus when writing about discoveries in parasitology for the *West Australian* in 1932: ‘Old legends and fairy-tales tell us of battles with giants and dragons; modern medical science tells us of battles with microbes too

<sup>48</sup>Nathan K. Hensley, *Forms of Empire: The Poetics of Victorian Sovereignty* (Oxford: Oxford University Press, 2016) p. 1.

<sup>49</sup>‘A Conquered Pest: the Mosquito and Malaria’ *Bath Chronicle and Weekly Gazette*, Saturday 16 February 1924, p. 15.

<sup>50</sup>‘A Real Romance’ *The Sphere*, 24 July 1926, p. 97.

small to be seen'.<sup>51</sup> MacCallum, who discovered the male and female gamete forms of the malaria parasite in birds in 1897, described Ross's work on malaria using a by then familiar Arthurian framework:

Sir Gawain asked the knight if he knew any adventures in that country, "I shall show you some to-morn" said the old knight, "and these marvellous." So on the morn they rode into the forest of adventures. The forest of adventures for Sir Ronald Ross—then plain Major Ross of the Indian Medical Service—was the teeming insect life of India. At Secunderabad, on August 20th 1897, he made an epoch-making step into the unknown.<sup>52</sup>

The narration of a valiant knight hungry for adventure (and the colonial landscape as the land fit for this pursuit) positioned the tropical researcher as a hero of modern times, combining the historic virtues of chivalry and patriotism with contemporary concern for sanitary reform.

The central tensions inherent in this motif are articulated by Rudyard Kipling's poem 'The New Knighthood', which offers a stark juxtaposition between the courtly conventions of British orders of chivalry and the 'barbarism' of the colonial outpost. The poem, which appeared after a 'Deal in Cotton' in *Actions and Reactions* (1909), begins: 'Who gives him the Bath?/"I", said the wet/Rank, jungle sweat,/"I'll give him the Bath"<sup>53</sup> Giving him the Bath refers to the practice of bathing knights-to-be in the Middle Ages as a symbolic spiritual purification—an act that gave its name to the Order of the Bath, an order of British military knighthood established by King George I in 1725. Garter King of Arms and England's highest heraldic officer, John Anstis, outlined the tenets of a knight of the Bath as

the exaltation of the Holy Christian Religion; the Support of the Rights of our Sovereigns; the Defence of their Realms; the Advancement of Justice; the Protection of Virgins, Widows, and Orphans; the Relief of the Oppressed; and for Demonstrating the Affection of our Monarchs towards the Estate of *Chevalrie*; to the End, both their Subjects and Foreigners may be rewarded

<sup>51</sup> W.G.M., 'The Deadly Female. Murder that Mosquito!' *West Australian*, Saturday 15 February 1938, p. 5.

<sup>52</sup> William MacCallum, 'Science and Poetry. Work of Sir Ronald Ross' *West Australian*, 13 February 1932, p. 5.

<sup>53</sup> Rudyard Kipling, *Actions and Reactions* (London: Macmillan and Co., 1909) p. 197.

for Heroick Military Actions, and towards exciting other Persons to imitate such Examples.

Anstis concludes that the Order is founded ‘upon religious, upon moral, and political considerations’, an ideology that persisted in New Imperialist understandings of empire.<sup>54</sup> Kipling’s ‘new knighthood’ transplants the pomp and ceremony of medieval knighthood—which historically included ritual bathing, reading of psalms, laying of swords, buckling of spurs, and drinking of wine—to an archetypal tropics where ‘jungle sweat’, ‘palms’, ‘hot wind’, ‘sun’, ‘short-rations’, ‘fever’, and ‘quinine’ also play a role in the making of a knight.

Who’ll shake his hand?  
 “I,” said the Fever,  
 “And I’m no deceiver,  
 I’ll shake his hand.”

Who brings him the wine?  
 “I,” said Quinine,  
 “It’s a habit of mine,  
 I’ll come with his wine”. (197)

Bradley Deane argues that much of Kipling’s poetry is concerned with the production of ‘better men’ through imperial toil. True to this appraisal, ‘The New Knighthood’ positions the struggle for manly self-assertion at the core of the expansion and defence of the British Empire. Deane argues that Kipling prizes ‘valorized manliness’ over biological maleness, and ‘heritage’ over ‘race’ as a way of motivating his readers to actively tread the road to ‘better manhood’ and avoid the complacency inspired by racial Englishness. Kipling encourages men to aspire to an ‘English heritage constituted through competition for masculine honour [...which] demanded endless struggle and reaffirmation’.<sup>55</sup> ‘An ethos of honourable suffering’ is one of many models that Kipling used to understand the global encounters of men—a model that was shared by proponents of

<sup>54</sup> John Anstis, *Observations Introductory to an Historical Essay upon the Knighthood of the Bath* (London: James Woodman, 1725) p. 3.

<sup>55</sup> Deane, *Masculinity and the New Imperialism*, p. 44.

tropical medicine who saw Kipling's constant struggle for manly honour embodied in the science of empire.<sup>56</sup>

The poem's final lines—'And after this fashion, adventure to seek/Was Sir Galahad made—as it might be last week!'—invoke the same chivalric masculinity that Ross used to eulogise Dutton as a 'knight of science' in 1905 (albeit perhaps in a different tone). Both Ross and Kipling suggest that the work of imperial administration is a trial of endurance that finds a parallel in historical models of chivalry. According to Ross, Dutton—whose death, he insisted, was 'to all of us like that of a family bereavement'—demonstrated not only scientific ability, but 'a singular purity, modesty and courtesy of character'. He worked 'without rest or recreation, and in spite of frequent illnesses [...] unremittingly in the cause of science and his country'.<sup>57</sup> Kipling's poem might as well have been written about Dutton. Indeed, the idea that Kipling had the work of parasitologists in mind when composing 'The New Knighthood' is certainly possible. Born in Bombay in 1865, Kipling knew India first hand. As a journalist and writer living in India between 1883 and 1889, and a regular visitor to South Africa, he had ample experience of empire and illness. But, more significantly, Kipling and Ross were friends and in the year of the poem's publication, they were in correspondence about setting up an annual dinner for British Nobel Prize winners (Kipling having won the Nobel in 1907 and Ross in 1902). In a letter dated 13<sup>th</sup> May, Kipling noted that he had read Ross's 'speech on malarial (or lack of) prevention the other day with keen sympathy', suggesting he agreed with Ross's characterisation of imperial servants as underappreciated and their work as self-sacrificing.<sup>58</sup> 'The New Knighthood' suggests that working in tropical colonies was equal to the knightly work of defending the realm and that the reward for such work was in short supply.

<sup>56</sup>A prominent counternarrative that criticised British expansionist policies, and particularly the human rights abuses most strongly associated with the Belgian Congo, can be read in much late-century fiction. The work of Joseph Conrad is a prime example, where scholars such as Lorenzo Servitje have read tropical illness as a signifier of 'coloniopathy' and the project of empire as sordid and degenerating. See: Lorenzo Servitje, "'Triumphant Health": Joseph Conrad and Tropical Medicine' *Literature and Medicine* 34.1 (2016) 132–57.

<sup>57</sup>Ross, 'Joseph Everett Dutton, M.B., Ch. B. Vict, D.P.H.', p. 1021.

<sup>58</sup>London, LSHTM. RC. GB 0809 Ross/86/07/01. Letter dated 13 May 1909. Two days later, he sent a further letter thanking Ross for sending him a copy of a lecture on malaria and professing a wish to read it in full. London, LSHTM. RC. GB 0809 Ross/86/07/01. Letter dated 15 May 1909.

The promise of chivalry embodied by the imperial encounter in the popular imagination was realised for Ross when he was admitted into the Order of the Bath as a companion in 1902.<sup>59</sup> He was promoted to a Knight Commander in 1911 and in 1918 was also made a Knight Commander of the Order of Saint Michael and Saint George. Fellow doctor and poet Ronald Campbell Macfie (1867–1931) included a photograph of Ross in his 1907 book *The Romance of Medicine*, which he captioned ‘Dr. Ronald Ross, C.B. The Hero of the Mosquito Theory of Malaria’. The photo and caption, which appear opposite a reprint of Ross’s malaria day poem, ‘Reply’, do much to reinforce the popular conception of medical heroism that pervaded late-century feats of empire. Ross’s medical work is, for Macfie, ‘a romance in microscopy such as has rarely been equalled’.<sup>60</sup>

Ross won many honours and awards, including most notably his Nobel Prize (1902), and was a Fellow of the Royal Society and Royal College of Surgeons; however, Macfie only includes his companionship (denoted by C.B.). Thus, he makes use of the system of military and civic honours to reinforce Ross’s claim to heroism, a claim also bolstered by the reproduction of his poem on the opposite page. Ross’s poem recasts his discovery as a heroic moment ordained by God: ‘Seeking His secret deeds/with tears, and toiling breath/I find thy cunning seeds/O million-murdering death’. His years spent researching malaria as part of the Indian Medical Service—encapsulated by ‘tears and toiling breath’—are rewarded in melodramatic fashion. Ross recounts his celebration: ‘I know this little thing/A myriad men will save,/O Death, where is thy sting?/Thy victory, O Grave!’ His invocation of Corinthians endorses a mid-century muscular Christianity that came to characterise the idealised colonial encounter, as I will explore in the next chapter, and perpetuated an image of scientific

<sup>59</sup> Many parasitologists received similar honours from British orders of chivalry; David Bruce (1855–1931) was made a Companion of the Order of the Bath (C.B.) in 1905, Knight Bachelor in 1908 (K.B.), and Knight Commander (K.C.B.) in 1918; Samuel Rickard Christophers (1873–1978) was made a Companion of the Indian Empire (C.I.E.) in 1915; David D. Cunningham (1843–1914) was made C.I.E. in 1893; Robert Leiper (1881–1969) was made Companion of the Order of St Michael and St George (C.M.G.) in 1941; William Boog Leishman (1865–1926) was made C.B. in 1915, K.C.B. in 1924, and K.C.M.G. in 1918; Patrick Manson (1844–1922) was made Knight Commander of the Order of St Michael and St George (K.C.M.G.) in 1903, and Knight Grand Cross (G.C.M.G.) in 1912; Leonard Rogers (1868–1962) was made C.I.E. in 1911, and Knight Commander of the Star of India (K.C.S.I.) in 1932; Henry Edward Shortt (1887–1987) was made C.I.E. in 1941.

<sup>60</sup> Ronald Campbell Macfie, *The Romance of Medicine* (London: Cassell and Co., 1907) p. 146.



research as a form of self-sacrificing heroism. Writing in 1947, a correspondent for the *Belfast Telegraph* recalled meeting Ross ‘years after he had presented his gospel of healing to the world’. She demonstrates the lasting impression of the rhetoric of parasitology by reproducing the language of the discipline, writing about his ‘indomitable spirit’ and insisting that ‘he went to his microscope as a knight of old rode to battle’.<sup>61</sup>

### ALEXANDER, SHAKESPEARE, AND APOLLO: LITERARY METAPHOR AND SCIENTIFIC IDEALISM

The collection of mythic metaphors and images associated with parasitologists were not just used to bolster their public reputations but also deployed to mediate professional discussions. In an article concerning the aetiology of kala-azar, Surgeon-Major George Giles used a reference to Alexander the Great to lampoon a colleague’s suggestion that the disease was a complication of malaria:

An ordinary man would indeed see at once that such a position is untenable, but Dr Rogers, like a medical Alexander, cuts his Gordian knot by announcing that Assamese malaria is infectious. In this he places himself at variance with not only the scientific, but the popular opinion of the entire world.<sup>62</sup>

Here Giles characterises Rogers’s solution to the problem of kala-azar as analogous to Alexander the Great’s severing of the Gordian knot. This analogy is a significant one, which itself requires some unpicking. Kala-azar is a parasitic disease, now predominantly known as visceral leishmaniasis, but at the time variously named kala-azar, kala-duk, Burdwan fever, Blacktown fever, black fever, Dum-dum fever, or Assam fever. The aetiology of the disease was unclear and it shared many of its symptoms with malaria, leading some to argue that it was not a new disease at all but instead a complication of malaria or a quinine-resistant form of malarial poisoning.<sup>63</sup> This was the position held by Surgeon-Captain Leonard Rogers, a member of the Indian Medical Service, who was sent to Assam in 1895 to investigate the disease. He went on to help establish the

<sup>61</sup> Kathleen Lurgan, ‘From an Ulsterwoman’s Scrapbook: Founder of “Mosquito Day”’ *Belfast Telegraph*, Wednesday 20 August 1947, p. 4.

<sup>62</sup> G. Giles, ‘The Etiology of “Kala-Azar”’ *Indian Medical Gazette* 33.1 (1898), p. 1.

<sup>63</sup> The causative agent—the protozoan parasite *Leishmania donovani*—was isolated independently by Charles Donovan and William Leishman in 1903.

Calcutta School of Hygiene and Tropical Medicine in 1920 and was a founder member of the Royal Society for Tropical Medicine and Hygiene (1907).

Giles, also of the Indian Medical Service, argued that Roger's theory was flawed because malarial poisoning was not infectious and kala-azar was.<sup>64</sup> He instead attributed the disease to a combination of chronic malaria and the presence of ankylostomes (intestinal worms), which to his mind accounted for the prevalence of kala-azar within families and close social groups. However, Rogers posited a solution: that malaria found in the Assam region (where kala-azar was prevalent) is a special variety of the disease, which *is* infectious. Giles points out the short-sightedness of this position; whilst it indeed reaches a solution, it is not backed up by evidence and thus is like cutting the knot, rather than untying it.

The use of the Gordian myth reinforces the notion that parasitologists understood their profession using mythic past narratives. Alexander the Great, leader of the Macedonian Empire, was a figure of imperial might comparable to the leaders of the Roman, Byzantine, and Mughal Empires.<sup>65</sup> Reference to such figures invoked past histories as models for the British pursuit of empire. Significantly, the decline of these great empires was often attributed to tropical disease. Such was the strength of this belief that Ross even collaborated with William Henry Samuel Jones and George Grigson Ellet on *Malaria: A Neglected Factor in the History of Greece and Rome* (1907). In the preface, Jones argued that malaria posed a unique danger to civilised nations:

Most other diseases, however distressing to individuals, brace a people by weeding out the unfit; malaria plays no such useful part in the economy of nature. It seizes all, fit and unfit alike, gradually lessening the general vitality until, in some cases, it has exterminated the people among whom it has become endemic.<sup>66</sup>

<sup>64</sup> Both were eventually found to be transmitted by insect vectors—mosquito and sandfly respectively—and thus neither truly infectious.

<sup>65</sup> When discussing Tennyson's 1892 poem 'Akbar's Dream', Patrick Brantlinger argues that 'Akbar is an Oriental King Arthur' and suggests that Tennyson uses this parallel to prophesize the triumph of the Empire: 'The great work he [Akbar] has begun of civilizing the Indian wilderness will collapse, but the British will take it up again and complete it on a permanent basis'. Patrick Brantlinger, *Rule of Darkness: British Literature and Imperialism, 1830–1914* (Ithaca: Cornell University Press, 1988) p. 10.

<sup>66</sup> W. H. S. Jones, Ronald Ross, and G. G. Ellet, *Malaria: A Neglected Factor in the History of Greece and Rome* (London: Macmillan and Co., 1907) p. vi.

In the introduction, Ross similarly singles out the nation-levelling power of malaria, asserting:

Historians, in attributing the downfall of nations to human agencies, have overlooked the probably greater effects produced by those obscure or invisible foes that destroy us from within [...] the conqueror of Greece was not so much the Macedonian or the Roman as that great tyrant which now holds half the world—malaria. (5)

Using quantitative data analysis of malaria rates in modern Greece, and qualitative data analysis of the uses of malaria-related terms in Ancient Greek medical and cultural texts, the writers make a case for its historical endemicity. Jones, for example, finds evidence that malaria was an ancient problem in Hippocrates' observation that those who drink marsh water have an enlarged spleen.<sup>67</sup>

Despite ascertaining that malaria was probably prevalent in ancient Greece, Jones insists that it is 'an African disorder' that entered the country following the 'intercourse of merchants', the return of sick soldiers, and the migration of slaves. His characterisation aligned modern Britain with ancient Greece through imperial trade and conquest. However, where past empires had failed Britain's would not because the nineteenth-century model was endowed with a secret weapon: tropical medicine. Unlike the great empires that came before, Britain's focus was purportedly on successfully colonising (rather than simply conquering) foreign lands and thus on effective and lasting solutions to the problems of parasitic disease. For Giles, this success was analogous to truly unravelling (rather than cutting) the Gordian knot.

In a 1916 article in *Science Progress*, Ross considered the parallels between science and literature, arguing that 'the great histories and biographies, as well as other epics and novels, belonged to the same class of work' as those of science—that is—work that is aimed at educating the non-specialist. He dubbed Homer, Dante, Shakespeare, and Cervantes 'great men of science' who were each 'in his own country and epoch' engaged in 'collecting, classifying, and cataloguing the infinite varieties of character and circumstance in human life'. This 'sub-science' attempted to

<sup>67</sup> Splenomegaly, or abnormally enlarged spleen, is a symptom of malarial infection. Jones notes that, in connecting enlarged spleen to marsh water, Hippocrates was unknowingly identifying the connection between malaria, marshland, and mosquitoes—the vectors of malaria.

‘extract from the facts an explanation for human action’. ‘The only manner in which science can be taught to men’, he argued,

is by way of narratives of events which, though they may not actually have occurred as described, are occurring over and over again in history and in our lives—just as Euclid’s book was the first to crystallise geometry in sets of definite propositions with figures which are never actually found in nature.<sup>68</sup>

In other words, linear story-telling is the mode in which humans can best understand new ideas. Likewise, ‘the constructions of the men of science’, he asserted, ‘have to be idealised, partly for brevity and partly for fixing the attention of the public’. In both cases, science relies on art for its ‘presentment’ (137).

These different modes of knowledge, literary and scientific, fictive and non-fictive, were also mobilised to establish the value and nature of scientific research, as exemplified by an obituary of parasitologist Walter Myers. Myers, who worked alongside Ross at the Liverpool School of Tropical Medicine, died of yellow fever whilst investigating the disease in 1901. He was remembered with a brief memorandum of his life and work in 1913, which ended with the line: ‘The Rest is Silence’. Not content with this reference to Hamlet, the *Financial News*, in republishing the memorandum, saw fit to add the following lines from Tennyson’s *In Memoriam*, a poem in which Tennyson tries to come to terms with the death of his close friend Arthur Henry Hallam at the age of just 22:

So here shall silence guard his fame;  
But somewhere, out of human view,  
Whate’er thy hands are set to do,  
Is wrought with tumult of acclaim.<sup>69</sup>

The dual frames of Shakespearean tragedy and what is considered one of the great poems of the nineteenth century positioned Myers’ death within a framework of tragic loss, both frames emphasising the poetic nature of scientific endeavour. Barri J. Gold argues that Tennyson embraces poetry ‘as a way of knowing’, whilst maintaining an investment in scientific modes

<sup>68</sup> Ronald Ross, ‘Homer, Dante, Shakespeare, and Cervantes’ *Science Progress*, 11.41 (July 1916) 137–40 (p. 137).

<sup>69</sup> Alfred Tennyson, from ‘In Memoriam A.H.H.’ quoted in ‘How to Assist Tropical Medical Work’ *Financial News*, 23 January 1913. n.p.

of inquiry. She argues that *In Memoriam* insisted on the ‘consonance of the “two cultures” of science and literature at a moment when they seemed to be diverging’.<sup>70</sup> Gold identifies the poem as disrupting dominant models of unidirectional influence (science to poetry) by drawing our attention to the prescience Tennyson shows regarding theories of Darwinian evolution and thermodynamics. *In Memoriam*, she argues, anticipates these fields of knowledge and thus is an example of ideas moving from literature to science, not only circulating facts but ‘helping them to exist’.<sup>71</sup>

The use of the poem to eulogise Walter Myers reaches into the past to connect two premature deaths and lament lost potential across multiple spheres of knowledge. It also contributed to the framing of scientific figures and their achievements using the cultural authority of literature. The eulogy was part of an article asking for financial support for research in tropical medicine, and the lines from *In Memoriam* were included to ‘tell the reader in what spirit and at what cost the work is being done’. Or as Ross puts it to ‘fix the attention of the public’. Such collaborative relationships between literature and science complicate ideological and disciplinary boundaries—boundaries that Ross often rejected wholesale. As he argued in a lecture given at the Royal Institution and reprinted in the *English Review*, both disciplines are motivated by the same desire to know. He writes:

Do you really imagine that science is concerned only with the discovery of petty utilities; art with the discovery of new tricks of technique? [...] art is science teaching us, not by means of saws and syllogisms, but by means of wise instances and great figures set within crystals of perfect and immortal beauty.<sup>72</sup>

For Ross, art and science walk ‘hand in hand’ as a Keatsian dialogic of ‘beauty’ and ‘truth’; ‘we shall reach Truth by seeking Beauty; and Beauty by Seeking Truth. Nor shall we attain one without the other’, he insists.<sup>73</sup>

<sup>70</sup> Barri J. Gold, *Thermopoetics: Energy in Victorian Literature and Science* (Cambridge: MIT Press, 2010) pp. 35–36.

<sup>71</sup> Gold, p. 3.

<sup>72</sup> Ronald Ross, ‘Science and Poetry’ *English Review* (October 1920) 303–19 (pp. 306–07).

<sup>73</sup> Ross, ‘Science and Poetry’ *English Review*, p. 319. Such a philosophy was drawn from his interest in ancient Greece and Rome, which he admired as models of civilisation. In his *Memoirs*, he characterises his malaria work as an episode precipitated by his boyhood interest in ancient Greek philosopher Epicurus and Roman poet and philosopher Lucretius.

It is possible to map Ross's goal of a blended art and science onto his interest in the Greek muses, to whom he frequently refers. In his science and poetry lecture, he asserts 'the figures of Apollo, Pallas Athene, and the Muses are the personifications of the intellectual virtues'.<sup>74</sup> His insistence on viewing the world in these poetic terms—in his own words, a 'Heliconian philosophy'—was gently mocked by Arthur Conan Doyle in his poem 'To Ronald Ross'.<sup>75</sup> The poem was inspired by Ross's visit to Parnassus after being torpedoed by the Germans onboard a ship near Ithaca:

I've read of many poets, Latin, Greek,  
And bards of Tarragona or Toledo,  
But you, dear Ross, are surely quite unique,  
Blown to Parnassus by a Boche torpedo.<sup>76</sup>

In his *Memoirs*, Ross also recalled this incident through the lens of Greek mythology, although seemingly without irony. He notes that in the aftermath of the first torpedo, he went down below ship to retrieve his heavy military overcoat with 'Sir J. G. Frazer's *Studies in Greek Scenery, Legend, and History* and Baedeker's *Greece* in its pockets'.<sup>77</sup> Following which he reappeared on deck in time to witness the second torpedo and escape with the rest of the crew and French soldiers into a waiting destroyer. As Ross describes the military stand-off between the French destroyers and the German submarine, he diverges into an altogether different narrative:

The rising sun was like Apollo in the east, and the rippled sea as blue as heaven. We were all wild with delight. I said to myself: "Ulysses and Penelope must be seated on Ithaca there, watching the scene". (521)

Ross's obsession with ancient Greek models of intellectual creativity—and the philosophical positions that they embody—clearly informed his worldview (not to mention his narrative style) in substantial ways. Such was the significance of mythological narratives for Ross that he saw fit to end his *Memoirs* somewhat arbitrarily with the scene related earlier. Observing the landscape that surrounds him, he concludes: 'there, as of yore, were the

<sup>74</sup> Ross, 'Science and Poetry' *English Review*, p. 319.

<sup>75</sup> Ross, *Memoirs*, p. 497.

<sup>76</sup> Arthur Conan Doyle, 'To Ronald Ross' in *The Poems of Arthur Conan Doyle* (London: John Murray, 1922) p. 216.

<sup>77</sup> Ross, *Memoirs*, p. 520.

Great Gorge and the Castalian Cleft; but now the temple was nothing but a pavement, the treasures were empty, the gods had become mountain eagles, and the voice of the pythoness was the voice of the wind' (522). He asks the Oracle of Delphi for the cause of all human troubles and is rewarded by Apollo's voice 'in the wind'. What follows is another of Ross's poems, which speaks of men who 'would not be taught', before a curt 'so ends my story'. These bitter sentiments reflect his belief that the British and colonial governments had not done enough to stem the spread of malaria, despite knowing its full aetiology. A footnote tells us that Ross provided 'an account in verse' of this military event during a lecture to the Royal Institution in 1920. Ross concluded the lecture with the assertion 'science and poetry dwell together'. Rejecting 'militarism', 'politicism', and anti-intellectualism as 'false gods', he instead urges his audience to worship the 'figures of Apollo, Pallas Athene, and the Muses [who] are the personifications of the great intellectual virtues which have raised us from the barbaric state'.<sup>78</sup>

Despite his criticism of imperial governance, Ross subscribed to the idea that British imperialism was a civilising influence. In his *Memoirs*, he again employs the mythic forms of ancient Greece, this time to conceptualise hill stations. Speaking of the British in India he writes:

They introduced honesty, law, justice, order, roads, posts, railways, irrigation, hospitals, defence from external enemies and, what is essential to civilisation, a final superior authority. But they themselves dwelt apart like the gods. (17)

The gods provide a way of characterising the power dynamic between British colonists and indigenous Indians—the former's 'final superior authority' akin to the absolute power of mythic deities.

### DESCENT INTO THE EAST: TROPICAL MYTHOLOGIES

Ross was not unique in reaching back to the narrative power of ancient Greece. Indeed, owing in part to the emphasis on classics in the education system in the nineteenth century, and in part to the perception that Classical Greece provided the foundations for western civilisation, ancient

<sup>78</sup> Ronald Ross, 'Science and Poetry' *English Review* (October 1920) 303–19.

Greek mythology formed a common reservoir for medical analogy.<sup>79</sup> The mythic Greek hero provided a connection to past civilisations and empires, myth being for the ancient Greeks ‘the major formative power of cultural progress’.<sup>80</sup> Frank Turner argues that, for the Victorians, Greek civilisation represented not ‘the Ancients’, but ‘distant contemporaries who had confronted and often mastered the difficulties presenting themselves anew to the nineteenth century’.<sup>81</sup> To this end, their myths were repurposed for scientific analogy; the mythic Greek hero was often fused with the Knight Errant (a figure associated with Britain’s Arthurian myths of nationhood) to better represent the tribulations of the British Empire.

In an address on the tropics and the nation, Regius professor of medicine at Oxford, William Osler, identified three outstanding events in the making of the modern world: ‘the Greek civilisation, the geographic renaissance of the sixteenth century, and the scientific awakening of the nineteenth century’. The latter, he asserted, ‘has given man such a control of nature that at a stroke is removed the chief obstacle to world-wide dominion’.<sup>82</sup> In 1898, Dr Luigi (later Louis) Sambon had identified this obstacle as a belief in the immutability of the tropical world. He, like so many of his contemporaries, saw parallels between ancient Greece and modern Britain and used a figure from Greco-Roman mythology to contextualise the debate:

But there remains the great tropical belt, with its vast and rich territories extending over more than a third of the surface of the globe. This, surely,

<sup>79</sup> Frank Turner argues that the classical world was at the heart of Victorian intellectual thought. See: Frank Turner, *The Greek Heritage in Victorian Britain* (London: Yale University Press, 1981) p. xii.

<sup>80</sup> Walter Burkert, *Structure and History in Greek Mythology and Ritual* (Berkeley: University of California Press, 1979) p. xii.

<sup>81</sup> Turner, p. xii.

<sup>82</sup> William Osler, ‘An Address on the Nation and the Tropics’ *The Lancet* (13 November 1909) 1401–06 (p. 1401). In 1906, Osler had invited Ross to give a lecture before the Oxford Medical Society, in which Ross had elaborated his theory that the fall of ancient Greece was predominantly due to the introduction of malaria into the population. Osler introduced Ross to William Henry Samuel Jones with whom he wrote *Malaria: A Neglected Factor in the History of Greece and Rome* (1907). Jones dedicated his 1909 *Malaria and Greek History* to Ross ‘as a tribute to his labours for the welfare of mankind’.



must be the Promised Land; but we dare not enter, because at its gates stands a terrible monster—the Cerberus of prejudice.<sup>83</sup>

Sambon mobilised this analogy to dispel the erroneous notion that Africa could not be colonised by ‘the white man’ owing to geographical or ecological incompatibility. He refers here specifically to the popularly held connection between tropical climate and disease: ‘It is the almost universal opinion that the European cannot colonise the tropics, but must inevitably fall, sooner or later, a victim to the influence of their deadly climate’.<sup>84</sup> He went on to point out the folly of this connection, highlighting the importance of new medical knowledge:<sup>85</sup>

One time, undoubtedly, these diseases were attributed to the direct and sole agency of solar heat, just as malarial fevers were attributed to the moon-shine; but now they have been inscribed deeply on the tablets of bacteriology, and certainly the demonstration that disease belongs to the domain of parasitism is the greatest advance that medical science has ever made. (589)

Sambon’s use of Cerberus (the three-headed, serpent-tailed hound of Hades) characterises the tropics as the Underworld and the journey across the Atlantic as tantamount to crossing the river Styx (a formidable stretch of water that separates the Earth from the Underworld). Nevertheless, Sambon also refers to the tropical belt as ‘the promised land’ perhaps to draw an analogy to the belief, expressed in the *Aeneid*, that Elysium was located in a special region of the Underworld.<sup>86</sup> To achieve Elysium—or to unlock the commercial potential of the tropics—Britons must persevere through the barrenness and hardships of the African continent, symbolised by the Underworld. However, before the British can find Elysium (or happiness in Africa), they must first also lull to sleep the Cerberus of Prejudice, that is, they must dispel the notion that the tropics are uninhabitable.<sup>87</sup> Patrick Manson used the same analogy in 1907; however,

<sup>83</sup> L. Westernra Sambon, ‘Acclimatization of Europeans in Tropical Lands’ *The Geographical Journal* 12.6 (1898) 589–99 (p. 589).

<sup>84</sup> Sambon, ‘Acclimatization of Europeans in Tropical Lands’, p. 589.

<sup>85</sup> He is in fact so against this climatic connection that he insists ‘sunstroke’ is not caused by exposure to the sun, but is an infectious disease.

<sup>86</sup> Robin Hard, ‘The Brothers and Sisters of Zeus’ *The Routledge Handbook of Greek Mythology* (London: Routledge, 2004) p. 117.

<sup>87</sup> The sibyl accompanying Aeneas on his journey through the Underworld puts Cerberus to sleep by tossing him a drugged honey cake, whilst Orpheus uses a harp to lull Cerberus

his Cerberus was not prejudice but disease: 'The Cerberus that guards the African Continent, its secrets, its mystery and its treasure is disease... (which I would liken to an insect)'.<sup>88</sup> The final clause suggests that Manson refers specifically to parasitic diseases, many of which have insect vectors.

Manson's and Sambon's gatekeepers are effectively one and the same; the prejudiced notion that Africa is uninhabitable to Europeans stems from a direct association between climate and disease. Both regarded the taming of disease as the key to colonisation. Sambon advocated a disassociation between heat and disease, as he saw no causative link between them. As the *British Medical Journal* reported in 1897:

Like everyone else, Dr. Sambon recognises two [obstacles to tropical acclimatisation] heat and disease. But he differs from almost everyone else in accentuating the fact that these two are [...] independent of each other; in fact entirely distinct.<sup>89</sup>

This dissociation dispelled the notion that tropical lands were noxious environments in and of themselves, suggesting that a third factor (the parasite) is what causes disease, and thus what might be overcome by Europeans. Europeans cannot change the tropical climate, but they might be able to avoid parasitic infestation and thereby achieve acclimatisation. As a writer for the *British Medical Journal* concluded in 1898:

If climate pure and simple be the cause of the unhealthiness in the tropics, the position is hopeless; we cannot materially modify climate. But after all it is mainly the parasites [...] take away the malaria microbe and the dysentery microbe from West Africa and this deadly country would become as healthy as Europe.<sup>90</sup>

into submission when he descends to the Underworld to rescue Eurydice. Elizabeth Webber and Mike Feinsilber (eds.) 'Cerberus' in *Merriam-Webster's Dictionary of Allusions* (Springfield: Merriam-Webster, 1999) p. 107; George William Cox, *Tales from Greek Mythology* (London: Longman, Green, Longman and Roberts, 1861) p. 20.

<sup>88</sup> Quoted in Sheldon Watts, *Epidemics and History: Disease, Power and Imperialism* (Bath: The Bath Press, 1997) p. 213.

<sup>89</sup> 'Europeans in the Tropics' *British Medical Journal* 1.1880 (9 January 1897) 93–94 (p. 93).

<sup>90</sup> 'Medicine in the Tropics' *British Medical Journal* 2.1969 (24 September 1898), 909–10 (p. 910).

In this way, parasitologists were again indirectly valorised by their insistence that the only thing standing in the way of European acclimatisation was parasitic disease and, by extension, the only ones able to grant acclimatisation were parasitologists.

The transformative powers of parasitology and its allied practices of public health and sanitation were an integral part of the parasitology brand—a highly politicised modern mythology constructed by and about its proponents. The playfulness of this mythology can be seen in correspondence between Ross and Lord Lever (later Leverhulme)—benefactor of the Liverpool School of Tropical Medicine and manufacturer of Sunlight Soap. Lever wrote to Ross in 1911 to inform him that he had received a drama in one act, anonymously signed, which had St Peter send ‘a soap-maker’, billed as the chair of the School of Medicine, and ‘a scientist’, who ‘made a great discovery’, to Hell. He enclosed the play and composed a second act, which he provided under the authorship of ‘a certain soap-maker’ who ‘often gives rise to reflections’.<sup>91</sup>

The scientist is clearly a fictionalisation of Ross and the soap-maker of Lord Lever.<sup>92</sup> Given the subtitles: ‘by a scientist’ and ‘by a soapmaker’, respectively, it seems likely that Ross composed the first act and Lever the second. The gathering of applicants who are ‘mostly from Liverpool, Shipowners, Professors, Business Men and so on’ situates the drama in dialogue with the Liverpool School of Tropical Medicine and its proponents.<sup>93</sup> The first act takes place at the ‘Gates of Paradise’ where St Peter is reviewing the applicants for admittance to heaven. After meeting a Parson and sending him to Hell for the insincerity of his prayers and his failure to convert anyone to Christianity, St Peter is met with a scientist.

St Peter:     [...] Next. Who are you?  
 Scientist:    A poor man of science, Sir.  
 St Peter:     Oh! I don’t understand that lot. What has he done?  
 Secretary:    He made a discovery once, Sir—many years ago.

<sup>91</sup> London, LSHTM. RC. GB 0809 Ross/113/20/05. Lever to Ross, 27 December 1911.

<sup>92</sup> William Lever was an English industrialist and philanthropist best known for manufacturing (with his younger brother) ‘Sunlight Soap’—a business that relied on palm oil supplied by the British Empire.

<sup>93</sup> From the tone of the correspondence and the details of the play, which take place ‘Christmas 19—’ and conclude with many LSTM members getting into Heaven ‘because it is Christmas Day’, I suspect the first act was sent by Ross to Lever as a private joke.

- St Peter: Ah yes, I've read about it in our Science Jottings. And what has he discovered since then?
- Secretary: Nothing, Sir.
- St Peter: Monstrous! Why not? Why haven't you used your talent?
- Scientist: Please, Sir, I have had to spend all my time writing letters, attending committees, and dining with the next applicant; so that I have had no leisure to think and work properly.
- St Peter: Rot! Down you go. Fifth class.<sup>94</sup>

These lines might be read as an allegory for the mistreatment of scientists, a reading that is supported by Ross's campaigns for better recognition and remuneration for scientific workers. Scottish scientist Henry Faulds, commenting on Ross's remuneration campaign, captured this sentiment when he asked:

Why should only well-paid warriors, diplomats and civil servants be additionally requited for often purely conventional services, while those who painfully penetrate with ultimate success into the unknown, but fertile regions receive nothing for their expenses, and often not even the barest form of thanks?<sup>95</sup>

By using the concept of 'penetrat[ing]' into 'unknown but fertile regions', Faulds upholds the widespread characterisation of research in parasitology as a physical expedition. The speed with which St Peter dismisses the scientist's discovery suggests both a belittling of the significance of his research and a lack of understanding of the political nuances and administrative red tape associated with such work.<sup>96</sup>

Alternatively, the scene might be read as a sincere criticism of the amount of time spent reaping the rewards of discovery at dinners and committees, by someone who, either seriously or teasingly, Lever accuses

<sup>94</sup>London, LSHTM. RC. GB 0809 Ross/113/20/07-08. 'The Gates of Paradise', 27 December 1911.

<sup>95</sup>Henry Faulds, 'The Reward of Research' *British Medical Journal*, 1.2781 (18 April 1914), p. 888.

<sup>96</sup>'It seems to me there is far too much red tape in these matters and that an ordinary layman like myself is in much greater danger of damaging the cause he wishes to help [...] if he rushes in where angels fear to tread'. London, LSHTM. RC. GB 0809 Ross/121/01. Lever to Ross, January 1912.

of ‘lay[ing] sacrilegious hand on the scientist’.<sup>97</sup> Either reading, however, suggests a disparity between the perspectives of the workers of the Liverpool School of Tropical Medicine and their political reception at large. Faulds’s notion of scientists as penetrating into unknown lands and subsequently transforming them is played out in the second act, which has the scientist, parson, and soap-maker descend into the deepest regions of Hades. A conversation with ‘his Satanic majesty’ reveals that the Underworld has been positively transformed owing to St Peter’s dislike of scientists, whom he sends to Hell, and who then proceed to improve it beyond recognition.

His Satanic Majesty: The fact is we get so many distinguished scientists that they are improving the place entirely out of my recollection. They introduce Town Planning Schemes, Garden Cities, Art Galleries, Museums; to say nothing of Tropical Wards, Scientific Medical Research and other advancements.<sup>98</sup>

Parallels with the tropics are erected through references to ‘climate’ (which has of course been improved by the scientists in Hades), and by references to other markers of colonial space.<sup>99</sup> The journey to Hades takes place by train, perhaps nodding to the railway infrastructure of the colonies, a seminal factor in the successful colonisation of central Africa. Satan encourages further comparison when he says:

The very men who invented mosquito proof curtains have introduced here fire proof curtains [...] and there is one distinguished scientist connected with the Liverpool School of Tropical Medicine, whom we are expecting here shortly and whom we have good reason to believe has succeeded in inducing a very wealthy Baronet, living in the South of England somewhere near Ascot, to fit up a cold chamber on the Haslam Improved System.<sup>100</sup>

<sup>97</sup> London, LSHTM. RC. GB 0809 Ross/113/20/05. Lever to Ross, 27 December 1911.

<sup>98</sup> London, LSHTM. RC. GB 0809 Ross/113/20/07–08. ‘The Gates of Hades’, December 1911.

<sup>99</sup> Furthermore, Ross’s assertion that ‘[Africa] is mostly an empire of graveyards, a kingdom over tombstones’ allegorically links the colonies with Hade’s underworld. London, LSHTM, RC. GB 0809 Ross/67/08. Ronald Ross, ‘A Recent Medical Expedition to West Africa’ lecture delivered at the Liverpool Chamber of Commerce on 27 November 1899.

<sup>100</sup> London, LSHTM. RC. GB 0809 Ross/113/20/07–08. ‘The Gates of Hades’, December 1911.

This likely refers to Ross's work studying the effects of cold on animals (and people) infected with trypanosomiasis (African sleeping sickness).<sup>101</sup> A cold chamber, made by Alfred Haslam, was erected at the University around this time, paid for by Edwin Durning-Lawrence.<sup>102</sup>

Parallels with recognisable real-life developments, like the implementation of mosquito nets in the tropics and the construction of the cold chamber at Liverpool, situate the drama firmly in dialogue with the politics of the discipline. Lever became chairman of the school in 1909 and, according to Ross, immediately added £800 to the school income.<sup>103</sup> In their letter correspondence, Lever and Ross exchange veiled compliments, which—given the parallels discussed here—suggest they see British imperialism and the work of the Liverpool school as part of the same sanitising and transformative force. A self-congratulatory tone comes to the fore as their dramatic counterparts bleed into real life and the lines between Greek mythology and the mythology of the discipline become increasingly indistinct: 'You make me blush when you talk about the Ignominious soap-maker improving Hades. It is the new departure in Town Planning being carried out by men of science headed by R... R...'.<sup>104</sup>

The transformative power of parasitologists exemplified here is an idealisation; despite providing the basis for prophylaxis against parasitic disease in the tropics, parasitologists could not guarantee the implementation of their findings. In the medical press and his *Memoirs*, Ross repeatedly recounts his frustrations at the government's failure to act on the mosquito-malaria connection, as well as time and money spent on what were, to his mind, unnecessary further experiments. In a letter to *The Lancet*, he wrote:

We must not forget that while we are considering academical details valuable lives are constantly being lost and that we are already in possession of facts solid enough to form a basis for practical action.<sup>105</sup>

<sup>101</sup> See: London, LSHTM. RC. GB 0809 Ross/110/62. Ross to Sir Alfred Lewis Jones, December 1911.

<sup>102</sup> See: R. Ross and J. G. Thomson, 'Experiments on the Treatment of Animals Infected with Trypanosomes, by Means of Atoxyl, Vaccines, Cold, X-Rays and Leucocyte Extract; Enumerative Methods Employed (Preliminary Note)' *Proceedings of the Royal Society of London. Series B, Containing Papers of a Biological Character* 83.563 (1911) 227–34.

<sup>103</sup> Ross, *Memoirs*, p. 511.

<sup>104</sup> London, LSHTM. RC. GB 0809 Ross/113/20/06. Lever to Ross, 30 December 1911.

<sup>105</sup> Ronald Ross, 'A Forgotten Suggestion' *The Lancet* 155.4002 (12 May 1900) 1400–01.

He also sent a memorial petition signed by several colleagues to Joseph Lister urging sanitary action, but laments that nothing came of it, observing—facetiously—that the colonial office ‘appointed a Committee!’ (421).

In addition to petitioning for more to be done with the findings of parasitology research, he also campaigned for better remuneration, recognition, and pensions for scientific workers. These petitions included widely read articles in the lay press, which resonated with the public. Several correspondents wrote to Ross in support: ‘I have been very struck with your letter in “The Times” [...] I should be very pleased to add to such a fund (£500 anonymously)’;<sup>106</sup> ‘I have just read your letter in today’s “Times”, I wish I could send a cheque worthy of such an object’.<sup>107</sup> However, the campaign was also met with resistance, as voiced by this article in the *Abolitionist* in 1914:

The claims of “research” workers to have benefitted mankind are matched only by their insistent pleading for grants and complaints of inadequate payment [...] I fail to see what claim [they have] upon the public purse of this country.<sup>108</sup>

Such scepticism concerning the social value of parasitologists reinforced the need for their imaginative reconstruction. The use of tropes such as the chivalric knight, the brave explorer, and the lone hero in both private and public correspondence contributed to the dramatisation of the discipline—a dramatisation that served to glorify individuals and legitimise their fiscal demands. Andrew Balfour, director of the London School of Hygiene and Tropical Medicine, for example, drew on ancient Greek epic poetry to characterise the story of malaria sanitation in British Malaya as ‘a medical Iliad’ that ‘shows what can be done when the right men and ample funds are forthcoming’.<sup>109</sup> In his *Memoirs*, Ross invokes the biblical imagery of the Promised Land, a metaphor freighted with colonial overtones, to communicate the lasting value of parasitology research.

British physician Sir Joseph Fayrer, who was president of the Medical Board of the India Office from 1874 to 1895, mobilised similar

<sup>106</sup> London, LSHTM. RC. GB 0809 Ross/119/27. A. F. Yarrow to Ross, 18 August 1913. Probably Alfred Fernandez Yarrow (1842–1932) of Yarrow Shipbuilding Works.

<sup>107</sup> London, LSHTM. RC. GB 0809 Ross/119/25. Lilian Glenny to Ross, 16 August 1913.

<sup>108</sup> ‘Sir Ronald Ross and his Petition’ *Abolitionist* 6.15 (1914) 126–28 (p. 126).

<sup>109</sup> Quoted by Malcolm Watson, ‘Ronald Ross (1857–1932)’ *Science Progress in the Twentieth Century* 27.107 (January 1933) 377–92 (p. 389).

techniques when writing about tropical disease in his contribution to the multi-volume textbook *A System of Medicine* (1897). He noted that ‘Milton’s description of a trying climate is amply illustrated in India’:

For Hot, Cold, Moist and Dry, four champions fierce  
Strive here for mast’ry and to battle bring  
Their embryon atoms. *Paradise Lost*.<sup>110</sup>

Whilst Fayrer’s chapter drew attention to the wide variety of climates in India and included large sections of topographical and statistical information, reviews of the textbook concentrated on his use of Milton, re-quoting him for their readers and encouraging them to approach India through a mythic literary lens.<sup>111</sup> Arthur Bagshawe, director of the sleeping sickness bureau, also used mythic language when referring to the task of reducing the *Glossina Palpalis* (tsetse fly) population to suppress sleeping sickness in Africa, which he compared to the ‘labour of Sisyphus’.<sup>112</sup> Such archetypal images helped to conceptualise the perceived difficulty and significance of the task at hand, equating the development and administration of public health with the trials that characterise Judeo-Christian and ancient Greek theology.

## FAIRY TALES AND AFTERLIVES

The knights of science narrative—and its kindred variations—held cultural currency owing not only to its political utility but also to its rhetorical power. It capitalised on popular appetite for imperial adventure stories and appealed to a ‘great man’ model of history, which was advanced by historian Thomas Carlyle in the 1840s and popularised by the novels of Walter Scott, Charles Kingsley, and Thomas Hughes (as I will explore further in the next chapter). Writers who engaged with the medieval revival emphasised chivalry and the ethic of service as part of a model of public masculinity that was in turn co-opted by parasitologists to valorise their work. By manipulating and updating the historical and imperial ‘hero’ to suit their own ends, parasitologists upheld continuities between national values and

<sup>110</sup> Joseph Fayrer, ‘On the Climate and Some of the Fevers of India’ in *A System of Medicine by Many Authors*, ed. by T. Clifford Allbutt (London: Macmillan and Co., 1897) pp. 296–352.

<sup>111</sup> ‘A System of Medicine by Many Writers’ *JAMA*, 8 July 1897, p. 45.

<sup>112</sup> ‘Annotations. The Suppression of Sleeping Sickness’ *The Lancet* 173.4462 (6 March 1909) p. 701.



codes of behaviour over time whilst destabilising boundaries between myth, legend, and historical record. Such a destabilisation expanded the narrative potential of parasitology from a nascent medical specialism to a source of folkloric national identity.

Newspapers were quick to take up the linguistic patterns offered by the profession. The *Liverpool Echo* asserted, ‘Of many modern fairy-tales of science, none, perhaps, is more fascinating than the story of the formulation and ultimate verification of the mosquito-malaria theory’.<sup>113</sup> The *Brisbane Courier* also participated in the fairy-tale-like construction of parasitology by noting (of Ross):

His fight against the malaria-carrying mosquito has been truly described as more romantic than any story of knight against huge dragon [...] this kindly knight was to show himself possessed of patience, imagination, determined and highly-developed reasoning power, and above all faith and courage.<sup>114</sup>

Even in private correspondence, the mythical nature of Ross’s work prevailed; a friend congratulating him on the Nobel Prize wrote that ‘it reads like a Fairy Tale and I hope it will all end in Fairy Tale fashion and that you & Rosie will live happily ever after, and all your children grow up to marry princes and princesses’.<sup>115</sup>

In 1923, Frederick James Gould, writing for the British social democratic newspaper, *Justice*, used the story of Hercules to contextualise Ross’s malaria work. In the newspaper’s ‘Monthly Talks with Young Citizens’ segment, he insisted: ‘you were earnestly requested not to believe a word of the legend of Hercules [...] now I invite you to believe every word of this brief account of one of the greatest discoveries in the history of civilisation’.<sup>116</sup> Hercules was again used as a frame of reference in James Oram Dobson’s biography *Ronald Ross: Dragon Slayer*, in which Dobson writes, ‘[Ross’s] social sympathies, his passion for health, and his own restless energies and capacities found fulfilment in those weary years of

<sup>113</sup> [No title] *Liverpool Echo*, Monday 15 February 1909, p. 4.

<sup>114</sup> ‘Sir Ronald Ross’ *Westminster Gazette*, Thursday 10 December 1925, p. 6; ‘Sir Ronald Ross, Famous Scientist Ill’ *Northern Star*, Friday 16 August 1929, p. 3; ‘Sir Ronald Ross’ *Brisbane Courier*, Tuesday 20 September 1932, p. 10.

<sup>115</sup> London, LSHTM. RC. GB 0809 Ross/86/06/18. Letter of congratulation, 1902.

<sup>116</sup> F. J. Gould, ‘XVII—Three Workers. Ronald Ross’ *Justice*, Thursday 6 December 1923, p. 5.

concentration on a task that was the labour of Hercules'.<sup>117</sup> Given that one of Hercules's most prominent labours was the capture of the hell-hound Cerberus, more might be made of this allusion (Cerberus being, as we have seen, a motif invoked to represent the obstruction of white settlement in Africa by tropical disease). Allusions to Hercules might also owe something to his second labour: the destruction of Cerberus's 'sister' the Hydra of Lerna. The swamp-dwelling hydra is fabled to have poisonous breath and bile and was considered by some to be symbolic of malaria, as Ross pointed out in his *Prevention of Malaria* (1910).<sup>118</sup>

The use of tropes drawn from myth and legend was widespread in popular medical books, like Macfie's *The Romance of Medicine* (1907), in which he waxed lyrical about the 'imaginative aspect and romantic character of medical discovery'. He asserted that the mosquito-malaria story was one 'of such determination and heroism' that it was surely 'worthy to be styled romantic'.<sup>119</sup> Macfie, who knew Ross personally, sent Ross a copy of the book in 1908, clearly seeking his approval. He contributed several articles to *Science Progress* under Ross's editorship, and his poems were favourably reviewed in the magazine's pages, where he was eulogised in 1931 as a 'heroic soul' with 'the heavenly gift of poesy'.<sup>120</sup> In 1928, he again described Ross's discovery, this time (perhaps following Ross's lead) using Greco-Roman mythology and the Portuguese colonial empire as frames of reference:

His scientific demonstration that the entrails of a judge might be as full of treacherous death as the belly of the Trojan Horse has saved and will continue to save thousands of lives. His scalpel not only carved mosquitoes but cut the Panama Canal and opened up more territories to the white races than all the bloody swords of all the conquistadores.<sup>121</sup>

<sup>117</sup> J. O. Dobson, *Ronald Ross: Dragon Slayer. A Short Account of a Great Discovery and of the Man Who Made it* (London: Student Christian Movement Press, 1934) p. 101.

<sup>118</sup> Ronald Ross, *The Prevention of Malaria* (London: John Murray, 1910) p. 4.

<sup>119</sup> Ronald Campbell Macfie, *The Romance of Medicine* (London: Cassell and Co., 1907) p. 155.

<sup>120</sup> R.M.S., 'Obituary: Ronald Campbell Macfie, H.A., M.B., C.M., LL.D., Died June 9, 1931' *Science Progress in the Twentieth Century* 26.102 (October 1931) 269–70.

<sup>121</sup> Ronald Campbell Macfie, 'Poems by Sir Ronald Ross' *The Bookman*, 28 September 1928, p. 315.

In 1937, five years after Ross's death, Rev. T. McDougall of St Paul's Presbyterian Church gave a lecture on Ross's life and works in which he quoted *The Times* in stating that Ross 'slew the Dragon and delivered mankind from immemorial bondage'. He noted that he was indebted to *Chamber's Encyclopaedia* and to Dobson's biography for the matter used in the lecture, demonstrating the lasting and intersecting afterlives of Ross's mythological narratives.<sup>122</sup> John Rowland's 1958 biography of Ross, *The Mosquito Man*, indulges in a similar rhetoric when describing his discovery as 'a story of adventure—adventure in far off lands, as well as the more familiar surroundings of hospitals in London and Liverpool'.<sup>123</sup>

Meanwhile, in his 1931 biography of Ross, English writer Rodolphe Louis Mégroz titled the chapter about Ross's malaria research: 'The Quest' (language that persists in articles about Ross on the World Health Organization and Centers for Disease Control and Prevention websites today).<sup>124</sup> Mégroz dedicated his book to 'all true hero-worshippers and especially to I. Landreth-Walton who first sent me "Philosophies" to read'. This reference to the transformative moment of reading one of Ross's poetry collections indicates that Mégroz's own 'hero-worshipping' was significantly framed by Ross's poetic persona. He describes Ross as 'sustained by a combination of his poetic power and scientific imagination', and presents his poetry as 'look[ing] back in the spirit of an adventurer to the climax of that scientific pilgrimage' (29). Indeed, many writers—in biographies, obituaries, and newspaper columns—insisted on the significance of his polymathic nature: 'this musician, poet, mathematician, doctor, scientist, philosopher, author, had solved a mystery of the ages'.<sup>125</sup> Although starting out as an indulgent linguistic fantasy to explicate and contextualise the practical interventions of their research, the mythic 'knight of science' became an archetypal figuration that obscured the foundations of tropical medical knowledge for years to come.

<sup>122</sup>'Sir Ronald Ross's Discoveries. Brotherhood Address' *Northern Star*, 20 March 1937, p. 14.

<sup>123</sup>John Rowland, *The Mosquito Man: The Story of Sir Ronald Ross* (London: Lutterworth Press, 1958) p. 9.

<sup>124</sup>R. L. Mégroz, *Ronald Ross: Discoverer and Creator* (London: George Allen and Unwin, 1931).

<sup>125</sup>'Men You Will Hear of When You Grow Up' *The Children's Newspaper*, 6 December 1919, p. 4.

At the opening of a memorial gate commemorating Ross's malaria work in Calcutta, Lord Lytton, governor of Bengal, gave a speech in which he spoke of Ross's work as a 'self-imposed mission' and remarked:

It is nothing short of miraculous that such results should have been obtained by the discovery of one man, and that he, almost unaided, should have been able to detect not only the means by which malaria is carried but also the means by which it can be prevented.<sup>126</sup>

This idea of Ross as lone and unaided was inaccurate—in Ross's own histories of malaria, he points out the long chain of events that led to his discovery, from the suspicions of 'the ancients', to the elucidation of parasite lifecycles in the mid-century, to various theories of transmission, to his experimental proofs. Moreover, he recognises the network of kindred discoveries that needed to happen: from Laveran's discovery that malaria was caused by an animal parasite (rather than 'vegetable bacteria'), to Manson's discovery of the mosquito vector for filariasis, to David Bruce's discovery that tsetse flies transmit trypanosomes between cattle, to William MacCallum and Eugene Opie's elucidation of the sexual stages of the malaria parasite, to his own identification of human malaria parasites in the salivary glands of mosquitoes and experimental proof of mosquitoes as vectors of avian malaria, to the final confirmation of transmission between mosquitoes and humans by Giovanni Battista Grassi, Amico Bignami, and Giuseppe Bastianelli. During a brief speech, he noted his indebtedness to Alphonse (Charles) Laveran ('my master'), Patrick Manson ('my sponsor'), surgeon-general Harvey, then director-general of the Indian Medical Service (IMS), and 'subsequent work in India by Christophers, James, and Bentley' (121). This is not to mention his staff of laboratory assistants, which included Mahomed Bux and science graduate Kishori Mohan Bandopadhyay, who was awarded the King Edward VII Gold Medal in 1903 for his role in the discovery (although Ross omits mention of him in his *Memoirs*).

Lytton's words then are disingenuous. They erase indigenous people from the story of tropical medicine, an erasure that Indian author Amitav Ghosh radically reimagines in his 1995 novel *The Calcutta Chromosome*. The value of the contributions of indigenous Indians and Africans is evident in correspondence between European researchers. German

<sup>126</sup> 'The Ross Gate of Commemoration in Calcutta' *Science Progress in the Twentieth Century* 22.85 (July 1927) 116–21 (p. 118).

microbiologist Robert Koch, for instance, noted that natives in German East Africa believed that malaria was caused by the bites of mosquitoes as a fact that supported his own work.<sup>127</sup> Likewise, Ross informed American-British parasitologist George Nuttall in 1898 that ‘in parts of both Africa and Assam the natives believe that mosquito bites cause fever’.<sup>128</sup> In discussing the practicalities of his experiments, Ross credited Bux with developing a technique for identifying the larvae of *Anopheles* mosquitoes and urged Nuttall when making use of the information in publications to ‘give the credit [...] not to me but to Mahomed Bux (for whom I want the government of India to do something). I think it will prove to be an observation of very great importance’.<sup>129</sup> Nevertheless, the diverse social and material networks that supported parasitology research were obscured in journalistic accounts of tropical medicine, which reproduced the idealism of the discipline by framing prominent figures like Ross as a ‘lone hero’ or a ‘great scientific soldier’ in a ‘fight against a scourge that till he was in the field took an annual toll of millions of mankind’.<sup>130</sup>

The institutionalisation of the discipline in two major English cities, integral to politics and commercial trade, provided a public face and a platform from which to influence legislation and medical practice. The London and Liverpool Schools combined their scientific, medical, social, commercial, and political interests to produce two institutions that far surpassed Chamberlain’s notion of a space for colonial medical training. The varying interests that contributed to the foundations of the schools also shaped the professional identity of parasitologists and the ways in which they—and others—talked about their research. In 1903, co-founder of the Liverpool school and shipping magnate Alfred Lewis Jones revealed the intertwining of commercial business and tropical medicine when asserting ‘if the men of the future [are] to have a chance of fighting the battle of commerce, they must be better trained in science’.<sup>131</sup> Extending the military metaphor, the Lord Mayor of Liverpool identified the

<sup>127</sup> As relayed to Ross by George Nuttall in letter correspondence. London, LSHTM. RC. GB 0809 Ross/17 Letter from G. H. Nuttall, 25 September 1898.

<sup>128</sup> London, LSHTM. RC. GB 0809 Ross/17 Letter to G. H. Nuttall, 31 October 1898.

<sup>129</sup> London, LSHTM. RC. GB 0809 Ross/17 Letter to G. H. Nuttall, 28 April 1899.

<sup>130</sup> ‘Liverpool’ *British Medical Journal* 1.2192 (3 January 1903) p. 48; ‘Ronald Ross (By One Who Knew Him)’ *Yorkshire Post and Leeds Intelligencer*, 19 September 1932, p. 8.

<sup>131</sup> ‘Liverpool’ *British Medical Journal* 1.2196 (31 January 1903) 285–86 (p. 285).

importance of Ross's discovery as 'mark[ing] a stage of advance and success in the warfare which humanity was waging against disease and death'.<sup>132</sup>

Sir William Banks, however, framed research by Ross and Manson as a counterpoint to the 'excessive praise' of 'what had been done by foreigners', demonstrating a tension between national achievement and international collaboration that underscored much public debate. The narrative patterns of parasitology often framed British research in terms of a patriotic desire to out-do competing imperial nations, as reflected in Manson's written encouragement of Ross, which was focused, not on elucidating the problem, but elucidating it *first*:

It is evident the Italians are now on the scent. I do hope you will run into the quarry before them. Bignami is a clever little fellow and ambitious. Laveran is working up the Frenchmen. I do not hear that the Germans are moving, but they will and so will the Russians. Cut in first.<sup>133</sup>

Manson repeatedly urged Ross to be mindful of international competition: 'The Frenchies and Italians will pooh pooh it at first, then adopt it, and then claim it as their own. See if they don't. But push on with it and don't let them forestall you'.<sup>134</sup> In 1895, Manson again warned Ross of increasing French and Italian interest, urging Ross to 'hurry up and save the laurels for Old England'.<sup>135</sup>

The *British Medical Journal* was similarly preoccupied with nationality in regard to malaria research, asserting in 1897:

We hope that in this case at least the authorities will take care that the British pioneer in what is truly a medical Africa has not once more discovered

<sup>132</sup> 'Liverpool' *British Medical Journal* 1.2192 (3 January 1903) p. 48.

<sup>133</sup> Patrick Manson, 'Letter 48 02/018' in *The Beast in the Mosquito: the Correspondence of Ronald Ross and Patrick Manson* ed. by W. F. Bynum and Caroline Overy (Amsterdam: Rodopi, 1998) pp. 124–25 (p. 125).

<sup>134</sup> Patrick Manson, 'Letter 19 02/007' *The Beast in the Mosquito*, p. 55.

<sup>135</sup> Letter from Manson to Ross, 11 October 1895 qtd in Jeanne Guillemin, 'Choosing Scientific Patrimony: Sir Ronald Ross, Alphonse Laveran, and the Mosquito-Vector Hypothesis for Malaria' *Journal of the History of Medicine and Allied Sciences* 57.4 (October 2002) 385–409 (p. 392).

territories for the better-subsidised Frenchman or German to step in and occupy.<sup>136</sup>

The concern here is that Britain will lose out to competing nations owing to a lack of government support and funding. This is an extension of what Michael Paris recognises as a widespread anxiety in the 1890s of ‘the challenge of ambitious and aggressive continental empires actively seeking to topple Britain from her premier position in the imperial hierarchy’.<sup>137</sup> If tropical disease was the primary obstacle to imperial expansion and successful trade, then Britain’s dominance in parasitology could determine her dominance in global politics too.

In the popular imagination, there was often a nationalist inflection to discussions of Ross’s discovery. Following the award of the Nobel Prize, he received correspondence from doctors seeking advice, researchers in allied disciplines congratulating him, would-be patients wanting diagnoses, and even fans wanting autographs. One correspondent sent him a poem she had written which talks about the impressive sight of Ross and fellow parasitologist Lt. Col. John William Watson Stephens crossing the Liverpool University quadrangle. As they cross the quad to reach the Thompson-Yates laboratories, ‘haughty arts men’ watch them enviously, ‘with noses pressed against the glass’, and engineers are shamed by such an ‘inspiring sight’. It begins:

Here come—now glory be to God!  
The colonels twain across the quad  
And one is dreamy, pale and long  
And one alert, and brown, and strong.

Just as fellow parasitologists Kinghorn and Montgomery were described by one newspaper as ‘fine specimens of British manhood’, Stephens and Ross took on the physical attributes of heroic figures in the public imagination.<sup>138</sup> The poem continues:

<sup>136</sup> ‘A Malaria Problem’ *British Medical Journal* 2.1929 (18 December 1897) 1805–06 (p. 1806).

<sup>137</sup> Michael Paris, *Warrior Nation: Images of War in British Popular Culture, 1850–2000* (London: Reaktion Books, 2000) p. 8.

<sup>138</sup> See: London, LSHTM. R.C. GB 0809 Ross/113/23/24. Cutting: ‘Insect Borne Disease’ *Daily Graphic*, 1907, n.p.

To you the privilege we tender,  
 Of basking in reflected splendour,  
 So long as you will keep in mind—  
 (We do not wish to be unkind,  
 Or brag or boast or make a fuss)  
 That both of them belong to us!<sup>139</sup>

Friends similarly wrote to congratulate Ross with the addendum: ‘you have done the trick and I congratulate you heartily and I congratulate ourselves for do you not belong to us? And you are no Italian, French or German but a plain Briton!’<sup>140</sup> The public could draw pride from Ross’s status as a ‘plain Briton’ in the context of a cultural discourse that narrated the discovery of the mosquito vector of malaria as a triumph of mental and moral fortitude. Ross had not only won something for humanity, but he had also proven the superiority of British mettle. In the emotively titled ‘Honour to Whom Honour Is Due’, the editors of the *British Medical Journal* proudly declared:

The short article on Surgeon-Major Ronald Ross’s most recent work on the mosquito in malaria, which we publish to-day, shows that in this particular line of investigation for once our countrymen have been observing, reasoning, and proving whilst their continental *confrères* were still only speculating.<sup>141</sup>

Indeed, the *British Medical Journal* routinely invoked the concept of nation when discussing gains in tropical medicine. In September 1898, for example, they had asserted that for years French, German, Italian, Japanese, and American researchers had grappled with questions of colonial disease whilst the British had ‘listlessly disregarded’ the subject. ‘[T]he naval and colonial services, the increasing body of medical missionaries, and the vast crowd of civil practitioners connected with our tropical possessions’, they insisted, had been ‘utterly neglected’ in tropical education. However, Britain has a ‘practical monopoly of medical opportunity’, given her tropical possessions, and they are glad to report that ‘Englishmen are

<sup>139</sup> London, LSHTM. RC. GB 0809 Ross/146/19/26. Poem sent by Miss Allman, 23 February 1919.

<sup>140</sup> London, LSHTM. RC. GB 0809 Ross/48/36. Letter dated 31 September 1898.

<sup>141</sup> ‘Honour to Whom Honour is Due’ *British Medical Journal* 1.1955 (18 June 1898) 1607–08 (p. 1607).



now throwing off their lethargy [and] awakening to a sense of duty and responsibility'.<sup>142</sup>

This is an awakening that the British Medical Association, through its journal, branches, and individual members, felt they could 'justly claim to have contributed powerfully to'. They perceived evidence of British investment and growing interest in tropical medicine in the introduction of lectureships on tropical disease in metropolitan and provincial medical schools; several textbooks recently published on the subject; the appearance of the *Journal of Tropical Medicine*; a special section of dedication to tropical diseases by the association; and the founding of the London School of Tropical Medicine at the Albert Docks.

Although research in tropical medicine and parasitology was suffused with language that foregrounded nationalism, the tenor privileged conduct over race—commentators conceptualising research in terms of honour, duty, and service. Honour became a sticking point in Ross's priority disputes with Italian investigator Giovanni Battista Grassi.<sup>143</sup> In a chapter of his memoirs entitled 'Roman Brigandage', Ross discussed the 'unscrupulous' behaviour of Italian researchers, insisting facetiously, 'great would have been their honour—if their honour had been greater'.<sup>144</sup> Indeed, the ethos of sportsman-like fair play that characterised public school muscular Christianity also characterised discussions of parasitology research. When British neurophysiologist Charles Scott Sherrington (professor of physiology at Liverpool and later president of the Royal Society) wrote to congratulate Ross on his Nobel Prize, he perpetuated a narrative of honourable perseverance in the face of the dishonourable conduct of others:

It has been one of the most unmixed pleasures of my life to see your splendid discoveries make their way and overcome ignorance, prejudice and jealousy. The Nobel prize gains honour from its award to you.<sup>145</sup>

<sup>142</sup> 'Medicine in the Tropics' *British Medical Journal* 2.1969 (24 September 1898) 909–10 (p. 909).

<sup>143</sup> For a more detailed discussion of these disputes see: Emilie Taylor-Brown, "'Petty Larceny'" and "'Manufactured Science'": Nineteenth-Century Parasitology and the Politics of Replication' in *Replication in the Long Nineteenth Century: Re-makings and Reproductions* ed. by Julie Codell and Linda K. Hughes (Edinburgh: Edinburgh University Press, 2017) pp. 67–83.

<sup>144</sup> Ross, *Memoirs*, p. 410.

<sup>145</sup> London, LSHTM. RC. GB 0809 Ross/86/06/55 Letter from Ch. S Sherrington, n.d.

Dr George Nuttall, founder and editor of both the *Journal of Hygiene* (1901) and *Parasitology* (1908), similarly used the idea of proper sportsmanship when writing to Ross about malaria research in 1913, ‘you are the only man who shows the proper spirit of fair play. All the rest want to bag each other’s game in a manner that disgusts me’.<sup>146</sup> He insists that ‘scientific pirating’ is rife within the international community, characterising the practice as ‘new Koch methods’, referring to Robert Koch’s failure to cite the work of other researchers such as Ross, Grassi, and William MacCallum.<sup>147</sup> Ross, Sherrington, and Nuttall’s criticism of international conduct maps onto their investment in models of chivalry and crusader medievalism. As Mark Girouard explains

the ideal knight was brave, loyal, true to his word, courteous, generous [...] and respected and honoured his enemies in war, as long as they obeyed the same code as he did. Failure to keep to accepted standards meant dishonour.<sup>148</sup>

The entrenchment of the directive to play fair in concepts of nationhood is illustrated by an encounter between Italian parasitologist Aldo Castellani and then Governor of British Ceylon Sir Robert Chalmers in 1914. Castellani trained at the London School of Tropical Medicine and under their auspices went out to Uganda to investigate sleeping sickness. He spent years working in the colonial medical services and was even reported as an ‘English doctor’ alongside British colleagues Cuthbert Christy and George Carmichael Low in journalistic accounts of sleeping sickness expeditions—his involvement with the British schools of Tropical Medicine providing him with an alternate form of nationhood informed by the science of empire.<sup>149</sup> In 1914, he was offered a position as the first director of a new government department, the Research Institute of Science, in British Ceylon. However, his ‘alien citizenship’ stood in the way and he was asked to naturalise. When he turned down the position, explaining that changing his nationality would feel like ‘denying [his] mother’,

<sup>146</sup> London, LSHTM. RC. GB 0809 Ross/16/05. Letter from George Nuttall dated 13 April 1899.

<sup>147</sup> London, LSHTM. RC. GB 0809 Ross/16/04. Letter from George Nuttall dated 19 March 1899.

<sup>148</sup> Mark Girouard, *Return to Camelot: Chivalry and the English Gentleman* (New Haven: Yale University Press, 1981) p. 16.

<sup>149</sup> See, for example, ‘Sleeping Sickness’ *Irish Independent*, Tuesday 2 June 1903, p. 2.

Chalmers professed that it had won him more respect, for ‘could there be a better example of British fair-mindedness?’<sup>150</sup> Britishness was, for Chalmers, so thoroughly tied to honour and fair play that Castellani could be legally Italian, but culturally British. Castellani later became director of tropical medicine at the Ross institute.

The ‘knights of science’ narrative provided a new field of research with a means by which to reconceptualise Britain’s relationship to a global research community. Proponents employed mythic language that reached back to historical fantasies of nationhood in an attempt to elevate the discipline above the unglamorous realities of imperial competition and ultimately deployed these fantasies flexibly to suit professional and personal interests. From Manson’s emphasis on producing a fully funded and competent scientific discipline to compete with French and German medicine, to Alfred Lewis Jones’s concern for British-African commercial trade, to Ross’s more poetic desire to conquer ‘million-murdering death’, proponents moulded the discipline to suit their own ends using the versatile concept of nationhood.<sup>151</sup>

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<sup>150</sup> Quoted in Aldo Castellani, *Microbes, Men and Monarchs* (London: The Scientific Book Club, 1960) p. 78.

<sup>151</sup> From his famous malaria day poem ‘Reply’. Ronald Ross, ‘Reply’ (1897) *Philosophies* (London: John Murray, 1911) pp. 53–54 (p. 54).



# Expeditions into ‘Central Man’: Imperial Romance, Tropical Medicine, and Heroic Masculinity

This, however, is no record of travel in Central Africa. There are many such to be had in any circulating library, written by abler and more fantastic pens. Some of us who have wandered in the darkest continent have looked in vain for things seen by former travellers—things which, as the saying is, are neither here nor there [...] there is nothing new under the sun—even immediately under it in Central Africa. The only novelty is the human heart—Central Man. That is never stale, and there are depths still unexplored, heights still unattained, warm rivers of love, cold streams of hatred, and vast plains where strange motives grow. These are our business.<sup>1</sup>

In Henry Seton Merriman’s imperial romance novel *With Edged Tools* (1894), his disarmingly self-aware narrator comments on the fictitious nature of nineteenth-century travel narratives. There are many forms of travel record to be found ‘in any circulating library’, written by ‘abler and more fantastic pens’ than his and containing things ‘neither here nor there’, he asserts. The remark plays with a double meaning that refocuses the reader’s attention—such ‘things’ are of little importance to his story—whilst also suggesting that they are nowhere to be found because they are largely made up. Perhaps this comment is more astute than intended. As

<sup>1</sup>Henry Seton Merriman, *With Edged Tools* (1894; London: Smith, Elder, & Co., 1909) pp. 193–94.

critics, such as Patrick Brantlinger, David Arnold, and Mary Louise Pratt have argued, texts about the tropics—from travel narratives and anthropological tracts to medical textbooks and imperial fiction—indulged in what Pratt describes as a process of ‘euro-imperial meaning making’.

Such works created imperial order for their reading publics by providing them with ‘a sense of ownership, entitlement and familiarity with respect to the distant parts of the world that were being explored, invaded, invested in, and colonized’.<sup>2</sup> They helped to create ‘curiosity, excitement, adventure, and even moral fervour about European expansionism’ for domestic subjects by subscribing, to a greater or lesser degree, to what Brantlinger calls the ‘myth of the Dark Continent’—to the racist idea that Africa was a mysterious land of savagery and superstition that needed civilising by the light of Western imperialism.<sup>3</sup> Books like Richard Burton’s *Lake Regions of Central Africa* (1860), John Speke’s *Discovery of the Sources of the Nile* (1864), and Samuel White Baker’s *The Albert N’Yanza* (1866) are, for Brantlinger, ‘nonfictional quest romances [...where] center stage is occupied not by Africa or an African but by a Livingstone or a Stanley or a Burton, Victorian St Georges battling the armies of the night’.<sup>4</sup> As Merriman’s analogy between exploring Central Africa and exploring Central Man illustrates, narratives like these helped to form and universalise cultural ideals of Britishness and masculinity.

In 1876, a writer for *Chambers’s Journal* illustrated the shared appeal of travelogues and adventure tales by characterising the former as ‘narratives of courage, endurance, pluck, inventive resource, scientific observation,

<sup>2</sup> Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (London: Routledge, 1992) p. 15.

<sup>3</sup> Pratt, *Imperial Eyes*, p. 202; Patrick Brantlinger, *Rule of Darkness: British Literature and Imperialism, 1830–1914* (Ithaca: Cornell University Press, 1988) p. 174. Christopher GoGowilt explores the emergence of the twentieth-century idea of ‘the West’ as a ‘new historical fiction’ that was developed in the context of British imperial rhetoric during the 1890s. In the ‘aftermath of the nineteenth-century colonial penetration of India, China, and the Middle East’ the West became, he argues, a ‘signifier of Europe’s imperial project [...] merg[ing] with the concept of civilisation’. GoGowilt, ‘True West: The Changing Idea of the West from the 1880s to the 1920s’ in *Enduring Western Civilization. The Construction of the Concept of Western Civilization and Its ‘Others’* ed. by Silvia Federici (Westport: Praeger, 1995) p. 66.

<sup>4</sup> Brantlinger, *Rule of Darkness*, pp. 180–81. Claire Pettit places travel narratives in the context of the emergence of the modern category of celebrity: ‘Exploration in Print: From the Miscellany to the Newspaper’ in *Reinterpreting Exploration: The West in the World* ed. by Dane Kennedy (Oxford: Oxford University Press, 2014), pp. 80–108 (p. 86).

energy tempered by caution, firmness tempered by kindness [...] and a little tinge of mystery’. Africa was a ‘new world’ explored by ‘gallant men’ and a ‘mighty geographical puzzle on which the imagination could dwell with pleasure’.<sup>5</sup> As Bradley Deane has argued, late Victorian and Edwardian readers consumed stories in which manliness and empire were entwined, where variously ‘men made the Empire’ and ‘the Empire made men’.<sup>6</sup> These tales of manly adventure in unfamiliar spaces were read for entertainment, but they also produced new ideals of imperialist masculinity that were fashioned in relation to conquest—of disease, of land, of cultures, and of peoples. Such ideals were given further reach by parasitologists who, I argue, appropriated the structural and ideological properties of travelogues and adventure tales to situate their research in relation to Britain’s changing global relationships. Thus, the cartographic imperialism of nineteenth-century exploration was bound up with the colonising practices of medicine, both of which weaponised narratives of African primitivism. In Ronald Ross’s *Memoirs*, for example, he narrates an expedition sent by the Liverpool School of Tropical Medicine in 1900 with the words ‘on the 21st March the School dispatched Mr. H. E. Annett, Mr. J. E. Dutton, and Dr. J. H. Elliott (the latter being two of our most enthusiastic students) to “carry the torch” into darkest Nigeria’.<sup>7</sup>

This triumphalist patriarchal language is characteristic of popular historiographical accounts of medicine which have tended towards a mode of heroic biography. Recent calls to decolonise science have brought to the fore the implicit legacies of British imperialism; the London School of Hygiene and Tropical Medicine has funded a project to research its own colonial histories, and a wealth of historical and postcolonial scholarship has long established the political entanglement between medicine and colonial politics.<sup>8</sup> In this chapter, I build on this existing scholarship by

<sup>5</sup> ‘A New World in Central Africa’ *Chambers’s Journal of Popular Literature, Science and Arts* 649 (3 June 1876) 365–67 (p. 365).

<sup>6</sup> Bradley Deane, *Masculinity and the New Imperialism: Rewriting Manhood in British Popular Literature, 1870–1914* (Cambridge: Cambridge University Press, 2014) p. 1.

<sup>7</sup> Ronald Ross, *Memoirs with a Full Account of the Great Malaria Problem and its Solution* (London: John Murray, 1923) p. 416.

<sup>8</sup> See for example: Rohan Deb Roy, ‘Decolonise Science—Time to End Another Imperial Era’ *The Conversation*, 5 April 2018: <https://theconversation.com/decolonise-science-time-to-end-another-imperial-era-89189>; Lindy Orthia and Elizabeth Rasekoala, ‘Anti-racist science communication starts with recognising its globally diverse historical footprint’ *LSE Impact Blog*, 1 July 2020: <https://blogs.lse.ac.uk/impactofsocialsciences/2020/07/01/>

excavating the literary and historical contexts that informed and augmented the rhetorical constructions of parasitology. To fully appreciate and historicise tropical medicine and its sub-disciplines, I resituate it within the narratological contexts of research-as-expedition, examining cross-pollinations amongst a range of genres engaged in the work of ‘mapping’ Central Man—by which I mean texts that help to construct the particular kinds of white imperialist masculinity that have, until relatively recently, characterised Anglophone medical histories.<sup>9</sup> Whilst a unidirectional or even bidirectional relationship between tropical medicine and any one of these genres would be overly simplistic, I want to emphasise the sharing of stylistic convention, and especially the cultural currency of heroism and cartography in constructing narratives of medicine.

Asserting that ‘masculinities are lived out in the flesh, but fashioned in the imagination’, Graham Dawson identifies ‘the narrative resource of a culture—its repertoire of shared and recognized forms’—as a kind of ‘currency of recognizable social identities’.<sup>10</sup> As I explored in my first chapter, the public and professional communications of parasitologists were stylistically influenced by the medieval revival, which produced ‘endless stories of chivalry, daring, knights, gentlemen and gallantry’ and contributed significantly to conceptions of the English gentleman.<sup>11</sup> The rhetorical constructions of parasitologists, which were reproduced in periodicals, biographies, medical travelogues, and national and regional newspapers, manipulated these national myths so that the practices of their discipline became narratively—if not materially—synonymous with bravery, heroism, duty, self-sacrifice, and manful endurance. Parasitologists were modern heroes exploring new realms and fighting a war against inimical

[anti-racist-science-communication-starts-with-recognising-its-globally-diverse-historical-footprint/](#).

<sup>9</sup>Lindy A. Orthia has examined how SciComm (science communication) and ‘popular science’ are broadly concerned with the ‘relatively recent history associated with the spread of Western-style science beyond the West’ and perpetuate an understanding of ‘science’ as a privileged practice and form of knowledge emerging from white, Anglophone cultures in the eighteenth and nineteenth centuries. Lindy A. Orthia, ‘Strategies for Including Communication of Non-Western and Indigenous Knowledges in Science Communication Histories’ *Journal of Science Communication* 19.2 (2020) <https://doi.org/10.22323/2.19020202>.

<sup>10</sup>Graham Dawson, *Soldier Heroes: British Adventure, Empire, and the Imagining of Masculinities* (London: Routledge, 1994) p. 23.

<sup>11</sup>Mark Girouard, *The Return to Camelot: Chivalry and the English Gentleman* (New Haven: Yale University Press, 1981) p. 7.

enemies for the glory of Britain. In this way, the fantasies of the 'knights of science'—as Ross would characterise parasitologists at the turn of the century—brought the realities of empire tantalisingly close to the romance of fiction.

Here I further problematise the boundaries between parasitology and imperial romance by examining how these shared forms—the chivalric knight, the soldier hero, the brave explorer—informed a 'great man' narrative of history that underpinned the identities of protagonists and professionals alike for popular audiences. Like Dawson I am interested in the relationships between the 'narrative imaginings of masculinity' and 'the forms through which these imaginings materialise' in the sociopolitical world.<sup>12</sup> If, as Martin Green argues, 'adventure narratives are the generic counterpart in literature to empire in imperial politics' then the knight of science and tropical medicine complete the triptych.<sup>13</sup> Parasitologists' co-opting of imperial romance is perhaps unsurprising given the genre's 'deep ideological investment in the empire as a place of renewal'.<sup>14</sup> During a period in which imperial anxiety, self-doubt, and pessimism were creeping into widening sections of the populace, the knightly science of tropical medicine offered a vision of empire as a project of heroic sanitary transformation. Perceiving, as many did, that there were dwindling opportunities for heroism in the modern world, parasitologists reached back to the real and imagined past to sate a kind of nostalgia for an ideal of masculine citizenship that never really existed. Here, I tease apart some of the fantasies that helped construct medicine and empire jointly as manly enterprises, exploring how the adventure mode helped to remap medicine, gender, and nation in ways that remain with us today.

### PIONEERS, POETS, AND PROPHETS

In 1928, British-born physician and explorer Arthur Torrance published his popular medical travelogue, *Tracking Down the Enemies of Man*, wherein he described how many times a white colonist had been saved because 'a doctor, in the spirit of true heroism, broke through the jungle

<sup>12</sup>Dawson, *Soldier Heroes*, p. 22.

<sup>13</sup>Martin Green, *Dreams of Adventure, Deeds of Empire* (London: Routledge and Kegan Paul, 1980) p. 37.

<sup>14</sup>Stephen Arata, *Fictions of Loss in the Victorian Fin De Siècle: Identity and Empire* (Cambridge: Cambridge University Press, 1996) p. 94.



woods and streams on horseback, foot, or by canoe, and mastered the murdering parasite'.<sup>15</sup> In describing his travels through Africa and South-East Asia researching sleeping sickness, he indulged in a familiar story of medical heroism, encapsulating the collision of two cultural fantasies: the heroic triumph of white imperialism and of Anglophone medicine. First published in the United States, and a year later in Britain, the book included the subtitle: 'being the romance of a doctor's life in the jungles', with a publisher's foreword that asserted: 'it is the pull of the adventurous life that brings into existence the tropical doctor' (vii).

The foreword perpetuated a narrative of Western exceptionalism by describing the tropical medical practitioner, of which Torrance is an example, as a

lone-wolf disease-searcher, stamping out epidemics, warding off scourges of cholera, fever, plague, sleeping sickness [...] which wipe out towns and valleys full of helpless primitives [...] gleaming like [a] light of glory [...] pitting all his strength into the daily task of weaving the fabric of advancing civilization. (vii–viii)

Dr Morris Fishbein, editor of the *Journal of the American Medical Association*, also supplied a preface in which he wrote about the 'mystery that is Africa, Borneo, and India'. Fishbein insisted that 'romance pours from the tropics as from an overflowing cauldron of some magical brew' along with 'sleeping sickness, yellow fever, malaria, and dozens of tropical diseases' (xi).

Like many of his contemporaries Fishbein tied the romance of the tropics to disease and the possibilities it opened up for medical adventures. Bishop George Frodsham similarly declared for readers of the *Saturday Review* that 'there is a certain magic in the tropics which bewitches alike the memory of the man who knows them well and the imagination of those who know them only through the mediatory offices of others'. He wrote of the tropical world as 'sometimes alluring, sometimes horrific' and narrated tropical life as 'the heat and the flies and the smells and the noise and the fevers and the bad food and the worse water'. 'To the uninitiated', he commented, 'the subject of tropical sanitation seems utterly bereft of

<sup>15</sup> Arthur Torrance, *Tracking Down the Enemies of Man: Being the Romance of a Doctor's Life in the Jungles* (New York: J. H. Shears and Company, 1928) p. 213.

the glamour of romance'. And yet he insisted that this is not the case; tropical sanitation is filled with 'the glamour of warfare against disease'.<sup>16</sup>

As more and more of the populace began to know the tropics through 'the mediatory offices of others' and, by association, began to know medicine 'in the imagination', some sounded notes of caution. In 1902, British physician Dennis Vinrace had warned against the rhetoric of glamour being attached to the medical profession through the tropics. Responding to a speech at the Charing Cross Hospital Medical School in which Sir Frederick Treves had waxed lyrical about the 'romance of medicine', Vinrace asked whether 'glowing and unqualified eulogia of the calling' was of 'unmixed benefit to the profession or the public at large'. Treves's words may give 'the general public a false and distorted idea of the prospects offered to young men'. Such 'rainbow hues', he argued, imply that 'Dr Patrick Manson's pursuit of the deadly mosquito' might be done with only 'a stout heart and a diploma'.<sup>17</sup>

This anxiety is unsurprising, given the volume of works that reproduced these rainbow hues for popular audiences. In Torrance's book, for example, he recounts an incident in which a doctor at a tropical hospital in East Africa examines a slide of a patient's blood, espies the protozoa of malaria swimming about and diagnoses him accordingly. However, in response to the young doctor's boasting, a more senior doctor re-examines the blood to find the spirochete of relapsing fever 'curled up' in a corner of the slide. After another bout of bragging, a third, yet more senior doctor enters—and lo and behold both have missed the trypanosome of sleeping sickness hiding in plain sight in the middle of the slide! The patient is suffering from not one, not two, but three distinct tropical diseases in a dramatic moment that seems likely to be the product of artistic licence. Nevertheless, for readers, the episode functioned as a 'romance' of medical insight and a thrilling window into the dangers of inhabiting tropical space.

Torrance's book was well received and he was even given a regular slot on CBS radio at 8 pm on Saturday nights to regale his listeners with tales of his pioneering tropical adventures. Intrigue surrounding the explorer intensified in 1931 after he was widely reported to have drowned whilst on an expedition in the Belgian Congo. On 29 April 1931, following a

<sup>16</sup> Bishop Frodsham, 'The Romance of the Tropics' *Saturday Review of Politics, Literature, Science, and Art*, 122.3176 (9 September 1916) 246–47.

<sup>17</sup> Dennis Vinrace, 'The Romance of Medicine' *British Medical Journal*, 2.2170 (2 August 1902), 362–63.

telegram about the calamity, national and regional newspapers in England, Ireland, Scotland, and Wales, as well as various American and Australian papers lamented his death. A week later however reports emerged of his triumphant survival, bolstering his public visibility. Torrance went on to publish another book called *Junglemania: Exploring the Jungles for Science* (1933), allegedly based on his travels in Central Africa and Borneo at the behest of the Royal Society of Tropical Medicine. The book, heavily illustrated with photographs of his travels, was, according to one journalist, far from a ‘long, dry, cold edition of “the Lancet”’ but rather ‘a tale of adventure in which the lure of the jungle and of medicine are equal’.<sup>18</sup> It was a bestseller in the United States; however, it was shortly withdrawn by its London publishers owing to similarities between it and British author Owen Rutter’s novel *Passion Fruit* (1924).

Rutter, formerly a district officer in Borneo, argued that in his novel he had made up a town called ‘Malang’, which Dr Torrance wrote about as having visited, and that whole passages from his story had been reproduced almost verbatim. ‘My fictional episodes in “Passion Fruit”’, he commented, ‘are related by the author of “Junglemania” as having happened to himself’.<sup>19</sup> Plagiarised passages included unlikely incidents such as a trick in which the protagonist turns water into blood to impress an unfriendly chief. Rutter also pointed out that it was unlikely that Torrance had shot a tiger as he suggested in his book because there were in fact no tigers in Borneo. Controversy also surrounded the photographs that accompanied the book, which resembled popular picture-postcards of Borneo. In a compelling twist, the Royal Society of Tropical Medicine, whilst admitting that Torrance was a member, denied ever having sent him on any expeditions.<sup>20</sup> This is a particularly stark example of the indistinct lines between fictional and nonfictional accounts of tropical travel, which often shared ideologies, images, forms, and—in the above case—whole

<sup>18</sup> ‘Junglemania’ *Nottingham Journal*, Monday 22 October 1934, p. 4.

<sup>19</sup> ‘Malaysian Travel Book Withdrawn by Publishers’ *The Straits Times*, Friday 9 August 1935, p. 18. There is, in fact, a city called Malang in the Indonesian province of East Java.

<sup>20</sup> In 1941, the ‘well-known explorer’ again made news headlines, this time as a suspect in the murder of his third wife whilst on their honeymoon in Mexico. The police alleged that he beat her to death with a thermos flask. During the trial, Mrs Martha Caldwell, an ex-wife of Torrance, came forward to testify for the prosecution, insisting that Torrance had tried to murder her on three occasions, including once with poison disguised as anti-malarials. See: *Belfast Telegraph*, Monday 17 November 1941, p. 5; *Portsmouth Evening News*, Tuesday 18 November 1941, p. 1; *Sunday Mirror*, Sunday 30 November 1941, p. 16.

sections of prose. Such intertextual exchanges participated in romantic formulations of medicine and empire that helped to write the practice of medicine into a history of heroic adventure.

In *Propaganda and Empire*, John Mackenzie argues that a new, fast-expanding juvenile book market had a formative influence on childhood by producing works that 'enshrined contemporary hero-worship' in the youthful imagination:

Stories of travel and exploration, missionary writings and biographies, the endless stream of popular lives of General Gordon and other heroes, books celebrating military and naval exploits [...] all these became Christmas and birthday present staples, and above all prizes for school and Sunday school.<sup>21</sup>

M. Gregory Kendrick similarly identifies the wide influence of a sensationalist mass press that lionised explorers like Richard Burton and David Livingstone by 'accent[uating] the challenges and dangers [of scientific exploration and] playing up the heroic features of the latter-day knights errant who led them'.<sup>22</sup> The characterisation of explorers as 'latter-day knights errant' invoked a legendary ideal to confer on explorers a collection of attributes that set them apart from the ordinary citizen. This was continuous with broader conceptions of the 'empire hero', which Ted Beardow argues was forged in the 'Western warrior heroic tradition'.<sup>23</sup>

In 1841, historian Thomas Carlyle had galvanised interest in heroes and heroism in a series of lectures that offered a protean masculine ideal, which—as Graham Dawson argues—'became fused in an especially potent configuration with representations of British imperial identity'.<sup>24</sup> In *On Heroes, Hero Worship, and the Heroic in History* (a collected anthology of his lectures), Carlyle considered history as a 'biography of great men' in which the thoughts and deeds of individual 'heroes' are responsible for the

<sup>21</sup> John M. Mackenzie, *Propaganda and Empire: The Manipulation of British Public Opinion, 1880–1960* (Manchester: Manchester University Press, 1986) p. 18.

<sup>22</sup> M. Gregory Kendrick, *The Heroic Ideal: Western Archetypes from the Greeks to the Present* (Jefferson: McFarland, 2010) p. 110.

<sup>23</sup> Ted Beardow, 'The Empire Hero' *Studies in Popular Culture* 41.4 (Fall 2018) 66–93 (p. 68).

<sup>24</sup> Dawson, *Soldier Heroes*, p. 1.

progress of civilisation: ‘the history of what man has accomplished in this world is at bottom the History of the Great Men who have worked here’.<sup>25</sup>

Using models as diverse as Odin, Napoleon, and Shakespeare, Carlyle identified the hero in six forms: ‘divinity’, ‘prophet’, ‘poet’, ‘priest’, ‘man of letters’, and, finally, ‘king’. His heroes come in different guises but they are united by several universal characteristics: physical and mental strength—‘the first duty of a man is still that of subduing *Fear* [...] a man shall and must be valiant’ (32); reverence for a higher power and the ability to influence through speech, especially poetic speech—‘a great soul, open to the Divine Significance of Life [...] fit to speak of this, to sing of this (185); and a passionate, self-sacrificing commitment to a cause—‘the chief characteristic of a hero [is] being heartily *in earnest*’ (185) ‘to fight and work [...] in a great victorious enduring manner’ (115).

For Scottish writer Peter Bayne, ‘the ethical elevation, the earnest and spiritual religion, the impassioned sympathy with valor [*sic*], devout self-sacrifice, all that is heroic in man, and the resolute determination to recognise nobleness under all disguises’ is what rendered *On Heroes* (as late as 1879) ‘one of the best [books] that can be put into the hands of young men’.<sup>26</sup> In her introduction to the 1905 edition of *On Heroes*, American essayist Annie Russell Marble argued that Carlyle’s lectures were still popular because they offered ‘an inspiration not a final authority in criticism’.<sup>27</sup> Carlylean heroism was certainly inspirational; it was reproduced in best-selling self-help manuals, adapted for boy’s adventure fiction, provided narrative resources for journalists, and significantly contributed to the burgeoning ‘hero industry’.<sup>28</sup> In turn the hero industry produced an array of texts that employed comparative historicism to try to identify what was contingent and what was timeless about heroes and the heroic. In 1858, English historian Charles Duke Yonge published *Parallel Lives of Ancient*

<sup>25</sup>Thomas Carlyle, *On Heroes, Hero-worship, and the Heroic in History* ed. by H. D. Traill (London: Macmillan and Co., 1897).

<sup>26</sup>Peter Bayne, *Lessons from my Masters: Carlyle, Tennyson, and Ruskin* (London: James Clarke and Co., 1879) p. 49.

<sup>27</sup>Thomas Carlyle, *On Heroes, Hero-worship, and the Heroic in History* ed. Annie Russell Marble (New York: The Macmillan Company, 1905) p. xxvi.

<sup>28</sup>Helen Goodman, “‘A story of treasure, war and wild adventure’: hero-worship, imperial masculinities and inter-generational ideologies in H. Rider Haggard’s 1880s fiction’ in *Martial Masculinities: Experiencing and Imagining the Military in the Long Nineteenth Century* ed. by Michael Brown, Anna Maria Barry, and Joanne Begatio (Manchester: Manchester University Press, 2020) pp. 232–54.

*and Modern Heroes*, a book that sought to 'bring ancient and modern times and nations into juxtaposition' to 'examin[e] and compar[e] the lives of some of those illustrious men of both eras whose great deeds, or as it may be, whose eminent position has kept them before the eyes of all the succeeding ages'.<sup>29</sup>

Many writers were drawn to the ancient Greeks whose mythologies they saw as providing a kind of urtext for heroism. Charles Kingsley, a good friend and devotee of Carlyle, for example, published *The Heroes; or Greek Fairy Tales for My Children* in which he laid out the Hellenic ideal of the hero:

that was the name the Hellens gave to men who were brave and skilful and dare do more than other men [...] men who helped their country; men in those old times, when the country was half wild, who killed fierce beasts and evil men, and drained swamps, and founded towns [...] we call such a man a hero in English to this day, and call it "heroic" to suffer pain and grief, that we may do good to our fellow-men.<sup>30</sup>

It is not hard to see how this view of heroism might be co-opted to endorse British imperial projects.<sup>31</sup> Indeed, it is just these kinds of analogical manoeuvres that were used to characterise parasitology as a heroic science of empire. Taming wild countries, draining swamps, founding towns, even killing fierce beasts were all tropes employed by parasitologists and their proponents in the late century. In 1904, for example, a contributor to the *British Medical Journal* characterised the 'richest mines' and 'most fruitful plantations' of empire as being 'in the keep of invisible guardians more dreadful than the dragon that watched over the gardens of the Hesperides'.<sup>32</sup> In 1922, then editor of the journal Dawson Williams repeated the frame of reference when eulogising Patrick Manson. Recounting Manson's contributions to the mosquito-malaria hypothesis, he wrote 'malaria continued to be the dragon which guarded the golden apples in the garden of

<sup>29</sup> Charles Duke Yonge, *Parallel Lives of Ancient and Modern Heroes* (London: Chapman and Hall, 1858) p. 3.

<sup>30</sup> Charles Kingsley, *The Heroes; or Greek Fairy Tales for My Children* (London: Blackie and Son, 1856) pp. 17–18.

<sup>31</sup> Devin Griffiths examines the key influence of comparative historicism on nineteenth-century scientific developments generally in *The Age of Analogy: Science and Literature Between the Darwins* (Baltimore: Johns Hopkins University Press, 2016).

<sup>32</sup> 'The Imperial Aspects of Tropical Medicine' *British Medical Journal* 2.2285 (15 October 1904) 1022–23 (p. 1023).

the Hesperides. To slay this monster Manson came forth armed with the spear of knowledge and with unconquerable enthusiasm'.<sup>33</sup> In this way, and as I explored at length in the previous chapter, parasitologists were made the modern counterparts to the mythic heroes of ancient Greece.<sup>34</sup>

In his discussion of the great men of history, Carlyle had advocated, not only heroism itself, but also the practice of hero-worship, which he lamented was waning in the 1840s:

society is founded on Hero-worship [...] in these days Hero-worship [...] professes to have gone out, and finally ceased [...] an age that as it were denies the existence of great men; denies the desirableness of great men. (12)

There is no nobler feeling, for Carlyle, than the 'heart-felt prostrate admiration for one higher than himself', itself a heroic deed (11). Eight decades later, Ross aligned himself with Carlylean heroism by asserting in his *Memoirs*: 'perhaps the soundest of all religions is Hero-worship' (6), and: 'I was and am a hero-worshipper' (288). Rodolphe Louis Mégroz similarly invoked Carlyle by dedicating his biography of Ross 'to all true Hero-worshippers'. Writing in 1931, he asserted 'Hero-worship in this age is unfashionable' but '[we have] in our midst one of those great men described by Carlyle as the hero', Ronald Ross.<sup>35</sup>

Carlyle's notion of heroism, more so than any other, appealed to Ross because it suggested that there was admiration to be found not only in the doing but also in the telling. Ross believed, like Carlyle, that the poet was 'a heroic figure belonging to all ages' (78). He modelled himself on Carlyle's conception of the man of letters as both bard and man of action, agreeing with his assertion that he 'could not sing the Heroic warrior unless he himself were at least a Heroic warrior too'.<sup>36</sup> Mégroz argues in kind that by practising both science and art Ross was 'enabled to play the part of labourer and the singer of labour'.<sup>37</sup>

<sup>33</sup> 'Sir Patrick Manson, G.C.M.G., M.D., LL.D., F.R.S.' *British Medical Journal* 1.3198 (15 April 1922) 623–26 (p. 624).

<sup>34</sup> Stealing the apples from the garden of the Hesperides was Heracles's (Hercules's) eleventh labour Eurystheus, claiming that two of the previous ten did not count.

<sup>35</sup> R. L. Mégroz, *Ronald Ross: Discoverer and Creator* (London: George Allen and Unwin, 1931) p. 20.

<sup>36</sup> Carlyle, p. 182.

<sup>37</sup> Mégroz, *Ronald Ross*, p. 98.

In 1933, Malcolm Watson eulogised Ross in *Science Progress* and in doing so he also leaned heavily on Carlylean heroism. He prefaced his essay with two quotations from *On Heroes* and quoted it throughout to drive home Ross's heroic polymathic nature: 'the Hero can be a Poet, Prophet, King, Priest [...] I have no notion of a truly great man that could not be *all* sorts of men'. Ross was, he insists, triply a poet, a prophet, and a scientist. Watson reminded his readers that Ross's now-famous malaria day poem was 'written while the lens of his microscope was still dim with sweat of his travail' and that Ross's words are those of 'a prophet and a poet'.<sup>38</sup> He reiterated that Ross was 'a precious gift', a 'man of genius [...] a "Great Man", a "Hero", Carlyle would have called him', and insisted that in Ross's letters to Manson, he shows us a new type: the 'Hero as Scientist' (379).

Ross's own poetry features prominently in the eulogy, providing a double evidence of Carlylean greatness by recounting his feats of heroic endurance and, at the same time, demonstrating his ability as a poet:

It was the suffering in the wards of his Indian hospital that was to bring out the greatness in this Great Man;  
"The painful faces ask can we not cure? We answer. No, not yet; we seek the laws". (379)

Watson also used the words of poet laureate John Masefield to conceptualise Ross's malaria research as a pioneering expedition that required endurance in the face of adversity:

"Follow the flagellum" was Manson's advice. Unfortunately, it proved impossible to "follow the flagellum." It disappeared utterly soon after it entered the mosquito's stomach. Ross could find no trace of it in the insect. But as if he had heard Masefield's song of the watchers of ships—  
"Adventure on, for from the littlest clue  
Has come whatever worth man ever knew;  
The next to lighten all men may be you."  
[...] with "only one star to steer by, Hope", on he pressed. (381)

<sup>38</sup> Malcolm Watson, 'Ronald Ross, 1857–1932' *Science Progress in the Twentieth Century* 27.107 (January 1933) 377–92 (pp. 378–79).



Masefield, who was in his teens when Ross was carrying out his experiments, had not yet written these lines for Ross to be inspired by. Nevertheless, the two men, who became firm friends, shared similar philosophies. Looking back on his own life in 1941, Masefield used Ross's by-then-famous poetic phrase to conceptualise an early formative moment. Struck by a desire to become a doctor and work on yellow fever, he asserts: 'I longed to work at that enemy, and to help find "its unseen, small, but million-murdering cause"'.<sup>39</sup> He again quoted Ross when the unforeseen closure of the mill that he worked for left thousands of workers suddenly penniless:

It was frightful to me, as it is still, that any depression or other cause could so threaten the lives of active willing workers:  
 "Cannot the mind which made the engine make  
 A nobler life than this?" (104)

These lines from Ross's poem, 'India' written in 1881, precipitated Ross's 'whole philosophy of life', as he told the audience of his 'Science and Poetry' lecture given to the Royal Institution in 1920. 'In short', Ross said, 'I invoked Science to heighten civilization and to prevent decadence'—an ideal that aimed at 'the conquest of nature and the perfectibility of man and of society by Science'.<sup>40</sup>

In 1909, Masefield embraced Ross's poetic worldview by writing *Multitude and Solitude*, a novel about sleeping sickness that dramatised the work of tropical medicine as an antidote to fin de siècle ennui and a source of national regeneration. At the end of the novel, Masefield, through the mouthpiece of Roger, urges: 'Let us build up an interest in the new hygiene and the new science; in all that is cleanly and fearless'.<sup>41</sup> This rallying cry to the reader is situated within the context of contemporary parasitology research; the protagonist Roger studies parasites at the British Museum and reads 'Reports of the Commission, various papers in the *Lancet*, the works of Professor Ronald Ross and Sir Patrick Manson, the summary of Low in Allbutt, [and] the deeply interesting articles in the

<sup>39</sup> John Masefield, *In the Mill* (London: Macmillan, 1941) p. 95. Quoted from Ross's poem 'Indian Fevers'.

<sup>40</sup> Ronald Ross, 'Science and Poetry' *English Review* (October 1920) 303–19.

<sup>41</sup> John Masefield, *Multitude and Solitude* (London: Grant Richards, 1909) p. 299.

*Journal of Tropical Medicine*' (123). Masfield also invokes the discipline stylistically when Roger contemplates his ailing friend Lionel—who has contracted sleeping sickness during his investigations—as like 'a crusader dying outside the Holy City' (152). It is not difficult to see how Masfield's story about an amateur playwright who goes to Africa to find a cure for sleeping sickness aligns with Ross's romantic ideals. Indeed, Mégroz would make this connection for his readers in 1931, reminding them of Masfield's public admiration of Ross's poetry and remarking: '*Multitude and Solitude* showed long ago [Masfield's] appreciation of the scientific hero'.<sup>42</sup>

### 'IT'S A HEROIC THING TO DO': EXPLORING THE MICROSCOPIC FRONTIER

Patrick Brantlinger argues that the late nineteenth century experienced an 'eclipse' of the British hero, alongside numerous attempts to revitalise him, which 'became increasingly militant in the era of the New Imperialism'.<sup>43</sup> The resurgence of heroism and hero-worship was precipitated by the 'burgeoning new industry of Boy's adventure tales', itself inspired by the great explorers of the mid-century and the heavily stylised travel narratives that they published. Such narratives were often informed by ideals of historical masculine endurance, as is made plain by a review of Henry Morton Stanley's travel narrative *In Darkest Africa* (1890), which was claimed by a writer for the *Edinburgh Review* to have been read 'more universally and with deeper interest than any other publication' that year.<sup>44</sup> The reviewer characterised Stanley's trip through the Congo to the Egyptian Soudan as 'one of the severest trials of endurance which ever attended the exploits of such heroes of antiquity or of modern history as Alexander, Caesar, and Bonaparte'.<sup>45</sup>

Readers are thus invited to perceive Stanley's narrative using 'one of the most durable and powerful forms of idealised masculinity'—the soldier

<sup>42</sup> Mégroz, *Ronald Ross*, p. 21.

<sup>43</sup> Patrick Brantlinger, *Rule of Darkness*, p. 36.

<sup>44</sup> 'In Darkest Africa: Being the Official Record of the Quest, Rescue, and Retreat of Emin, Governor of Equatoria. By H. M. Stanley, M.R.G.S. Two Volumes, 8vo. London: 1890' *Edinburgh Review* 172.352 (October 1890) 372–88 (p. 372).

<sup>45</sup> 'In Darkest Africa: Being the Official Record of the Quest, Rescue, and Retreat of Emin, Governor of Equatoria. By H. M. Stanley. London: Sampson Low. 1890' *Speaker* 2 (5 July 1890) 20–21 (p. 20).

hero.<sup>46</sup> By demonstrating military virtues of endurance, Stanley could explore new lands in a feat tantamount to the wars waged by past emperors. Here, and in many similar narratives (including those of medicine) the myth of the Dark Continent prevails as a guiding framework for characterising the colonial encounter as one of heroism versus savagery. However, as Brantlinger demonstrates, this binary was disrupted by increasingly complex and pessimistic depictions of empire as the century waned.<sup>47</sup> As the glamour of exploration was displaced by ‘mere travel’—a ‘sordid spectacle of tourism and commercial exploitation’—opportunities for heroism seemed vanishingly slight.<sup>48</sup>

In Arthur Conan Doyle’s 1912 novel *The Lost World* (which makes reference to Stanley’s book as well as to explorer and anthropologist Richard Burton), a newspaper editor tells the protagonist Edward Malone that ‘the big blank spaces in the map are all being filled in, and there’s no room for romance anywhere [...] The day for this sort of thing is rather past’.<sup>49</sup> Nevertheless, Conan Doyle gives us a ‘wild romance’ of dinosaurs and savages, which Brantlinger reads as ‘in defiance of this fact of modern life’.<sup>50</sup> When Professor Challenger shows Malone a pterodactyl wing, Malone is amazed. Referring to both the size of the specimen and to the size of the achievement, he declares ‘it’s just the very biggest thing that I ever heard of! [...] it is colossal’. Professor Challenger is ‘a Columbus of science who has discovered a lost world’.<sup>51</sup> Whilst these words prompt us to recognise the wonder to be found in ‘bigness’, the early pages also

<sup>46</sup> Dawson, *Soldier Heroes*, p. 1.

<sup>47</sup> The 1890s, in particular, were beset by stories in which the capacity of Britons to triumph in imperial space was questioned: ‘not only do stereotypes of natives and savages degenerate toward the ignoble and the bestial in late Victorian thinking [...] so do the seemingly contrasting images of European explorers, traders, and colonizers [...] late Victorian literature is filled with backsliders like Conrad’s Kurtz who themselves become white savages’. Brantlinger, *Rule of Darkness*, p. 39; Linda Dryden has explored how Joseph Conrad manipulated the form of romance to undercut ‘adventure [and] heroism [...] with their reactionary values of empire and all the school-boy loyalty they entail’ (163). Whilst for the heroes of Henty and Haggard empire provides an opportunity to prove their moral worth and racial superiority, Conradian heroes, she argues, find only ‘the truth of [their] own inadequacy, the hollowness of their selfish dreams, and the fact of their own mortality’ (148). Linda Dryden, ‘“An Outcast of The Islands”: Echoes of Romance and Adventure’ *The Conradian* 20.1/2 (1995) 139–68.

<sup>48</sup> Brantlinger, *Rule of Darkness*, pp. 37–38.

<sup>49</sup> Arthur Conan Doyle, *The Lost World* (1912; London: The Folio Society, 2010) p. 14.

<sup>50</sup> Brantlinger, *Rule of Darkness*, p. 38.

<sup>51</sup> Conan Doyle, *The Lost World*, p. 38.

point us towards another avenue for adventure and heroism when Malone meets bacteriologist Henry Tarp. Tarp, who 'lives in a nine-hundred-diameter microscope', is a self-confessed 'frontiersman from the extreme edge of the Knowable'.<sup>52</sup>

Such a characterisation not only illustrates how the frontiers of science and empire were simultaneously imagined in macro and microscopic scales, but also how opportunities for romance and adventure were routinely located in the distant realms of inaccessible time (the evolutionary and historical past) or inaccessible space (the microscopic present)—worlds lost to history or vision. Kathleen E. Hames goes as far as to read the plateau that they travel to in *The Lost World* as itself suggestive of a biological cell. She argues that whilst critics have considered Conan Doyle's indebtedness to Everard Im Thurn's descriptions of Mt Roraima in constructing the geographical and geological details of his lost world, 'the biological symbolism of the region is more suggestive of Doyle's [*sic*] experience as a physician and his fascination with laboratory science'.<sup>53</sup> She reads the battle between man and ape-man in South America as a dramatisation of the relationship between host body and the tropical microbe.

The imagined interchangeability of 'savage natives' and 'savage microbes' enabled proponents of tropical medicine to identify the microscopic fields of empire as frontiers that offered new opportunities for heroism. By rewriting the colonial encounter as microbiological, parasitologists could emerge as modern heroes traversing treacherous lands in pursuit of deadly foe. When Lionel expresses his desire to find out about the life cycle of the trypanosome parasite in *Multitude and Solitude*, for example, Roger responds: 'But I think it's heroic of you [...] it's a heroic thing to do [...] Heroic' (145–46). He conceives of the pathogen as an imperial enemy and those researching it as scientists and soldiers dying on behalf of their fellows:

[Roger] thought of [sleeping sickness] no longer as an abstract intellectual question, but as man's enemy, an almost human thing, a pestilence walking in the noonday. Out in Africa that horror walked in the noonday stifling the brains of men [...] he thought of the little lonely stations of scientists and soldiers, far away in the wilds, in the midst of disease [...] they were giving

<sup>52</sup> Conan Doyle, *The Lost World*, p. 17.

<sup>53</sup> Kathleen E. Hames, 'Imperial Fever: Tropical Medicine, British Literature, and the Return to South America, 1880–1930' (Unpublished PhD, Cornell University, 2013) pp. 54–55.

up their lives cheerily and unconcernedly in the hope of saving the lives of others. (154–55)

The characterisation of the disease as a ‘horror’ that ‘walks in the noonday [...] out in Africa’ offers pathology as a form that structures the colonial encounter, reinforcing the pivotal defensive role—not to mention bravery—of tropical pathologists. And whilst they didn’t give their lives ‘cheerily and unconcernedly’ many scientists did indeed perish in the service of tropical medicine. Dr Walter Myers died from yellow fever whilst on a Liverpool-funded expedition to investigate the disease in Brazil in 1901 (aged 28), Dr Joseph Everett Dutton died from relapsing fever in Africa on a Liverpool-funded expedition in 1905 (aged 29), and Lt Dr Forbes Mason Grant Tulloch died after contracting sleeping sickness whilst on a Royal Society-funded commission in 1906 (aged just 27).

Masefield’s rhetorical techniques were shared by other writers who employed the language of battle and sacrifice to communicate the stakes of tropical medical research. A writer eulogising British special commissioner to East Africa, Sir Gerald Portal, for instance, asserted that his death from malaria in the prime of his life was ‘a tragic reminder of the tribute which Africa extracts from its white conquerors’. The writer went on to describe Africa as a ‘malarial frontier’, quoting Rev Prof Henry Drummond in lamenting, ‘how capricious and yet how remorseless, how constant and yet how unaccountable the extraction of this tribute is’.<sup>54</sup> Such language frames Africa as a ruler and tropical illness as a tax—or, as the OED notes of ‘tribute’: ‘the price of peace, security, and protection’.<sup>55</sup> This was a commonly invoked trope in discussions of the political context of tropical medical research. In 1905, Joseph Chamberlain framed the study of tropical illness as part of Britain’s ‘duty to reduce this blood tribute that we paid to the Empire’.<sup>56</sup> When speaking about the risks of studying malaria in 1897, the *British Medical Journal* had positioned tropical research in a similar light, reporting on Ross’s recent illness as a ‘reward’ for the ‘devotion which he has shown in the cause of medical science and humanity’.<sup>57</sup> Likewise, in a lecture to medical students in Glasgow, Governor of Lagos,

<sup>54</sup> ‘Sir General Portal’ *The Anti-Slavery Reporter* 14.1 (January 1894) pp. 57–58 (p. 57).

<sup>55</sup> ‘tribute, n.’ *OED Online*. Oxford University Press. <http://www.oed.com/view/Entry/205768?isAdvanced=false&result=1&rskey=UIsLDC&> (accessed 10 January 2019).

<sup>56</sup> ‘London School’ *Aberdeen Press and Journal*, Thursday 11 May 1905, p. 6.

<sup>57</sup> ‘The Risks of Studying Malaria’ *British Medical Journal* 2.1907 (17 July 1897) 162.

Sir William MacGregor, had spoken of the 'heavy national imperial responsibility' of Britain to carry out malaria research owing to their possession of 'the Lion's share of the malarial areas of the earth':

We hold those vast territories subject to the tyranny of the destructive giant Malaria, who bestrides the globe, and exacts his yearly tribute of scores and scores of thousands of human lives from white and black indiscriminately.<sup>58</sup>

Writers often invoked dragon slaying and giant killing as a way to meet the representational challenges of tropical medicine. By employing the adventure mode—a mode of gallant battles, perilous quests, and treasure-seeking adventurers—parasitologists were able to chart a new conceptual domain: that of tropical disease.

In 1933, a writer for the *Cornish Guardian* identified Ross as part of a list of 'modern adventurers', arguing that, contrary to popular belief, the 'age of adventure is not past'. 'It is perhaps because adventures that are worth calling adventures are the experience of a privileged few of mankind that we love to read about them', they remark, 'indeed we probably love better to read of other people's adventures than to go out and court death in adventures ourselves'.<sup>59</sup> Going on to write of anonymous sailors and pilots; Captain Ahab from Herman Melville's *Moby-Dick* (1851); First World War pilot and adventure writer Captain W. E. Johns; English explorer Bertram Thomas; colonial office intelligence officer St John Philby; high-altitude balloonist August Piccard, 'who ascended by balloon ten miles into the stratosphere to report his scientific findings'; the adventure stories of Captain Marryat and R. M. Ballantyne; Homer's *Odyssey*; and 'the late Sir Ronald Ross', the author demonstrates what Felix Driver describes as the 'unsettled frontier' between discourses of adventure travel and of scientific exploration.

This 'frontier' was a site for the struggle of professional identities and methodologies, where common ideas, vocabularies, and narrative patterns circulated between ill-bounded genres. Travel writings, imperial adventure stories, newspaper articles, obituaries, speeches, and medical texts shared in the same kind of imaginative work. Like the aforementioned

<sup>58</sup> 'A Lecture on Malaria' *British Medical Journal* 2 (20 December 1902) 1889–94 (p. 1889).

<sup>59</sup> H. J. W., 'Pages from a Notebook. The Odyssey of a Mariner. Living Dangerously Adds Zest to Life (By "Haitch-Jay")' *Cornish Guardian*, Thursday 13 July 1933, p. 9.

article, many of these texts lionised exploration in colonial space and perpetuated a view of Western medical knowledge as—in Masfield’s words—‘cleanly and fearless’. In these texts, imperial exploration was a dangerous but morally laudable duty; when tropical illness afflicted white bodies it was often characterised as a toll, as a price for civilisation, and a testament to the bravery of those working to build a better world. This is an extension of the narrative work of parasitologists discussed in my first chapter and part of a larger type of depiction of the colonial world characterised by what Joseph Conrad described as ‘Geography Militant’.

Writing in 1924, Conrad described three epochs in the history of geographical knowledge: Geography Fabulous, Geography Militant, and Geography Triumphant. The middle of these was prevalent from the late eighteenth century through to the ‘scramble for Africa’ and involved the empirical mapping of the world by military and imperial powers—the creation of the globe through discovery and exploration. For Conrad, this was a transitional stage between a time when maps were speculative and bounded by dragons, and a time when ‘white spaces had succumbed to the domination of science’ and there was nothing left to discover.<sup>60</sup> As Driver notes, Geography Militant represented a ‘spirit of heroic exploration’ built on ideas about explorers as missionaries of science ‘extending the frontiers of (European) geographical knowledge’.<sup>61</sup> Conrad laments the loss of genuine heroic exploration with the onset of Geography Triumphant, which he associates with the mundane, and with imperial opportunism and corruption. The slow reveal of modernity’s corrupting influence on idealistic exploration is reflected in what Driver calls the ‘murky impressionism’ of Conrad’s *Heart of Darkness* (1899).

Conrad’s perception of Geography Militant is an idealisation, reflecting a zeitgeist fuelled by imperial fervour and nostalgia for a Britain that never really existed. Thus, we might view these imagined geographies, not as sequential historical epochs, but as the expression of ‘inescapable tension[s] within projects of European exploration’—between idealism and political reality, between discovery and conquest, between philanthropy and exploitation.<sup>62</sup> As I explore in the following section, linguistic and structural exchanges between narratives of medicine and narratives of imperial

<sup>60</sup> Felix Driver, *Geography Militant: Cultures of Exploration and Empire* (Oxford: Blackwell, 2001) p. 3.

<sup>61</sup> Driver, *Geography Militant*, p. 4.

<sup>62</sup> Driver, p. 6.

romance reveal writers' attempts to 'resolve imaginatively what could not be resolved in other ways'.<sup>63</sup>

### FANTASY WORLDS AND FANTASY MEDICINE

At the seventieth annual meeting of the British Medical Association in 1902, Sir William R. Kynsey, president of the Section of Tropical Diseases, quoted the Prime Minister, Lord Salisbury, in asserting 'we live in a small bright oasis of knowledge surrounded on all sides by a vast unexplored region of impenetrable mystery'.<sup>64</sup> The original address, printed in *Nature* and *Popular Science Monthly*, was given by Salisbury at his inaugural speech as the president of the British Association for the Advancement of Science in 1894. In discussing the problems yet to be solved by science, he instructed his British listeners 'to turn [their] eyes to the undiscovered country which still remains to be won'.<sup>65</sup> Such rhetoric employs cartography as a form to understand the relationship between science and society, between knowledge and nation. Salisbury's imperialist politics—apparent during his stints as Secretary of State for India (1874–1878) and Foreign Secretary (1878–1880, 1887–1892, 1895–1900)—and the new context given by tropical disease in Kynsey's speech expose the deep-seated imperial ideology behind his borrowing of these words. For Kynsey, science is a tool of empire, helping to win—for Britain—those vast unexplored regions of the tropical world. He goes on, tellingly, to reflect that 'malaria was the great scourge of many lands which were the finest on earth, teeming with the products of tropical nature, and filled with the treasures of the richest mines'. Kynsey's words, which placed medicine in the context of treasure-seeking, contributed to circulating images, motifs, and patterns of speech that accumulated at the imaginative intersections of disease and nation.

British explorer Edward Glave, who worked with famous explorer Henry Morton Stanley (of Dr Livingstone fame), published his *Six Years of Adventure in Congo-Land* in the year preceding *With Edged Tools* (the text with which I opened this chapter). Within his narrative, Glave cites

<sup>63</sup> Driver, p. 5.

<sup>64</sup> 'Seventieth Annual Meeting of the British Medical Association' *British Medical Journal*, 20 September 1902, p. 829.

<sup>65</sup> Robert Gascoyne-Cecil, Lord Salisbury, 'Unsolved Problems of Science' *Popular Science Monthly*, 46 (1894) 33–47 (p. 36).



the formative power of adventure stories alongside Stanley's own travel writings in pushing him to become an explorer. He is enraptured to hear the same stories from Stanley's lips: 'I had read his books in old England, and his vivid narratives had carried me into the midst of savage African life; but now how much more was I affected as I listened to the graphic words of the author, and heard of the marvellous adventures from his own lips, in the land where the brave deeds were done'.<sup>66</sup> Glave lives out the fantasy of his readers by clinging to a vision of the world in which he can heroically triumph over adversity just like the fictional protagonists of imperial romance. Within the first three pages, he characterises Africa as the 'dark continent' no less than three times and recounts his dreams of following in the footsteps of the adventurers and explorers of his boyhood to conquer those 'vast unnamed blank spaces' on the map that adorned his classroom wall (16). Such an opening calls forward in time to the beginning of Joseph Conrad's *Heart of Darkness* (1899), which stylistically mimics Glave's narrative with young Marlow inspired by similar imagined cartographic adventures: 'I had a passion for maps. I would look for hours at South America, or Africa, or Australia, and lose myself in the glories of exploration. At that time there were many blank spaces on the earth [...] a white patch for a boy to dream gloriously over'.<sup>67</sup>

The fetishising of maps that opens both texts provides a structure that transcends genre as a symbol of imperial ambition. The literary maps that pervaded boy's adventure stories by the likes of H. Rider Haggard, G. A. Henty, and Robert Louis Stevenson were steadily replaced as the readership grew up by the maps of travel narratives written by prominent explorers like Glave or Stanley. Megan A. Norcia has drawn attention to the prominence of maps in childhood in the form of 'dissected puzzles' and geography primers as a way of communicating the idea of empire to children.<sup>68</sup> 'The children's puzzle-play prepared them to encounter, identify, and oversee an empire pieced together from distinct territories' and, like the literary maps of novels, explicitly gave power to the player or reader in constructing, or finding meaning, in global geography.<sup>69</sup> Such

<sup>66</sup> E. J. Glave, *Six Years of Adventure in Congo-Land* (London: Sampson Low, Marston and Company, 1893) p. 38.

<sup>67</sup> Joseph Conrad, *Heart of Darkness and Other Tales* ed. by Cedric Watts (1899; Oxford: Oxford University Press, 2002) p. 108.

<sup>68</sup> Megan A. Norcia, 'Puzzling Empire: Early Puzzles and Dissected Maps as Imperial Heuristics' *Children's Literature*, 37(2009) 1–32.

<sup>69</sup> Norcia, 'Puzzling Empire', p. 6.

puzzle maps, Norcia argues, ‘transmit[ted] social and political geography’ and ‘reinforce[d] a hierarchy of imperial power and knowledge’.<sup>70</sup>

Cartography was a mode of imperial meaning-making that justified colonialism by recasting vast areas of the globe as new, unclaimed, and empty. As Charlotte Rogers argues, the ‘blank space’ fallacy was used to facilitate the erasure of non-Western histories: ‘Europeans projected their own ignorance on to the regions unknown to them, transferring the blank space of their minds onto geographical and historical realities about which they knew nothing’.<sup>71</sup> Dane Kennedy recognises this as a central paradox of nineteenth-century exploration—that it became possible to ‘explore territory that was not truly terra incognita to the explorers or their sponsors. Their aim was to discover the known anew’.<sup>72</sup> Parasitologists also used mapping as a tool for reinvention: first to partition landscapes as inherently different from ‘temperate’ Europe, and then to demonstrate how these ‘pathological’ landscapes might be remapped anew by Western medical knowledge. In the introduction to Andrew Davidson’s medical textbook *Geographical Pathology* (1892), which contains a mass of statistics, charts, and tables, he invokes this form by setting out his aim to ‘map’ the geographical distribution of infective and climatic diseases. This, he declares, will be of ‘interest’ to the student but of ‘practical importance’ to the statesman, army medical officer, and sanitarian, implying that disease might be mitigated by good governance and hygienic infrastructures.<sup>73</sup>

Davidson’s book tacitly suggests that it might be possible to remap the globe with new, more salubrious geographies—an epidemiological extension of the British imperial project. The confluences between the practices of tropical medicine and the practices of empire are made even more explicit in his *Hygiene and Diseases of Warm Climates* published the following year, in which he remarks that the book aims at ‘filling up the blank’—a phrase that evokes a map of empire coloured in with the marks

<sup>70</sup>Norcia, ‘Puzzling Empire’, p. 12; p. 16.

<sup>71</sup>Charlotte Rogers, *Jungle Fever: Exploring Madness and Medicine in Twentieth-Century Tropical Narratives* (Nashville: Vanderbilt University Press, 2012) p. 7. Also see: See Christopher L. Miller’s *Blank Darkness: Africanist Discourse in French* (Chicago: University of Chicago Press, 1985).

<sup>72</sup>Dane Kennedy, *The Last Blank Spaces: Exploring Africa and Australia* (Cambridge: Harvard University Press, 2013) p. 6.

<sup>73</sup>Andrew Davidson, *Geographical Pathology: An Inquiry into the Geographical Distribution of Infective and Climatic Diseases* (Edinburgh & London: Young J. Pentland, 1892) p. xi.

of European powers.<sup>74</sup> In 1902, parasitologist Ronald Ross made a similar parallel, noting that ‘red marks of empire are really marks of disease’.<sup>75</sup> In this way, cartographic practices aided the political imagining of nations and colonies across geography and medicine, enabling writers to imaginatively map the contours of empire in respect of medical knowledge.

In their article ‘Quintessentially Modern Heroes: Surgeons, Explorers, and Empire’, Christopher Lawrence and Michael Brown make a case for the conceptual twinning of geographers and surgeons owing to ‘affinities in practice, professional identity, public representation, and ideology [...] their aspirations were shaped by the same social forces and predicated on the same social values’.<sup>76</sup> Both professional figures, moreover, took advantage of the new status afforded to empiricism, rebranding their disciplines as ‘scientific’ and thus ‘modern’. Lawrence and Brown argue for continuities between the ‘material and rhetorical resources’ that surgeons and geographers used ‘to pursue their practical and ideological goals’, drawing attention to, for example, the parallels between the collection of specimens from places and from people (152):

Central to explorers’ everyday activities was the deployment of their knowledge of natural history in the collection of specimens. After allowing a fly to bite through his flannel pajamas, Stanley collected the “specimen.” Likewise, when surgeons removed items of particular pathological interest from their patients, they preserved them, reporting, for example, “A Case of Surgical Kidney with Specimen”. (167)

Here I make a similar case for the continuities between explorers and tropical pathologists; however, I argue that for parasitologists such parallels were not only comparative practices, but also examples of the slippages of profession—a parasitologist would have just as much interest in preserving insect specimens as Stanley. Indeed, tropical medicine specialists Michael Barrett, Frank Cox, and Lee Inness include famous explorer David

<sup>74</sup> Andrew Davidson, ‘Preface’ in *Hygiene and Diseases of Warm Climates* ed. by Andrew Davidson (Edinburgh & London: Young J. Pentland, 1893) p. v. Ross references Davidson’s textbook, which fellow parasitologist Patrick Manson contributed a chapter to, in his *Memoirs* (1923).

<sup>75</sup> London, LSHTM. RC. GB 0809 Ross/67/08. Lecture delivered at the Liverpool Chamber of Commerce: ‘The Recent Medical Expedition to West Africa’, 27 November 1899.

<sup>76</sup> Christopher Lawrence and Michael Brown, ‘Quintessentially Modern Heroes: Surgeons, Explorers, and Empire, c.1840–1914’ *Journal of Social History* 50.1 (2016) 148–78 (p. 149).

Livingstone in their history of Scottish parasitologists, arguing that he pioneered the use of arsenic to treat trypanosomiasis and suggested a tsetse fly vector for animal trypanosomiasis (nagana) before David Bruce, who went on to discover both the causative organism and insect vector for human and animal trypanosomiasis at the end of the century (1894–1903).<sup>77</sup> Incidentally, by referring to Livingstone as a 'Victorian hero' on a 'quest' to 'rid the world of slavery', Barret, Innes, and Cox uncritically perpetuate a triumphalist Western understanding of empire and tropical medicine, demonstrating the lasting legacy of the narratives analysed in this book.

Scholars such as Helen Tilly, Markku Hokkanen, Alan Bewell, and David N. Livingstone have identified the role of cartographers and geographical societies in describing and bringing into being the biomedical boundaries of the modern world.<sup>78</sup> Cartography provided a means by which to think about, as well as to represent, the relationships between disease and geography. For Tom Koch, maps are a type of story-telling that represent 'neither the world nor an objective record of our worldly

<sup>77</sup> M. P. Barrett, E. A. Innes, and F. E. G. Cox, 'The Scottish Encounter with Tropical Disease' (2015) in *National Museums Scotland* [online] <https://www.nms.ac.uk/media/1160948/scottish-encounter-booklet-2015-glasgow.pdf>. Whilst David Bruce tends to be credited with these discoveries, there is also credit due to Aldo Castellani, who observed trypanosomes in a patient's blood on the same Royal Society-funded sleeping sickness commission. A bitter debate in the British medical press over priority ensued, with supporters of Bruce arguing that Castellani did not recognise the significance of what he saw. I have written about this elsewhere: Emilie Taylor-Brown, 'Petty Larceny and Manufactured Science: Nineteenth-Century Parasitology and the Politics of Replication' in *Replication in the Long Nineteenth Century: Remakings and Reproductions* ed. by Linda K. Hughes and Julie Codell (Edinburgh: Edinburgh University Press, 2018) pp. 67–83. The *Evening Mail* reported that Castellani had won the London School of Tropical Medicine's Craggs Research Prize (best original research that year) for his research into the aetiology of sleeping sickness. 'London School of Tropical Medicine' *Evening Mail*, Friday 13 November 1903, p. 5. In Ross's *Memoirs*, he notes that African natives associated the animal form of the disease (nagana) with tsetse flies before the connection was suggested by Livingstone or proven by Bruce (p. 123).

<sup>78</sup> See for example: Helen Tilly, *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870–1950* (Chicago: University of Chicago, 2011); Markku Hokkanen, *Medicine, Mobility, and the Empire: Nyasaland Networks, 1859–1960* (Manchester: Manchester University Press, 2017); Alan Bewell, *Romanticism and Colonial Disease* (Baltimore: Johns Hopkins University Press, 1999); David N. Livingstone, 'Tropical Climate and Moral Hygiene: The Anatomy of a Victorian Debate' *British Journal for the History of Science* 32.1 (March, 1999), 93–110.

experience, but a means whereby we come to understand aspects of it'.<sup>79</sup> Maps and mapping, whether depicted graphically or narratively, are also ways in which we exert authority over space; they have rhetorical power in shaping our experiences and understandings of geography—a phenomenon embodied by fictions of adventure as much as by the travelogues of real-life explorers. As Merriman's narrator points out in *With Edged Tools*, the boundaries between real and imagined geographies are not themselves always easy to map since adventure fiction and travel writing shared a familiar formula—'applauding the same heroic virtues of pluck and forthrightness in the conqueror, Othering the native in familiar ways, and making use of similar expressions, images, and plot'.<sup>80</sup> Moreover, imperial romance novels increasingly mimicked the paratexts of travel writing (including maps, forewords, and footnotes) in order to claim authenticity for the imagined adventures inside.

To complicate matters, many explorers including H. M. Stanley, Verney Lovett Cameron, and Samuel White Baker also wrote adventure novels for children, a phenomenon that Justin D Livingstone identifies as a 'turn to fiction' in the landscape of Victorian exploration.<sup>81</sup> In a significant parallel, Ross was attempting (and failing) to establish a literary career whilst stationed in India, writing novels, poetic anthologies, and plays alongside his medical practice. His first novel *The Child of Ocean*, a South Seas adventure story of shipwrecks, pirates, and forbidden love, received mixed reviews on its publication in 1889. Nevertheless, he did receive two prominent positive reviews: one from Mrs Lovett Cameron (British romance author and Verney Lovett Cameron's sister-in-law) and the other from adventure writer H. Rider Haggard. It is notable that the book is what first connected Ross with Haggard, who wrote a letter to Ross (then

<sup>79</sup> Tom Koch, *Cartographies of Disease: Maps, Mapping, and Medicine* (Redlands: ESRI Press, 2005) p. 6.

<sup>80</sup> Andrea White, *Joseph Conrad and Adventure Fiction* (Cambridge: Cambridge University Press, 1993) p. 39.

<sup>81</sup> Justin D. Livingstone, 'Travels in Fiction: Baker, Stanley, Cameron and the Adventure of African Exploration' *Journal of Victorian Culture* 23.1 (2018) 64–85 (p. 64). Cameron's books, mostly swashbuckling adventures for boys, included *Cruise of the Black Prince Privateer* (1886), *In savage Africa, or, The adventures of Frank Baldwin from Gold Coast to Zanzibar* (1887), *Jack Hooper. His Adventures at Sea and in South Africa* (1887), *Among the Turks* (1890), and *Three Sailor Boys, or Adrift in the Pacific* (1901). Baker's included *Cast Up by the Sea or the Adventures of Ned Grey, A Book for Boys* (1868) and *True Tales for My Grandsons* (1891). Stanley published *My Kalulu Prince, King, and Slave: A Story of Central Africa* (1873).

unknown to him) praising the novel shortly after it was published. In his *Memoirs*, Ross asserts *Laetus sum laudari a laudato viro!* (I am pleased to be praised by a man of such praise) (86). The two subsequently became lifelong friends.

Ross's early interest in the aesthetic possibilities of imperial romance went on to inform his experimental work, and later, the historicising of his discovery, in which he repeatedly invokes the tropes of the explorer-adventurer, the stormy seas of inspiration, and perils of (intellectual) piracy. In *Philosophies* (a poetic interpretation of his malaria research), Ross included 'Death-Song of Savagery', a poem that forms the epilogue of *The Child of Ocean*, suggesting that his experiments in novel writing were in some respects intellectually continuous with his malaria work. In his *Memoirs*, Ross invoked the romance of finding 'uncharted treasure island[s]' (a classic imperial fantasy) as a frame of reference for his scientific discoveries, writing of his competitors:

I am sure that none of them would ever have embarked on so vast and stormy a sea, would ever have been a Columbus of so wild an adventure, would ever have shown—I will not say the patience, the passion, and the poetry—but the madness required to find that uncharted treasure island! Really they have forgotten what was their true vocation—to stay at home and draw the maps after the event, to colour them red, blue, and yellow, to put their own names to the continents and islands, and to draw their salaries.<sup>82</sup>

Ross perceives his malaria work as tantamount to feats of historical exploration—the mosquito an uncharted territory waiting to be mapped by scientific explorers. He even perceives the eggs of mosquitoes as 'shaped curiously like ancient boats with raised stern and prow' (233). The characterisation of his competitors as simply map-makers implicitly criticises them for being wrapped up in the geopolitics of empire, rather than engaged in the romance of discovery. In his eyes, his research is above the petty politics of imperial cartography. He instead aligns his work with the romantic mapping of imperial adventure, using the fraught language of fantasy and exploration to place emphasis on the drama of discovery and distance his work from the messiness of imperial administration.

Drawing parallels between cartographic and literary 'mapping', Chu-Chueh Cheng has argued that processes of writing and of charting are

<sup>82</sup> Ronald Ross, *Memoirs*, p. 227.

encoded with both ‘wish and anguish’.<sup>83</sup> This is certainly true of the fictional maps in stories like Haggard’s *King Solomon’s Mines* (1885), which scholars have read as enacting a wishful but anxious heteronormative and Eurocentric ordering.<sup>84</sup> It is also true of textbooks like Davidson’s *Hygiene and Diseases of Warm Climates*, which attempt to carefully delimit European and non-European diseases, and of the speeches and lectures by parasitologists like Ross, who use cartography as a form with which to reimagine imperial space. In a lecture delivered to the Liverpool Chamber of Commerce in 1899, for example, Ross asserted:

We love to point out on the map those tracts of red which represent our possessions in that great continent [Africa]. See here, we say, the mighty extent of the British Empire! But [...] it is an empire of graveyards, a kingdom over tombstones. What really are those tracts of red in Africa? Scarcely possessions of Englishmen, but rather battlegrounds between Englishmen and King Malaria—unstable conquests maintained only by the sacrifice of hecatombs of our countrymen.<sup>85</sup>

Ross’s remapping of British Africa as a deadly battleground draws on imperial fantasy to voice both anguish about the viability of British rule and a deep pessimism about the purported ‘progress’ of imperial expansion. But at the same time, he poses a wishful future. Asserting that ‘the success of Imperialism will be found to depend very largely on our success with the microscope; the conquest of the world will depend on our conquest of invisible atoms’, he suggests that research in parasitology holds the key to future British dominion—to remapping the colonies in a new, more salubrious colour. Without malaria, he asserts, Africa would

<sup>83</sup> Chu-Chueh Cheng, ‘Imperial Cartography and Victorian Literature: Charting the Wishes and Anguish of an Island-Empire’ *Culture, Theory, and Critique* 43.1 (2002) 1–16 (p. 2).

<sup>84</sup> For scholarship on the maps of *King Solomon’s Mines*, see: Anne McClintock, *Imperial Leather: Race, Gender, and Sexuality in the Colonial Conquest* (London: Routledge, 1995); Sally Bushell, ‘Mapping Victorian Adventure Fiction: Silence, Doublings, and the Ur-Map in *Treasure Island* and *King Solomon’s Mines*’ *Victorian Studies* 57.4 (2015) 611–37; Jessica Howell, *Malaria and Victorian Fictions of Empire* (Cambridge: Cambridge University Press, 2019).

<sup>85</sup> London, LSHTM. RC. GB 0809 Ross/67/08. Lecture delivered at the Liverpool Chamber of Commerce: ‘The Recent Medical Expedition to West Africa’, 27 November 1899.

ere now have been civilised, peopled and prosperous; at any rate Europeans would now be able to live there, trade there and teach there, without the very imminent risk of death or severe sickness which they are now compelled to face; and our armies would be able to push forward into the heart of the country without fear of an enemy much more dangerous than any savage tribes to be found in it. (4)

In Ross's vision of West Africa, prosperity is clearly determined by Europeans 'liv[ing]', 'trad[ing]', and 'teach[ing]' there, while his desire to 'people' the region obscures the presence of indigenous populations and plays into the fantasy of West Africa as a 'blank space' on the map. This lecture is characteristic of his oratory style—which often borrows linguistically and conceptually from genre fiction—and illustrates a broader system of exchange between tropical medicine and imperial fantasy. Here he discards the language of realism and opts instead for romance by suggesting, not slow progress with a complicated political fallout, but an idealism whereby simply slaying the enemy, King Malaria, will result in the real-world counterpart to a tidy narrative resolution.

Haggard's *King Solomon's Mines* performs similar rhetorical work. Published just a few months after the conclusion of the Berlin Conference, the novel depicts the recent past, shortly after the Anglo-Zulu War and before the majority of the region came under British rule. As Helen Goodman argues, Haggard uses this setting to encourage 'cultural support' for the British Empire, and to 'glamourize imperial careers'.<sup>86</sup> His fiction, and fiction like it, tries to recapture an earlier moment in imperial history where Africa was more wild, more mysterious, more divided by conflict, and where men could enact a nostalgic heteronormative masculinity that probably never existed at all. In doing so—as Haggard biographer Morton Cohen argues—he 'let the reader turn his back on the troublesome, the small, the sordid' taking him on a journey to 'perform mighty deeds he could believe in'.<sup>87</sup> The 'he' here refers to its self-avowed position as a book for boys. Justin D. Livingstone argues that such fictions were aimed at a 'porous readership' that 'took advantage of the fluid boundary between men and boys'.<sup>88</sup> This porousness is evident in the

<sup>86</sup> Helen Goodman, 'A Story of Treasure, War and Wild Adventure', p. 233.

<sup>87</sup> Morton Cohen, *Rider Haggard: His Life and Works* (London: Hutchinson and Co., 1960) p. 96.

<sup>88</sup> Justin D. Livingstone, 'Travels in Fiction: Baker, Stanley, Cameron and the Adventure of African Exploration' *Journal of Victorian Culture* 23.1 (2018) 64–85 (p. 67).



book's dedication to 'all the big and little boys who read it'. Notwithstanding such marketing, Haggard's books had a much broader audience; with readerships in girls' schools as well as in boys'; Haggard appealed to 'critics, schoolboys, housewives, and working men alike'.<sup>89</sup> Nevertheless his fiction dramatises a specifically masculine kind of fantasy. As Graham Dawson argues, 'soldier heroes composed in adventure narratives [...] function[ed] psychically and socially as positive images set against the fragmenting and undermining effects of [imperial] anxiety'.<sup>90</sup> For Goodman, Haggard's imperial fantasy is one that 'reifies the alleged virtues of the military in relation to empire and masculinity', depicting male identities that 'both constitute and are constituted by imperial instincts to control and subdue hostile, feminised African landscapes'.<sup>91</sup>

Haggard's novels took on a central role in the critical debate about realism and romance in the 1880s. In 1887, literary critic Andrew Lang celebrated the revival of romance in verses which he dedicated to Haggard, Robert Louis Stevenson, Arthur Conan Doyle, and Stanley Wayman:

KING ROMANCE was wounded deep,  
 All his knights were dead and gone,  
 All his court was fallen on sleep,  
 In the vale of Avalon!  
 [...]  
 Then you came from south and north  
 From Tugela, from the Tweed;  
 Blazoned his achievements forth,  
 King Romance is come indeed!  
 All his foes are overthrown,  
 All their wares cast out in scorn,  
 King Romance has won his own,  
 And the lands where he was born!<sup>92</sup>

Lang's borrowing of medieval knighthood to conceptualise the male romance genre demonstrates how both the stories themselves and the processes of writing them were conceived with reference to a kind of

<sup>89</sup> Cohen, *Rider Haggard: His Life and Works*, p. 90.

<sup>90</sup> Dawson, *Soldier Heroes*, p. 282.

<sup>91</sup> Goodman, 'A Story of Treasure, War and Wild Adventure', p. 236.

<sup>92</sup> Andrew Lang, 'The Restoration of Romance' in *The Poetical Works of Andrew Lang* Vol. III. ed. by Mrs Lang (London: Longmans, Green and Co., 1923) pp. 196–97.

masculinity that linked fighting and adventure with imperial masculine citizenship. The language recalls Ross's mapping of Africa as a land in which Englishmen battle with 'King Malaria'. Writing in the late 1890s, and having already cultivated a friendship with Haggard, it is likely that Ross was influenced by the ideological appeal of the romance genre. Jessica Howell argues that in Ross's notebooks, and in his *Memoirs*, he focuses on linear mappings of illness and on sequential narrative structures when describing his experiments because they 'shared more with a conclusive plot structure of discovery'.<sup>93</sup> Elsewhere she notes that H. Rider Haggard does the same thing by 'consolidat[ing] the circuitous routes of imperial exploration and illness into a linear and conclusive path towards British success' (71). Both writers use maps or mapping as forms to make material—for different audiences—'the fantasy of progress in the face of tropical disease' (97, footnote 2).

#### 'PUNY CARPET KNIGHTS' AND MUSCULAR CHRISTIANITY

At the end of John Masefield's *Multitude and Solitude* (1909), playwright-turned-explorer Roger asserts 'the world is just coming to see that science is not a substitute for religion, but a religion of a very deep and austere kind' (299). Reviewers were inclined to agree, characterising the novel as 'find[ing] a new gospel in science and service'.<sup>94</sup> Whilst out in Africa Roger understands his fear of 'giving way and relapsing to the barbarism about him' in terms of 'the spiritual war'; his experimental work trying to cure sleeping sickness is 'the duty of one who had taken a military oath of birth into a Christian race' (262). He resolves to form a 'brotherhood' of amateur scientists with 'a little school and laboratory' and monthly paper 'preaching [their] tenets' to rid the world of 'dirt and cowardice' through the fearless invocation of sanitary science. Throughout the novel he is spurred on by visions of his dead fiancée, Ottalie, who—with her 'fine, trained, scrupulous mind'—embodies a 'new spirit coming into the world', the spirit of science:

she seemed to him to be something of all cleanness and fearlessness, waiting for him to lead her into the world, so that men might serve her. (298)

<sup>93</sup> Howell, *Malaria and Victorian Fictions of Empire*, p. 145.

<sup>94</sup> 'Multitude and Solitude by John Masefield' rev. by *North American Review* 204.733 (1916) 941–42.

He prays that Ottalie's influence on him might help him to

bring to earth that Promised life in which man, curbing Nature to his use, would assert a new law and rule like a king, where now, even in his strength, he walks sentenced, a prey to all things baser. (300)

These powerful final lines of the novel use a religious imperative to advocate for man's absolute dominion over nature. Science, cleanly and fearless, is imagined as a tool of imperialism on a global scale.

The entanglements between medicine, religious dogma, and imperialism in *Multitude and Solitude* reflect a rhetorical framing of the colonial encounter in which the conquest of tropical illness was championed as part of the Christian 'civilising mission'. This was literalised in a subset of stories published at the turn of the century in which recovery from sleeping sickness was associated with Christian conversion. In Alice Garland Steele's 'Awake Thou Sleeper!' (1923), published in the semi-religious periodical *The Quiver*, a doctor recounts the tale of a friend of his, John Chalmers, who went to Africa as a missionary and caught the fatal sleeping sickness, but against all the odds recovered. The recovery, which the doctor describes as 'a miracle', is attributed to his steadfast belief in God and his conversion of a wayward woman. Despite dosages of atoxyl, variants of arsenic, and 'a clinical thermometer in one hand and a dose of bluff in the other', the doctor could not help John, who continued to deteriorate and eventually became comatose. However, upon seeing a girl he had met on the steamer over, who prayed, for the first time in her life, for him, John makes a sudden recovery—the only explanation given is divine intervention.<sup>95</sup>

In Joseph Hocking's *The Dust of Life* (1915) British protagonist, Cedric Essex, similarly contracts sleeping sickness whilst on an expedition to Africa. He is considered as good as dead by the missionary doctor; however, he subsequently consumes the titular substance and undergoes both recovery from the illness and a powerful Christian epiphany. The dust, which turns out to be a naturally occurring compound containing large amounts of radium, is found deep in the African mountains.<sup>96</sup> It is a

<sup>95</sup>Alice Garland Steele, 'Awake Thou Sleeper!' *The Quiver* (February, 1923) 326–34 (p. 329).

<sup>96</sup>The positing of the sleeping sickness cure as radium-based engages with the radium craze of the early twentieth century, which saw a myriad of radioactive products sold as health improvers and panaceas.

precipitate of the 'Water of Life', a term that occurs in *The Book of Revelation* and the *Gospel of John* referring to the Holy Spirit, and in some versions of the Alexander romance. The dust is given to Cedric by African prince, Sunflower, himself a Christian whose support of Cedric is framed as a displaced gratitude to the British missionary who converted him. Sunflower dissolves the compound in water and within half an hour Cedric regains a healthier colour and his breathing becomes regular. Mr Taylor, a British missionary, asserts that the 'salts must possess some qualities as yet unrealised by the medical world' (128), characterising the action of the drug as 'like a miracle of which one reads in the New Testament' (116). Sunflower similarly remarks: 'you see! It is life fighting with death. It is like Christ in my heart. He overcome death!' (116). Here Hocking, who was himself a United Methodist Free Church minister, provides narrative justification for the 'civilising mission' by celebrating the combined efficacy of religion and medicine. As missionary Mr McFinn puts it, the work of Christianity is tied up with the 'romance' of exploration, and the practical work of medical science:

Was it not Livingstone who climbed a mountain one morning, and from the summit of the mountain saw the smoke rising from a thousand African villages, and who said that, God helping him, Christ's work should be known in each of those thousand villages before end of the century. Isn't there romance in a thought that? [...] I've cured hundreds of sickness. I've taught them something of the meaning of sanitation, of decency, of the laws of health.<sup>97</sup>

The material overlap between Divine and medical intervention depicted in imperial romance was reinforced by parasitologists' own investment in theological language. Patrick Manson, for example, refers to mosquitoes as 'the twelve apostles in glycerine' and himself as a 'preacher of the gospel of Laveran'. Meanwhile Ross invokes a form of theological redemption when he thanks 'relenting God' for showing him how to end human suffering in the form of scientific inspiration.<sup>98</sup> In his *Memoirs*, Ross recalls trying to persuade Surgeon-Colonel Lawrie of the Indian Medical Service

<sup>97</sup> Joseph Hocking, *The Dust of Life* (London: Cassell and Company, 1915) p. 86.

<sup>98</sup> Manson, 'Letter 32 02/011' in *The Beast in the Mosquito: The Correspondence of Ronald Ross and Patrick Manson* ed. by William F. Bynum and Caroline Overy (Amsterdam: Rodopi, 1998) p. 92; Ronald Ross, 'Reply' (1897) in *Philosophies* (London: John Murray, 1911) pp. 53–54.

to believe in Alphonse Laveran's still disputed discovery of the malaria parasite, which he conceptualises as a belief in 'Laveranity'. He writes, 'being a convert like St Paul I became a militant apostle' (178). Such language implies that 'belief' is a practice conserved across both realms: religious and scientific.

Examining the complex politics of Ross's intellectual affiliations and disputes with Patrick Manson, Alphonse Laveran, and Robert Koch over the course of his career, Jeanne Guillemin argues that in the late nineteenth century 'a medical scientist might strategically choose intellectual forebears to legitimize the claim to originality'.<sup>99</sup> Ross's own assertion that he was converted to the 'gospel' of Laveran alleged a prestigious and foreign patrimony that helped to reinforce Ross's priority claims. His choice of language and poetic framing of his work as divinely ordained doubly benefitted Ross by reinforcing the gospel-like authority of scientific knowledge and quelling what Ross went on to call 'petty inter-tribal advantage' by claiming God as his true mentor. He writes: 'I, with eyes upcast/  
Gazing warn and weary from this Dark World/Ask of thee thy Wisdom,  
steadfast Eye of God'.<sup>100</sup> His poetic anthology, which was published in 1911 in tandem with a malaria textbook, contains many such appeals to Divine intervention:

In this, O Nature, yield I pray to me.  
I pace and pace, and think and think, and take  
The fever'd hands, and note down all I see,  
That some dim distant light may haply break.

The painful faces ask, can we not cure?  
We answer, No, not yet; we seek the laws.  
O God reveal thro' all this thing obscure  
The unseen, small, but million-murdering cause.<sup>101</sup>

When Ross finally found his experimental proof, he made room for both the benevolence of God and for the innovations of the scientist, writing 'This day relenting God hath placed within my hand/A wondrous thing', but also: 'the voice of God is heard/Not in the thunder-fit;/A still small

<sup>99</sup> Jeanne Guillemin, 'Choosing Scientific Patrimony: Sir Ronald Ross, Alphonse Laveran, and the Mosquito-Vector Hypothesis for Malaria' *Journal of the History of Medicine and Allied Sciences* 57.4 (October 2002) 385–409 (p. 385).

<sup>100</sup> Ross, 'The Star' (1890–1893) in *Philosophies* (London: John Murray, 1911), p. 21.

<sup>101</sup> Ross, 'Indian Fevers' (1890–1893) in *Philosophies*, p. 21.

voice is heard, /Half-heard, and that is it' (53–54). Ross's narration of his work subscribed to a form of idealised masculinity, embodied by Carlylean heroism and the 'muscular Christianity' of writers like Charles Kingsley and Thomas Hughes, by presenting himself as a lone genius persevering in earnest for the good of humanity, informed by both Christ and his own innate skill.

Norman Vance has highlighted the wide reach of the concept of 'Christian manliness', which 'represented a strategy of commending Christian virtue by linking it with the more interesting notions of secular moral and physical prowess'.<sup>102</sup> Donald E. Hall characterises this as a 'religious, social, and literary movement' which 'evinced not only admirable agendas for moral and social salvation, but also sexist, classist, and imperialist ideological underpinnings'.<sup>103</sup> The muscular Christian movement forged an association between 'physical strength, religious certainty, and the ability to shape and control the world around oneself' (7). The overlap between these tenets and the political discourses of tropical medicine are particularly visible in fiction like Hocking's *The Dust of Life* where tensions in the imperial project are inscribed onto male 'sporting' bodies.

The novel establishes an association between physical health and moral virtue by describing the protagonist, Cedric, as 'springy, muscular, with health and vitality manifesting itself in his every movement and look' (8). He is an 'open-air English boy' and his first action in the narrative proper is to win a rugby game (3). His victory on the field foreshadows his eventual victory in the empire, a common narratological progression born of a culture in which competitive and team sports (and the kind of masculinities associated with them) became 'rhetorically and practically imbued with a spirit of martial imperialism'.<sup>104</sup> As Vanessa Heggie argues, educational reformers drew on 'games-based models of fair play, sportsmanship and muscular Christianity' to instil 'discipline, self-sacrifice, leadership and stoicism in middle- and upper-class boys' in preparation for them to become the military and political leaders of the future.<sup>105</sup> The triumphant conclusion to the novel, in which the 'lionine' Cedric—newly converted

<sup>102</sup> Norman Vance, *The Sinews of the Spirit: The Ideal of Christian Manliness in Victorian Literature and Religious Thought* (Cambridge: Cambridge University Press, 1985) p. 1.

<sup>103</sup> Donald E. Hall, *Muscular Christianity: Embodying the Victorian Age* (Cambridge: Cambridge University Press, 1994) p. 4.

<sup>104</sup> Vanessa Heggie, 'Bodies, Sport and Science in the Nineteenth Century' *Past and Present* 231.1 (2016) 169–200 (p. 174).

<sup>105</sup> Heggie, 'Bodies, Sport and Science', p. 176.

to Christianity—wins himself a fortune and a wife reiterates the kind of heroism to which readers should aspire.

Cedric enacts an idealised imperial masculine citizenship by demonstrating his athleticism, bravery, stoicism, and fair-mindedness in a series of mini-trials with increasing stakes. First, he wins a rugby game and then he saves a young woman from drowning in the sea in the Cornish town of Perranzeth. After swapping the playing field for the ‘real thing’—the African jungle—Cedric demonstrates his marksmanship and loyalty by saving his friend, the duplicitous and cowardly Roger, from a lion. John M. MacKenzie argues that the lion became a ‘national and imperial symbol [...] the epitome of empire itself’, with fantasies of lion killing representing ‘the striving and victory of civilised man over the darker primeval and untamed forces still at work in the world’.<sup>106</sup> Juvenile literature, annuals, journals, and travelogues were filled with pictorial representations of lion hunting, particularly of David Livingstone’s famous encounter with a lion, to illustrate the heroism of missionary-explorers (48). Indeed, Hocking too makes reference to the attack on Livingstone, dropping his narratorial voice to remark: ‘I think it was Livingstone who, when explaining some scars on his arm which he carried to his grave, declared that when the lion’s teeth had entered his arm—which had caused the scars—he felt no pain’ (91).

Cedric goes on to save Roger’s life again—this time by rescuing him from the mouth of an extinct volcano, which their native companions call the ‘mountain of the devil’, and which Cedric considers to be ‘like the mouth of hell’ (96). Descending into the fiery darkness suspended by a rope, Cedric enacts the mytheme of descending into the underworld and recites lines from Dante’s *Inferno*. After returning triumphant, he recovers swiftly owing to his ‘vigorous young life’ and his ‘splendid physique’ (102). He is heralded as a hero and a sportsman; as we are reminded throughout, he was invited to come on the expedition in the first place because he is ‘a sportsman to the fingertips’ (77)—a shorthand that speaks to the strength of his character as much as to his physical ability.

In *Masculinities in British Adventure Fiction, 1880–1915*, Joseph A. Kestner locates imperial romance within a landscape of crisis in which the coherence of British masculinity and British nationhood were being steadily and catastrophically undermined by fracturing gender roles, the

<sup>106</sup> John M. MacKenzie, *The Empire of Nature* (Manchester: Manchester University Press, 1988) p. 47.

increasingly insistent voice of the working class in domestic politics, and decreasing confidence in the imperial project. One response to these crises was an intensification of the adventure genre in which male readers could gratify their desire for a stable masculine ideal.<sup>107</sup> Anthea Trodd argues that in the Edwardian period, English literature was increasingly dominated by discussions of manliness, a phenomenon that helped to inculcate the voice of a masculine ruling class and, in turn, to map Englishness and masculinity in close proximity.<sup>108</sup> A variety of stories emerged in Britain at the fin de siècle which reimagined, reinforced, lauded, negotiated, and interrogated masculine ideals using empire as a conceptual space within which men might 'practice' manhood (in more ways than one). Amongst the diversity of masculinities that operated in this period, one prominent imagined identity was that of the man-of-action, most often typified by sports and big game hunting.

Hunting was part of the cult of English public-school athleticism in which activities like game shooting and sports, especially team sports, were thought to cultivate manly virtues. As MacKenzie argues, towards the end of the century,

the hunting cult was transferred overseas, often searching for a genuine wilderness, and generat[ing] an entire ethos which distinguished certain characteristics of the Hunt as markers of civilisation and gentlemanly conduct [...] the combination of science and ethic, nature study, human control and moral code began to take a central role in popular fiction and juvenile training.<sup>109</sup>

Hunting was widely conceived as 'preparation and training for European expansion and conflict with other peoples' and, for writers like G. A. Henty and H. Rider Haggard, 'lay at the centre of imperial experience' (43). An article in 'country gentlemen's newspaper', *Field*, drew on the association between sportsmanship and empire to communicate the value of Ross's 'mosquito crusade' in 1901. The sanitation work that Ross had been carrying out in West Africa would be of the 'very first importance to travellers, sportsmen, and all those whose duties or pleasures take them to

<sup>107</sup> Joseph A. Kestner, *Masculinities in British Adventure Fiction, 1880–1915* (London: Routledge, 2016) pp. 2–5.

<sup>108</sup> Anthea Trodd, *A Reader's Guide to Edwardian Literature* (Calgary: University of Calgary Press, 1991) pp. 6–8.

<sup>109</sup> John M. MacKenzie, *The Empire of Nature*, p. 26.



unhealthy tropical regions’, a comment that perpetuates the concept of empire as an extension of the playing fields of English public schools. The article goes on to advise sportsmen and travellers to avoid the ‘huts of the malaria-stricken natives in which the mosquitoes absorb the poison’ and to advocate the extermination of mosquitoes, not from ‘the whole of the dark continent but from those parts of it which white men particularly frequent’.<sup>110</sup> It could not be clearer here that the writer is concerned, not with global health, but with the accessibility of Africa to sportsmen. They conclude ‘there could be no more cheering news for those who travel in tropical swamps whether to kill game or dig gold’, a statement that suggests that these are the dominant activities of men in imperial space.

As an article in the *New York Times* demonstrated in 1895, the activities of parasitologists were often moulded to fit this narrative; it opened: ‘the world’s mightiest hunters in the last thirty years have been those who have pursued infinitesimal game—who have found, caught, killed, or held captive those curious little organisms called microbes or bacilli’.<sup>111</sup> In 1926, Paul de Kruif published a popular history of microbiology entitled *Microbe Hunters*, which similarly professed to be ‘a tale of the bold and persistent and curious explorers and fighters of death’.<sup>112</sup> He used the sports and games ideology to characterise the work of parasitologists such as Ross, David Bruce, Louis Pasteur, and Robert Koch as heroic. In de Kruif’s words, Bruce discovered the connection between tsetse flies and sleeping sickness ‘because he was a hunter. Not only with his mind—but a bold everlasting curious snouting hunter with his body [...] he carried the fight to the enemy’ (267–68). He was a fighter and a ‘viking’ (277); his wife and collaborator, Mary, ‘was a scientific Diana’—the Roman goddess of wild animals and the hunt (267–68). The British edition of the book included a preface that read: ‘Here is the true story of the adventures of explorers in the fantastic world of the unseen’. Reviews of the book made the lexis of sport and romance even more explicit; the *Saturday Review of Literature* asserted that *Microbe Hunters* was ‘a chapter of scientific history [as] thrilling and romantic as any conquest, or voyage, or discovery’. The *Emporia Gazette* characterised it as ‘a hunting story as interesting as any story of African game hunters, or tiger hunters in Asia’, and the *Boston*

<sup>110</sup> ‘The Mosquito Crusade’ *Field*, Saturday 21 September 1901, p. 25.

<sup>111</sup> ‘Hunting the Bacteria’ *New York Times*, Sunday 3 February 1895, p. 24.

<sup>112</sup> Paul de Kruif, *Microbe Hunters* (New York: Harcourt, Brace, and Company, 1926) p. 3.

*Transcript* dubbed it 'an adventure story' full of 'biography, science, and heroism'.<sup>113</sup>

This type of heroic imperial masculinity was, however, undermined and destabilised by the very fictions that sought to promote it. In *Multitude and Solitude*, Roger contemplates death from sleeping sickness, now dispossessed of the glory and heroics of earlier chapters: 'this death of which he had thought so grandly seemed very stupid now that he was coming to know it' (319). He writes a death note and reflects, dejectedly, on who might find it:

Some great German scientist about to banish the disease. Some drunken English gold prospector with a cockney accent. Some missionary, or sportsman, or commercial traveller. More likely it would be some roving savage with a snuff-box in his earlobe and a coil of copper wire about his limbs. (318–19)

The confidence in British scientists and soldiers that he had had before embarking on his trip is now replaced with disappointment and bitterness about the shallowness and shortcomings of the British imperial project. Roger goes on to recover and to save the life of his companion by finding a cure for sleeping sickness. However, his triumph is dampened when they find out that a Japanese researcher has beaten them to it. Thus, notwithstanding the rousing call to action at the end of the novel, the reader is unsure how to appraise the adventure. The narrator summarises their accomplishments (many of which happen off page) in the following words:

Scientifically, they had done less than they had hoped but more than they had expected to do. They had been the first to cure cases with animal serum. They had been the first to study in any way the effect of nagana upon the young of wild game, and to prepare an (as yet untested) vaccine in young antelopes, quaggas, and elands. They had discovered a wash of Paris green and lime which destroyed the tsetse pupae. They had cleared some three miles of fly belt. They had studied the tsetse. They had surveyed the whole and excavated a part of the Zimbabwe. (295)

The narrator's summary here reads, as many would complain, more like a report of the Liverpool School of Tropical Medicine than the climax of a romance novel. Nevertheless, and despite this inelegant deployment of

<sup>113</sup>Quoted in Paul de Kruif, *Microbe Hunters* (New York: Pocket Books, 1943) n.p.

realism, Masfield fulfils the requirements of male romance by reminding us of an equally important outcome of the trip—the solidification of homosocial bonds:

Lastly, they had settled the foundations of friendship between them. That was, perhaps, the best result of the expedition. They had settled a friendship likely to last through life. (295)

In Henry Seton Merriman's *With Edged Tools*, homosocial bonds also occupy a prominent place in the narrative; the friendship between Jack Meredith—the beau-ideal of London society—and big game hunter, Guy Oscar, threatens (but doesn't quite manage) to eclipse the traditional marriage plot. When they meet for the first time in Loango, they bond over the shooting of a leopard, and their friendship, 'inaugurated at the rifle's mouth', does not end with the adventure but 'extend[s] through that long expedition over a strange country called life' (115). The narrator explains that 'there was about these two men [...] a mutual and common respect for all things pertaining to sport' (113). Continuous with the public-school games ethic, their sportsmanship denotes not only physical strength and skill but also a keen sense of fair play, which underpins their motivations throughout the novel.

Guy is recruited to the expedition because he is 'a soldierly fellow full of fight', a description that prompts the narrator to reflect:

There are some Englishmen left, thank Heaven! Who love fighting for its own sake, and not only for the gain of it. Such men as this lived in the old days of chivalry, at which modern puny carpet-knights make bold to laugh, while inwardly thanking their stars that they live in the peaceful age of the policeman. (74)

Merriman's ideal Englishman embodies the collision between an honours-based form of the gentleman—represented by concepts of chivalry—and the outdoorsy masculinity of games and sport. Whilst honour and fair play were modelled in team sports, and bravery and skill were modelled in hunting, codes of chivalry were promoted through the iconography of St George, in which 'slaying the dragon' signified the ultimate hunt (47). As I explored in the previous chapter, this concept was bound up with journalistic accounts of parasitology research. In Merriman's fondness for the 'old days of chivalry', he perpetuates a naturalised 'ethos of honour' that

'sought authority from an imagined continuity with the past'.<sup>114</sup> His criticism of the 'puny carpet knights' of the modern age articulates a disappointing end-point to this ancestry.

Nevertheless, the hopeful vision of manliness embodied in 'men who love fighting for its own sake' is a complicated endorsement. In this same period, many writers became engrossed, as Bradley Deane argues, 'in charting vectors of convergence between Britons and those they regarded as primitive, and in imagining the ways in which barbarians might make the best imperialists of all'.<sup>115</sup> Despite championing fighting and sports, Merriman rejects a shallow model of masculinity based solely on brawn. He criticises Maurice Gordon, the local head of a large trading association in Loango, as 'one of those large, hearty Englishmen who seem to be all appetite and laughter—men who may be said to be manly, and beyond that nothing' (102). Thus, Merriman rejects the kind of man whose 'manliness is so overpowering that it swallows up many other qualities which are not out of place in men, such as tact and thoughtfulness, and *perhaps* intellectuality and the power to take some interest in those gentler things that interest women' (102). In a novel that frustrates reader's expectations by being as much about debutantes and 'wordy warfare' as it is about foreign climes and fierce battles, Merriman's clarification that men should retain an interest in 'the gentler things that interest women' feels particularly pointed, subtly intervening in the critical debate about realism and romance at the end of the century.

Merriman exposes the shortcomings of the archetypes of romance by juxtaposing his own characters with those idealised behaviours of 'people in books'—as when the protagonists find out that their cowardly business partner Victor Durnovo has deserted his companions and left them to the dangers of contracting smallpox:

"And what is to be done?" he inquired.

"Nothing. People in books would mount on a very high pinnacle of virtue and cast off Mr. Durnovo and all his works; but it is much more practical to make what use we can of him. That is a worldly-wise, nineteenth-century way of looking at it; we cannot do this without him". (140)

<sup>114</sup> Bradley Deane, *Masculinity and the New Imperialism: Rewriting Manhood in British Popular Literature, 1870–1914* (Cambridge: Cambridge University Press, 2014) p. 39.

<sup>115</sup> Deane, *Masculinity and the New Imperialism*, pp. 147–48.

By appealing to the ‘worldly-wise, nineteenth-century’ perspective, Merriman rejects the high-minded virtues of conventional romance in favour of realism. Merriman’s anthropological approach to his characters and frequent references to the ‘techniques of the discrete novelist’ allow the reader to enjoy a curious dissociative moment of complicity in the fictionality of the reading experience. The reader remains complicit in this negotiated fantasy as Merriman uses character dialogue to poke fun at both the male romance and the sentimental novel. When asked about his fiancé, beau-idéal Jack Meredith says

I ought to always have [a photograph] with me in a locket round my neck or somewhere. A curiously-wrought locket is the correct thing, I believe. People in books usually carry something of that description—and it is always curiously wrought. I don’t know where they buy them. (174)

Some 30 pages later, the reader is called upon to appreciate the irony of this dialogue when Guy Oscar unwittingly enacts the ‘people in books’ fantasy: ‘he was fumbling in his breast-pocket and presently he rose, crossed the room, and handed her, quite without afterthought or self-consciousness, a photograph in a morocco case’ (208). In this instance, Guy’s conformity to the tropes of literary romance makes him an inferior love interest—and indeed he fails to resolve his own narrative with the marriage that convention demands. Jack, on the other hand, does manage to secure an engagement, if not quite a marriage, and is afforded the virtues of chivalric masculinity when Guy characterises him as ‘a steel gauntlet beneath a velvet glove’ (207).

Nonetheless, Merriman’s novel refuses to offer narrative closure—the Simiacine scheme (for which they travelled to Africa) is exposed as a cover for slavery and does not, in the end, make the protagonists rich; Jack and Guy are both betrayed by their love interest, who turns out to be the same woman (unbeknownst to them); Jack’s father dies before he hears of his son’s survival or romantic happiness; and Jack returns from Africa not triumphant and unafraid, but ‘nervously apprehensive’ (454). It is a story of a failed business plan, a failed marriage, and a failed adventure, or as Merriman’s narrator characterises it: ‘a very lame story indeed [in which Jack] was not the hero’ (452). Jack’s sportsmanship is not enough to triumph in African space where ‘the respective positions of hunter and

hunted [are] imperfectly defined' (110). Instead, like the other characters in the novel, he proves to be 'a puny insignificant helpless being in a world that is too large for him' (62). Merriman invokes the games ethic, not to endorse imperialism but to contain it. For Merriman, diseases like malaria and sleeping sickness are God's way of levelling the playing field:

The Almighty speaks very plainly sometimes and in some places—nowhere more plainly than the West Coast of Africa which land He evidently wants for the black man [...] we don't get on in Africa. The Umpire is there, and He insists on fair play. (89)

### MEDICINE AS NEW ROMANCE

During a speech about imagination held at the Delphian Coterie dinner in 1924, which was reported by *The Times*, *The Daily Telegraph*, *Westminster Gazette*, *Kentish Independent*, *Irish Times*, and *Newcastle Chronicle*, Ross asserted that he was pleased to learn that his *Memoirs* had won a prize for 'best Romance' published last year.<sup>116</sup> He was probably referring to the recent award of the James Tait Black Memorial Prize (biography category) and his joke was met with laughter. However, it certainly wasn't the first time his scientific work had been characterised as 'romance', as chapters in this book attest. The tongue-in-cheek remark draws on a complicated landscape of exchange between the fantasies of imperial romance fiction and the imagined and reported romance of imperial science.

In his Nobel Prize lecture of 1902, Ross establishes malaria as 'the principle and gigantic ally of barbarism', arguing that it 'strikes down not only the indigenous barbaric population, but, with still greater certainty, the pioneers of civilisation, the planter, the trader, the missionary and the soldier'. Notwithstanding his narration (in his *Memoirs* and elsewhere) of his research as being characterised by tedious hours spent over a microscope, Ross here paints a much more swashbuckling vision of battle and sacrifice. He veers into the language of imperial romance when he asserts that 'no wild deserts, no savage races, no geographical difficulties have proved so inimical to civilisation as this disease'.<sup>117</sup> The picture of an Africa in which the landscape, the people, and the climate are all in stark opposition to the

<sup>116</sup> London, LSHTM. RC. GB 0809 Ross/146/26/132. 'Imagination and War. Sir Rider Haggard's Theory' *The Daily Telegraph*, 26 November 1924 [Newspaper Clipping].

<sup>117</sup> Ronald Ross, 'Researches on Malaria' *J R Army Med Corps* 4 (1905) 450–74 (p. 451).

European ‘pioneers’, models the most basic plot of an imperial adventure story. Indeed, Ross draws on the conventions of the genre to explicate his understanding of scientific research, describing his discovery as ‘the climax of an intense drama, full of hopes and despairs, visions seen in darkness, many failures, and a final triumph in which the protagonists are man and nature’.<sup>118</sup>

It is rather unsurprising that parasitologists like Ross take up the language and metaphors of imperial romance when, as Nicholas Daly argues, it is a genre that in the late century readily ‘embodies the fantasies of [an] emerging professional group, whose power is based on their access to and control of certain kinds of knowledge’.<sup>119</sup> Daly is not talking about parasitologists here, but his characterisation of late nineteenth-century romance as a genre that ‘pits a team of men with particular skills—sometimes actual professionals—against some outside threat’, more or less seamlessly embodies the widespread characterisation of parasitologists as new, semi-professionals (with or without specific training), who journey into colonial space to research and ultimately ‘battle against’ disease.<sup>120</sup> Neil Hultgren argues that imperial romance fiction ‘reflects and creates fantasies that emerged from the avid imperialism of late Victorian Britain’. The same ‘intertwined registers of the imperial and the fictional’ that underscore such fantasies might also be read in Ross’s speeches, lectures, and in his *Memoirs*.<sup>121</sup>

This is not just a narratological choice, but rather reflects complex interactions between social, intellectual, and material networks. Ross was, after all, friends with H. Rider Haggard and John Masefield as well as with writers like Arthur Conan Doyle and Rudyard Kipling. Moreover, he frequently dined at the Athenaeum Club in London, where Robert Louis Stevenson and Joseph Conrad were members. Indeed, the gentleman’s social club was a significant nexus for the diffusion and interchange of ideas. Ross was a member of clubs at Madras, Secunderabad, Calcutta, Liverpool, and London, where he mixed with figures as diverse as English

<sup>118</sup> Ross, *Memoirs*, p. vi.

<sup>119</sup> Nicholas Daly, *Modernism, Romance and the Fin de Siècle: Popular Fiction and British Culture, 1880–1914* (Cambridge: Cambridge University Press, 2000) p. 8.

<sup>120</sup> Daly, *Modernism, Romance and the Fin de Siècle*, p. 8.

<sup>121</sup> Neil E. Hultgren, ‘Haggard Criticism Since 1980: Imperial Romance Before and After the Postcolonial Turn’ *Literature Compass* 8.9 (2011) 645–59 (p. 646).

industrialist and politician William Lever; Irish journalist and M. P. Stephen Gwynn; British engineer Sir Charles Parsons; Oxford professor of poetry Sir Thomas Herbert Warren; Canadian physician Sir William Osler; professor of astronomy and editor of *Nature* (1919–1939) Sir Richard Gregory; and many others besides.

In 1916, Gregory published *Discovery; or the Spirit and Service of Science*, a book that, in one reviewer's words, undertook a 'definite campaign of popularisation of the true aims and aspirations and methods of the scientific discipline of thought'.<sup>122</sup> In the preface, Gregory insists that, to the popular mind, the man of science 'is a Faust who has not yet made a bargain with Mephistopheles and is therefore without human interest'. However, he pushes back against this view and the view that 'humanistic' and 'scientific' studies are at odds.<sup>123</sup> Gregory explains that he seeks to 'justify the claim of science to be an ennobling influence as well as a creator of riches' (vi). Using another literary reference point, Gregory insists that '[n]ature [is] a Katharine [*sic*] to be tamed by the Petruchio of Science rather than a Juliet to be worshipped by a love-sick Romeo. Only those who consider her worthy of battle have the patience or the power to affect a conquest' (4–5). The language of conquest (not to mention the gendering of the empire) reveals an anthropocentric imperialist understanding of science that works forcefully for the imagined betterment of the Western world.

In a chapter aptly named 'Conquest of Disease', he summarises Ross's malaria work, quoting lines from two of Ross's poems and adding 'where the teachings of science have been followed, our race has triumphed over its enemies; where ignorance or apathy prevails, the toll is being paid in human lives' (228). This is strikingly similar to the rhetorical thrust of Ross's *Memoirs*, which he would publish in 1923. Upon doing so Ross sent complimentary copies to many of his network, including his friend H. G. Wells, writing 'you will find a long tale told in those memoirs which ought to support your philosophy with which I always agree, as to the

<sup>122</sup>T. Brailsford Robertson, 'Discovery; or the Spirit and Service of Science. By R. A. Gregory. New York, Macmillan and Co. Price \$1.75' *Science* 45.1154 (9 February 1917) p. 143.

<sup>123</sup>R. A. Gregory, *Discovery; or the Spirit and Service of Science* (London: Macmillan and Co., 1916) p. v.



possibility of men improving their lot by proper efforts'.<sup>124</sup> Ross also sent Haggard a copy, which he read with 'the deepest interest' and summarised as a 'tale of official stupidity' and 'a great story of a great achievement' of which his countrymen should be proud.<sup>125</sup>

This framework of the power of scientific research to better man's lot and the resistance to it due to ignorance and apathy is repeated again and again in the discourses of tropical medicine and hygiene. In 1924, *The Lancet* published an article on the tropics that drew attention to the 'tragedy and romance' behind tropical medical research, to 'the tragic burden of insufficiency, sorrow, misery, and despair [...] lost opportunities, in the strangling hold of vested interests, in the stupidity, folly, and pig-headedness, aye, and wickedness of those who opposed progress, who were deaf to the claims of science'. However, such pessimism is tempered by the 'wonders' and 'romance' of scientific investigation:

[T]here is an element of romance in the strivings of devoted men to solve the mysteries of tropical disease, in the astonishing results they achieved, in the marvels they revealed [...] there is an abundance of romance in the application of knowledge gained and the transformation effected by such application.<sup>126</sup>

Such language draws attention to the twinned projects of imperial romance and imperial science, and to the role that fiction played in the creation of modern scientific selfhood through a particular kind of masculine self-fashioning. During the 50-year *fin de siècle* between 1880 and 1930, colonial expansionism and the rapid professionalisation of science were interpolated with circulating ideas about masculinity and nationhood, such that manly conquest and scientific investigation in the tropics became one and the same. This is also a period in which Michael Saler has identified the emergence of the 'New Romance' genre, which he describes as a form of 'modern enchantment' that combined 'tropes of fantasy with those of objectivity', including the use of footnotes, maps, appendices,

<sup>124</sup> London, LSHTM. RC. GB 0809 Ross/139/02/34. Letter to Wells dated 16 May 1923.

<sup>125</sup> London, LSHTM. RC. GB 0809 Ross/139/02/40. Letter from Haggard dated 10 June 1923.

<sup>126</sup> 'The Curse of the Tropics' *The Lancet* 203.5252 (26 April 1924) 855–56 (p. 855).

and photographs. Saler argues that readers were drawn to science fiction, fantasy, and detective stories at the turn of the century because 'they were seeking to be enchanted through the gratification of their reason'.<sup>127</sup> His contention that stories in this genre shared a 'combination of realism and romanticism' and were 'amalgams of wonder and reason' might convincingly be used to characterise works popularising or historicising scientific research in this period too. In such texts, the narration of the pursuit of scientific knowledge becomes itself a form of modern enchantment, as I explore in the following chapter. The fitness of parasitology research to sate the appetite for enchantment is evident in newspaper articles that contemplated the readerly experiences of Ross's *Memoirs* versus the more traditional tale of adventure: 'it is romance for which we hunger to-day. We look to our novelists and our playwrights, and they reward us with sour milk and stale bread [but] the life of Sir Ronald Ross is a romance more thrilling, more inspiring, more wonderful than the best romance in fiction'.<sup>128</sup>

In her survey of the changing sociocultural status of the scientist, Rosalynn D. Haynes identifies a subset of fiction at the turn of the century that imagined the scientist as a utopian ruler. In these stories, scientists are directly responsible for the physical and social improvement of society. She draws our attention to H. G. Wells as a purveyor of such fiction, arguing that he became a 'literary spokesperson for those contemporary scientists who were crusading vigorously [...] for greater political influence'.<sup>129</sup> In his journal *Science Progress*, Ross also singles out Wells as an arbiter between science and society, identifying what he considered to be the significant role of scientific romance in bridging the gap: 'many of the romances of H. G. Wells have probably done more to stimulate interest in science than all the publications of our learned societies'. He goes on to review *Atoms* by D. C. Wignall and G. D. Knox (1923)—a science-fiction novel involving a sensational plot to take over the world following the discovery of 'super radium'—and advocates its use in schools:

<sup>127</sup> Michael Saler, *As if: Modern Enchantment and the Literary Prehistory of Virtual Reality* (New York: Oxford University Press, 2012) p. 15.

<sup>128</sup> 'A Real Romance' *The Sphere*, 24 July 1926, p. 97.

<sup>129</sup> Rosalynn D. Haynes, *From Madman to Crime Fighter: The Scientist in Western Culture* (Baltimore: Johns Hopkins University Press, 2017) p. 180. Again, we see a naturalised 'crusading' motif perpetuated in relation to science.

Here the public will find some of the wholesome powder of physics combined with the jam of a stirring tale [...] we wish a large sale of this bold book, and recommend it particularly to the attention of science masters, who will find it of assistance in their teaching.<sup>130</sup>

In a private letter concerning an invitation to a dinner in honour of Wells, Ross again identifies him as a literary spokesperson for science:

He has done more to instruct the public on the meaning and value of science than all the academies put together. The art exhibited in the style and construction of his novels can be apparent only to those who have attempted to work on similar lines; his imagination is wonderful; and I for one, agree with his philosophy which amounts to this: that men can better themselves if they choose.<sup>131</sup>

Ross clearly considers his own insight into Wells's social value a result of 'work[ing] on similar lines', although it is unclear whether he means his forays into novel writing (none of which were science fiction), or his popular narrativisations of scientific research. The boundaries between scientific romance, as Wells called his earlier stories, and science proper are blurred here. Perhaps it is the gap between utopian visions of science and its real-world practice that speaks most forcefully to Ross; in Wells's *A Modern Utopia* (1905), which Haynes identifies as a prototype for all his utopian novels, Wells writes, 'Science stands, a too-competent servant behind her wrangling underbred masters, holding out resources, devices and remedies they are too stupid to use'.<sup>132</sup> Such a sentiment was echoed in Mégroz's biography of Ross:

How long will it be before the best countries of the world are freed from this universal scourge [malaria] depends, to quote once more the words of the man who opened the door of a new era [Ross], "on how stupid people are".<sup>133</sup>

<sup>130</sup> 'A Scientific Romance' *Science Progress in the Twentieth Century* 18.70 (October 1923) p. 279.

<sup>131</sup> London, LSHTM. R.C. GB 0809 Ross/146/25/78. Letter to Mr A. G. Church.

<sup>132</sup> H. G. Wells, *A Modern Utopia* (London: Chapman and Hall, 1905) p. 102.

<sup>133</sup> Mégroz, *Ronald Ross: Discoverer and Creator*, p. 126.

Ross also vented his frustration at the perceived apathy of the public towards science at the Delphian Coterie dinner with which I opened this section. He joked that he wished he'd spent his life 'creating beautiful romances' as Haggard had done instead of 'trying to prevent diseases, or what [is] much more difficult, in trying to persuade all the fools of the world to prevent diseases when they kn[o]w how to do it'.<sup>134</sup>

But in a sense 'creating beautiful romances' is what Ross had been doing all along. He perhaps unwittingly exposes the continuities between his attempts at fiction and his narrations of science by championing romance as a lasting genre. He argues that, unlike the novel—which 'describes the life of every one [...] and of what happen[s] every day around [one]'—romance must present 'something idealised' and 'must contain the quality of imagination'. Haggard gave a definition of imagination at the same meeting as 'an unusual power of putting ourselves into the places of others and of deducing the unknown from the known', a definition that complements Ross's understanding of the methodologies of the scientist as much as of the writer of fiction.<sup>135</sup> The 'something idealised' that Ross locates in romance is certainly also recognisable in his many projects of science communication, as this chapter has illustrated. He even uses the same phrase in an article in *Science Progress*, asserting that the only way that science can be communicated to the public is 'by way of narratives [...] the constructions of the men of science [...] have to be idealised'.<sup>136</sup> This assertion encapsulates the essence of my argument in this chapter: that, at the turn of the century, imperial romance was not confined to the realm of the fictional but also voiced itself through scientists' interactions with empire, where the gap between reality and rhetoric became another blank space on the map.

<sup>134</sup> London, LSHTM. R.C. GB 0809 Ross/146/26/132. 'Imagination and War. Sir Rider Haggard's Theory' *The Daily Telegraph*, 26 November 1924 [newspaper clipping].

<sup>135</sup> London, LSHTM. R.C. GB 0809 Ross/126/26/133 [newspaper clipping dated 1924].

<sup>136</sup> Ronald Ross, 'Homer, Dante, Shakespeare, and Cervantes' *Science Progress* 11.41 (July 1916) 137–40 (p. 137).

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# Detecting the Diagnosis: Parasitology, Crime Fiction, and the British Medical Gaze

In 1905, Dr Charles Porter, medical officer of health for Johannesburg, gave an illustrated lecture at St Andrew's church literary society in Sheffield. The subject was 'some animal parasites of the blood' which, as reported by the *Sheffield Daily Telegraph*, he had chosen because he had 'often wished to compare doctors and detectives'. He asserted that he

couldn't understand why writers of fiction went to the art of detection instead of the science of medicine for their mysteries and romances, neither did he know why the detective of fiction was provided with a halo of romance.<sup>1</sup>

Porter held a diploma in Public Health in addition to his Doctor of Medicine (MD) and Bachelor of Surgery (ChB). He qualified as a Barrister-at-Law at Gray's Inn in 1898 before taking up his post in Johannesburg, after the city had been occupied by British troops during the Anglo-Boer war (1899–1902).<sup>2</sup> In his lecture, he discussed malaria and sleeping sickness, suggesting that such subjects were worthy of appearing in mysteries and romances, and yet that the work of famous parasitologists

<sup>1</sup>'St Andrew's Literary Society' *Sheffield Daily Telegraph*, Friday 24 March 1905, p. 4.

<sup>2</sup>C. Plug, 'Porter, Dr Charles (Public Health)' *S2A3 Biographical Database of Southern African Science* [http://www.s2a3.org.za/bio/Biograph\\_final.php?serial=2232](http://www.s2a3.org.za/bio/Biograph_final.php?serial=2232) [accessed 2 September 2020].

like Patrick Manson and Ronald Ross (whom he names) is wholly different to that carried out by the detectives who usually grace such fiction.<sup>3</sup>

To a modern reader, this comment might seem bizarre. After all, the rhetorical and material confluences between doctors and detectives are, for us, par for the course. Notwithstanding the blurring of professions practised by forensic pathologists and coroners, detective work has ‘long been a metaphor for clinical acumen’.<sup>4</sup> As Claudio Rapezzi et al. point out, this is due to the real or imagined parallels between the professions, both of which ‘try to restore a status quo’ disrupted by crime or disease, using ‘deterministic interpretation[s] of clues, signs, and symptoms’ that ‘are often meaningless or disconcerting to the layman’.<sup>5</sup> These imagined parallels were popularised by Sherlock Holmes, perhaps the most enduring archetype of the scientific detective. As Arthur Conan Doyle reflected in 1930, his creation of Holmes was directly inspired by his medical training. His goal was to create a detective who ‘would treat crime as Dr Bell [his mentor] treated disease’ and ‘where science would take the place of chance’.<sup>6</sup> Such a goal articulates, in Jon Thompson’s words, ‘a desire for a complete form of knowledge’ that reflects the developing ‘scientific’ mode of knowledge that revolutionised modern American, and British, culture at the end of the nineteenth century.<sup>7</sup>

The idea that science provides a ‘complete’ knowledge is a fantasy that has become a truism in the popular imagination. Holmes quickly breached the bounds of Conan Doyle’s literary experiment and emerged as a figure that helped to reshape the public understanding and authority of scientific knowledge at the fin de siècle. As I explore in this chapter, the ‘halo of romance’ that Porter associates with detective fiction was not confined to the literary realm, nor was it a straightforward reflection of literary artifice, but rather, was part of the complex negotiation between science as idealisation and science as material practice. In his 2007 textbook on evidence-based medicine (EBM), Swedish professor of surgery Jorgen Nordenstrom

<sup>3</sup>Porter was perhaps prompted to use this frame of reference by the publication of *The Return of Sherlock Holmes* a few weeks previously on 7th March.

<sup>4</sup>Claudio Rapezzi, Roberto Ferrari, and Angelo Branzi, ‘White Coats and Fingerprints: Diagnostic Reasoning in Medicine and Investigative Methods of Fictional Detectives’ *British Medical Journal* 331 (22 December 2005): <https://doi.org/10.1136/bmj.331.7531.1491>.

<sup>5</sup>Ibid.

<sup>6</sup>London, British Library. Early Spoken Word Recordings. 1CL0013693. ‘Conan Doyle Speaking 1 of 2’, 14 May 1930.

<sup>7</sup>Jon Thompson, *Fiction, Crime and Empire: Clues to Modernity and Postmodernism* (Chicago: University of Illinois Press, 1993) pp. 44–45.

claims a similarity between EBM and detective work. He draws particular attention to the importance of ‘reasoning backwards’ through time—a technique that Sherlock Holmes employs; ‘The grand thing is to be able to reason backwards’, Holmes announces to Watson in *A Study in Scarlet* (1887).<sup>8</sup> Holmes considers reasoning backwards synonymous with reasoning ‘analytically’ and further explains: ‘being given a result and having the ability to evolve from [one’s] inner consciousness what the steps were which led up to that result’. Despite crediting the pedagogical technique of ‘backwards reasoning’ to ‘Barrows at McMaster University in the 1970s’, Nordenstrom places EBM in dialogue with Conan Doyle’s fictional detective by choosing the title: *Evidence-Based Medicine: In Sherlock Holmes’ Footsteps*, by including several literary quotations from the canon, and by employing a heavy-handed use of analogy. As Paul Glasziou, professor of EBM at the University of Oxford, notes in the foreword: using Holmes as a reference point makes the book ‘very accessible’.<sup>9</sup>

Articles and editorials in medical journals confirm that Holmes is still widely considered to be a useful tool in medical education and clinical practice.<sup>10</sup> Indeed, the invocation of Holmesian detection in scientific articles is ubiquitous.<sup>11</sup> Many see Holmes as a paragon of good diagnostic practice; Michael Trimble and Paul Hamilton quote Holmes twice in their

<sup>8</sup> Arthur Conan Doyle, *A Study in Scarlet* (1887; London: Ward, Lock and Co., 1893) p. 93.

<sup>9</sup> Jorgen Nordenstrom, *Evidence-Based Medicine: In Sherlock Holmes’ Footsteps* (Oxford: Blackwell Publishing, 2007) p. vi.

<sup>10</sup> See, for example, Larry Miller, ‘Sherlock Holmes’s Methods of Deductive Reasoning Applied to Medical Diagnostics’ *Western Journal of Medicine* 142.3 (March 1985) 413–14; André Didierjean and Fernand Gobet, ‘Sherlock Holmes – An Expert’s View of Expertise’ *British Journal of Psychology* 99 (2008) 109–25 (p. 109); Beryl B. Benacerraf, ‘The Sherlock Holmes Approach to Diagnosing Fetal Syndromes by Ultrasound’ *Clinical Obstetrics and Gynaecology* 55.1 (2012) 226–48; A. Schattner, ‘Sherlock Holmes and Clinical Excellence’ *QJM: An International Journal of Medicine* 106.12 (December 2013) 1157; G. V. Chanukya, M. Mengade, J. Goud, I.S. Rao, A. Jain, ‘Tumor-Induced Osteomalacia: A Sherlock Holmes Approach to Diagnosis and Management’ *Annals of Maxillofacial Surgery* 7.1 (2017) 143–47.

<sup>11</sup> Some authors simply abandon a quotation from a Holmes story at the beginning of a section and fail to engage with it in the prose at all. Perhaps because they feel it speaks for itself. See for example: David Herrington, ‘Eliminating the Improbable: Sherlock Holmes and Standards of Evidence in the Genomic Age’ *Circulation* 112.4 (2005) 2081–84; Howard L. Geyer, David M. Kaufman, Raminder K. Parihar, and Mark F. Mehler, ‘Movement Disorders in COVID-19: Whither Art Thou?’ *Tremor and Other Hyperkinetic Movements* 10.25 (2020) 1–4; X. Bai, J. Hippensteel, A. Leavitt, J. Maloney, D. Beckham, C. Garcia, Q. Li, B. Freed, D. Ordway, R. Sandhaus, E. Chan, ‘Hypothesis: Alpha-1-Antitrypsin is a



four-page article about clinical decision making.<sup>12</sup> Others, however, are more cautious about perpetuating the myth of the Holmesian method. In 2018, Dr Thomas Young wrote a book warning of the dangers of the myth of Sherlock Holmes in forensic science, which had led, he contends, to the incarceration of innocent people.<sup>13</sup> Young takes the classic example from *A Study in Scarlet* when Holmes meets Watson for the first time and effortlessly (but unconvincingly) gleans his profession, military association, and travel history from his tan, haggard face, and injured shoulder. As Young points out, this is not a good methodology because if we ‘reason backwards’ like Holmes, there is more than one train of events that might have got us here. Instead, he advocates using witness testimony (in this case Watson) to corroborate the evidence. As he notes: ‘You can listen to an eyewitness with an open mind and see if what he says fits the clues, but you cannot make up a story from the clues and expect it to be true’.<sup>14</sup>

Nevertheless, Holmes’s famous backwards reasoning commands an ‘aura of plausibility’, even ‘an aura of generalised authority’ that appeals to forensic scientists and physicians as much as to readers of fiction.<sup>15</sup> And therein lies the problem with the myth of Holmes: his formidable rhetorical power outstrips the utility of his methods—a mismatch that provides a limit case for the public understanding of science more generally. It is partly for this reason that I am choosing to focus on Holmes, even though my doing so perpetuates what Anne Humphreys characterised in 1996 as the ‘obsessive return of critical analysis’ to Conan Doyle in studies of detective fiction. In her 2014 book, *Late Victorian Crime Fiction in the Shadows of Sherlock*, Clare Clarke argues that the nascent genre’s capacity for narrative and moral complexity is still frequently overlooked in favour of a focus on Holmesian detection. Nonetheless, she concedes that late

Promising Treatment Option for COVID-19’ *Medical Hypotheses*, 12 November 2020, <https://doi.org/https://doi.org/10.1016/j.mehy.2020.110394>.

<sup>12</sup>Michael Trimble and Paul Hamilton, ‘The Thinking Doctor: Clinical Decision Making in Contemporary Medicine’ *Clinical Medicine* 16.4 (August 2016) 343–46.

<sup>13</sup>See: Thomas Young, *The Sherlock Effect: How Forensic Doctors and Investigators Dastardly Reason Like the Great Detective* (Boca Raton: Taylor and Francis, 2018).

<sup>14</sup>Young, *The Sherlock Effect*, p. 6.

<sup>15</sup>Young, ‘Is Sherlock Holmes’ “reasoning backwards” a reliable method for discovering truth? Analyses of four medicolegal cases’ *Heartland Forensic Pathology, LLC* <http://www.heartlandforensic.com/writing/is-sherlock-holmes-reasoning-backwards-a-reliable-method-for-discovering-truth> [accessed 24 November 2020]; David Levine, ‘Revalidating Sherlock Holmes for a Role in Medical Education’ *Clinical Medicine* 12.2 (2012) 164–69 (p. 164).

nineteenth-century detective fiction did elicit a new kind of hero, of which Holmes is a prominent archetype. This archetype drew from and simultaneously reinforced a range of concerns about the changing relationship between science and society. Michael Saler identifies such fictions as part of a ‘New Romance’ genre which ‘enchants and disenchants simultaneously’ by rendering the imagination compatible with reason and combining ‘the marvellous with the rational’.<sup>16</sup> What makes Holmes distinct from contemporaneous fictional detectives is his cult status as ‘larger than life’. Conan Doyle received letters addressed to Holmes requesting his consultation and advice. Some of these writers were what Saler terms ‘naïve believers’ and others ‘ironic believers’—those who simply chose to suspend their *dis*belief. In the context of a nascent celebrity culture, some readers thought that Conan Doyle was Sherlock Holmes’s literary agent, others thought he *was* Holmes. To complicate matters, Conan Doyle himself attempted to solve some much-publicised criminal cases. Magazines and newspapers published interviews ‘with Holmes’, as well as biographies of the famous detective and, when Holmes was killed off in 1893, even obituaries. A contemporaneous writer for *The Times* characterised such texts as ‘the free creations of a mythological fancy, rather like the Eastern legends of Alexander the Great’.<sup>17</sup> Here, I explore the legacies of this mythological fantasy in the context of the science of empire.

The fact both Conan Doyle and Porter reach for the same organising form—the doctor/detective dyad—says much about their cultural moment. The decades spanning 1880 to 1930 produced a plethora of ‘scientific’ detectives in popular fiction, and a wealth of journalistic accounts of medicine that invoked the figure of the detective (often specifically Holmes) as a shorthand for scientific or clinical insight. It was also a moment—as Clare Clarke notes—in which ‘internal conflicts contained by the concept of nation were externalised onto the larger field of the empire’.<sup>18</sup> Anxieties about national identity in the wake of fluctuating support for and criticism of Britain’s increasingly militarised imperial engagements were distilled into stories in which Britain’s right to rule

<sup>16</sup> Michael Saler, *As If: Modern Enchantment and the Literary Prehistory of Virtual Reality* (Oxford: Oxford University Press, 2012) p. 12.

<sup>17</sup> Quoted in Michael Saler, ‘“Clap If You Believe in Sherlock Holmes”: Mass Culture and the Re-Enchantment of Modernity, c. 1890–c. 1940’ *The Historical Journal* 46.3 (September 2003) 599–622 (p. 600).

<sup>18</sup> Clare Clarke, *Late Victorian Crime Fiction in the Shadows of Sherlock* (Basingstoke: Palgrave Macmillan, 2014) pp. 1–2.

became bound up with a fantasy about scientific endeavour. As Will Tattersdill has shown, the ‘material entanglements’ of science fact and science fiction in popular magazines like *The Strand*, which burgeoned at the turn of the century, ‘shored up the empire by presenting empirical discovery and imperial conquest as inseparable’.<sup>19</sup>

For Jon Thompson, the Holmes stories represent a ‘myth of England’ in which empire and empiricism are the dominant structuring ideologies. Indeed, Conan Doyle was an outspoken supporter of imperialism. He defended British military engagements in South Africa in a series of letters to national newspapers and to the *British Medical Journal*, as well as in his nonfiction books: *The Great Boer War* (1900) and *The War in South Africa: Its Cause and Conduct* (1902). These were informed by his experiences as a military doctor at the Langman Field Hospital in Bloemfontein. He was president of the imperialist youth movement, the Boys’ Empire League and wrote many jingoistic stories published in children’s story papers such as *Union Jack* and the *Boy’s Own Paper*. He also, Thompson argues, ‘ratified the principles and ideologies of an imperial, patriarchal Britain’ through his fiction in ways that facilitated a popularisation of empiricism and of the scientific method.<sup>20</sup>

Laura Otis, Lorenzo Servitje, and Susan Cannon Harris, among others, have explored the collision of medicine and empire embodied by Conan Doyle’s use of the language of epidemiology to symbolise ‘the physical, moral, and cultural contamination that Britain feared as its empire brought it into closer contact with Asian and African peoples, cultures, and climates’.<sup>21</sup> Against this backdrop Holmes emerges as Britain’s salvation; for Otis, Holmes acts as an imperial immune response, protecting the metropole from foreign bio-contaminants and ‘[bringing] to life the fantasy of a national immune system’.<sup>22</sup> She reads the Holmes canon through this metaphor of imperial immunology—a figuration that Conan Doyle does not himself explicitly name but which helpfully encapsulates both the imperial and medical contexts of his writing, and the essence of Holmes’s appeal for readers. ‘The British loved Holmes’, she argues, ‘for the same

<sup>19</sup>Will Tattersdill, *Science, Fiction, and the Fin-De-Siècle Periodical Press* (Cambridge: Cambridge University Press, 2016), p. 140.

<sup>20</sup>Thompson, *Fiction, Crime and Empire*, pp. 74–76.

<sup>21</sup>Susan Cannon Harris, ‘Pathological Possibilities: Contagion and Empire in Doyle’s Sherlock Holmes Stories’ *Victorian Literature and Culture* 31.2 (2003) 447–66 (p. 449).

<sup>22</sup>Laura Otis, *Membranes: Metaphors of Invasion in Nineteenth-Century Literature, Science, and Politics* (Baltimore: Johns Hopkins, 1999) p. 91.

reason that *fin-de-siècle* Europeans admired scientists like Robert Koch and Louis Pasteur'.<sup>23</sup> Like the tropical pathologist, Holmes was, for the reading public, 'an imperial knight who served the empire through his enhanced vision'.<sup>24</sup> In his biography of Conan Doyle, published in 1943, British actor and writer (Edward) Hesketh Pearson similarly positioned Holmes as a defender of empire and a model for imperial masculinity: 'Sherlock Holmes is what every man desires to be; like Don Quixote, he is a knight-errant who rescues the unfortunate and fights single-handed against the powers of darkness'.<sup>25</sup>

Pearson's recourse to Don Quixote is revealing for a number of reasons, none of which were perhaps intended. Most obvious is that Miguel de Cervantes's fictional character is, as the *Encyclopaedia Britannica* notes, only a 'would-be knight errant' whose 'delusions of grandeur' lead to 'comic misadventures' in which he and companion Sancho Panza imagine the 'mundane world of the Spanish countryside as something more exciting and dangerous'.<sup>26</sup> Pearson's comparison between Quixote and Holmes then would seem to undermine Holmes's fitness as a model for which to aspire. Indeed, the comparison's implicit suggestion that Holmes sees grandeur where there is none was also voiced by contemporary critics, who relentlessly satirised the detective's methodology. One critic wrote facetiously of Holmes that 'everything for him had a meaning, and what did not have a meaning had one promptly manufactured to fit into it'.<sup>27</sup> Charles Hamilton (under the pen name Peter Todd) produced a whole series of parodies involving 'Herlock Sholmes' and 'Dr Jotson'. In 'The Case of the Biscuit-Tin!' Jotson is endlessly impressed by Sholmes's basic and obvious deductions about his morning routine:

"[First] you rose from that bed."  
I started.  
"It is true," I admitted. "But how——"

<sup>23</sup> Otis, 'The Empire Bites Back: Sherlock Holmes as an Imperial Immune System' *Studies in 20th and 21st Century Literature*, 22.1 (1 January 1998) p. 2.

<sup>24</sup> Otis, *Membranes*, p. 98. A cartoon depicting Koch in this way appeared in Germany's humorous magazine *Ulk* and was reprinted to accompany Conan Doyle's article on Koch for the *Review of Reviews* in 1890.

<sup>25</sup> Hesketh Pearson, *Conan Doyle: His Life and Art* (London: Methuen and Co., 1943) n.p.

<sup>26</sup> 'Don Quixote' *Encyclopaedia Britannica* (11 Jan. 2018) Online: <https://www.britannica.com/topic/Don-Quixote-fictional-character> [accessed 2 March 2021].

<sup>27</sup> A. Dewar Willock, 'A Study in Red' *Fun* (6 July 1892) n.p.

“You then took your morning bath.”

“Sholmes!”

“And you breakfasted upon eggs and bacon.”

“Marvellous!”

[...]

“Nothing at all, my dear boy. Deduction, that’s all.”

“But how——”

[...]

“In the first place, you are now in a perpendicular attitude.”

“True!”

“The observations of a lifetime have led me to conclude that in bed people generally—in fact, almost invariably—assume a horizontal attitude.”

“True again!” I exclaimed. “I had not observed it, but, now that you point it out, I must admit that so far your deductions seem very simple.”

[...]

“Your present perpendicular attitude shows indubitably that you rose from your bed. As for your bath, I have observed your customs during the time we have been together at Shaker Street.”

[...]

“Perfectly correct. But the eggs and bacon?”

[...] “Upon your moustache remains a slight trace of the breakfast egg [...] Bacon and eggs frequently—in fact, almost invariably—are taken together. From the eggs I deduced the bacon.”

“Marvellous!”<sup>28</sup>

Sherlock Holmes parodies were only possible because he was a household name, his methodologies familiar territory for readers. As Saler intimates, he represented a departure in fiction, becoming an intermediary figure between the real and the imagined that had much in common with the ‘more ambiguous ontological status’ of mythological and legendary characters.<sup>29</sup> Many believed that Holmes was real, or else happily suspended their disbelief so that they might inhabit a world wherein such people existed, a phenomenon made more complex by Holmes’s prevalence as a model for the practices of experimental and diagnostic medicine. Pearson’s comparison then brings us back to the mythological self-fashioning of parasitologists that I explored in my first chapter.

<sup>28</sup> Peter Todd, ‘The Case of the Biscuit-Tin!’ *The Greyfriar’s Herald* (27 November 1915) 3–5 (p. 3).

<sup>29</sup> Saler, *As If*, p. 6.

The ‘knight of science’ and the scientific detective were kindred fantasies often made interchangeable in the popular imagination. In 1922, *The Times*, for example, eulogised tropical medicine giant Patrick Manson as a ‘builder of the British Empire’ framing both Manson and the birth of the discipline using detective fiction’s most famous archetype; the article located the ‘hour in which tropical medicine was to be born’ as the hour in which Manson put together his evidence for the mosquito vector of elephantiasis, ‘like Sherlock Holmes’.<sup>30</sup> Here detective fiction becomes a mode in which to understand the work of parasitologists. Drawing on a long-standing conceptual and rhetorical association between crime and disease, journalists and biographers framed parasitologists as sleuths solving impossible puzzles and tracking down microbe and insect ‘murderers’. The *News of the World* dubbed Ross’s malaria research as ‘one of the greatest detective stories of modern times’, whilst elsewhere he was described as ‘the man who tracked down the malaria germ’ and apprehended the ‘criminal mosquito’.<sup>31</sup> Parasitologist David Bruce was similarly eulogised as the ‘Sherlock Holmes of science’ in 1931.<sup>32</sup>

By using this shorthand, writers invoked not the realities of experimental science, but a fantasy about modern, western, Anglophone objectivity that continues to augment instrumental relationships between science and society. As Otis argues, Conan Doyle’s creation of ‘a hero with penetrating vision’ was a narrative realisation of a contemporary medical fantasy: the ability to perceive the imperceptible.<sup>33</sup> In this chapter, I bring the context of empire to bear on the concept of medical detection by placing the formal strategies of detective fiction in dialogue with the representational strategies of parasitology. By framing microbes as murderers and doctors as detectives, fictional and nonfictional writers alike invoked the confidence of domestic legal authority to control and order the chaotic phenomenon of tropical illness. In doing so, I argue, they supported a slippage between crime and disease that bolstered the biopolitical authority of

<sup>30</sup> London, LSHTM. RC. GB 0809 Ross/138/02–03. ‘Pioneer of Tropical Medicine. Sir P. Manson’s Great Work. An Empire Builder’. *The Times*, 10 April 1922. n.p.

<sup>31</sup> London, LSHTM. RC. GB 0809 Ross/156/153. [no title], *News of the World*. 23 Oct 1921, n.p.; London, LSHTM. RC. GB 0809 Ross/156/119–159. ‘The Man Who Tracked Down the Malaria Germ’ *John O’ London’s Weekly*, 21 May 1921, n.p.

<sup>32</sup> ‘Funeral of Sir David Bruce’, *The Scotsman*, Wednesday 2 December 1931, p. 12; ‘Sir David Bruce Dead’, *The Scotsman*, Saturday 28 November 1931, p. 10.

<sup>33</sup> Otis, *Membranes*, pp. 90–118 (p. 94).

Western medicine—an authority explicitly grounded in British imperial politics.

### HEROES OF REAL LIFE: MEDICINE AND EMPIRE

Nils Clausson contends that when Sherlock Holmes was introduced to the world in *A Study in Scarlet* in 1887, the ‘myth of the scientific detective was born’. Critics, he asserts, have since that moment largely taken Watson’s contention that Holmes has ‘brought detection as near an exact science as it will ever be brought’ at face value. Despite the orthodox view of Holmes as, in Jon Thompson’s words, the ‘quintessential empiricist’, or, in Catherine Belsey’s, a figure who demonstrates the ‘comprehensive power of positivist science’, Clausson argues that there is in fact a remarkable lack of applied science in the Holmes canon.<sup>34</sup> He is not alone in this observation. Notwithstanding James O’Brien’s assertion in *The Scientific Sherlock Holmes* (2013) that science makes an appearance in ‘every one of the sixty stories [and] in some stories, science is the dominant factor’, scholars have drawn attention to the numerous occasions in which Holmes fails to properly employ his fabled empirical methodology, tantalises us with science that does not then have any bearing on the resolution of the plot, or dispenses with empiricism all together. Holmes frequently admonishes Watson in one moment: ‘It is a capital mistake to theorise before you have all the evidence. It biases the judgement’, and engages in the forbidden behaviour in another.<sup>35</sup> Just a few pages after the aforementioned remark in *A Study in Scarlet*, and after only a preliminary examination of evidence at the crime scene, Holmes admits that ‘as a matter of fact, my mind is entirely made up on the case, but still we may as well learn all that is to be learned’ (33). And yet, despite these inconsistencies, Holmes continues to be renowned for his unparalleled scientific logic in scholarly criticism, medical commentary, and popular culture. What is interesting then is not whether or not Holmes truly is the ‘quintessential empiricist’ but the astonishing staying power of this particular kind of fantasy.

Ronald R. Thomas identifies not scientific objectivity but escapism as the driving force behind the Holmes canon, arguing that Watson’s ‘overly

<sup>34</sup>Nils Clausson, ‘Degeneration, “Fin de Siècle” Gothic, and the Science of Detection: Arthur Conan Doyle’s “The Hound of the Baskervilles” and the Emergence of the Modern Detective Story’ *Journal of Narrative Theory* 35.1 (Winter 2005) 60–87 (p. 60).

<sup>35</sup>Conan Doyle, *A Study in Scarlet*, p. 27.

romantic literary accounts' of Holmes's cases (for which he is often reproved) and Holmes's addiction to narcotics are cut from the same cloth as his imagined profession. They embody a desire to 'escape from the peculiar historical circumstances in which [Holmes and Watson] live' and to embark on 'quests for some elusive truth'.<sup>36</sup> These peculiar historical circumstances include the anxious politics of empire famously embodied by Watson's return as a wounded soldier from Afghanistan to join the other 'loungers and idlers of the Empire' who are 'irresistibly drained' into the 'cesspool' of London.<sup>37</sup> With a shattered collar bone and convalescing from enteric fever—'that curse of our Indian possessions'—Watson voices the fear that British men might be 'irretrievably ruined' by their engagements with empire.

The context of empire asserts itself in the margins—margins of plot: there are references to malaria, yellow fever, and enteric fever in at least five stories, and many more that include persons and artefacts from the colonies; and margins of form: Thomas reminds us of the dialogic format of popular magazines where

articles [...] on a new medical invention that could diagnose criminal pathologies might appear [...] inserted between a Sherlock Holmes mystery about an aboriginal savage criminal from India and a regular feature on "News from the Empire" that offered thrilling accounts of British military heroism in the colonies.<sup>38</sup>

This is something that Will Tattersdill has elsewhere described as the 'material entanglements' of 'Standard Popular Illustrated Magazines', which allow literature and science to become 'active agents within popular culture'.<sup>39</sup>

Despite Clare Clarke's contention that detective fiction, including the Holmes canon, is an 'ideologically complicated' body of work, and despite Stephen Arata's assertion that in his fiction Conan Doyle cannot seem to 'prevent even his staunchest defences [of Empire] from being hounded by doubt', audiences insisted—and continue to insist—on reading Holmes as a counterpart to those 'thrilling accounts of British military heroism in the

<sup>36</sup>Ronald R. Thomas, *Detective Fiction and the Rise of Forensic Science* (Cambridge: Cambridge University Press, 1999) p. 2.

<sup>37</sup>Conan Doyle, *A Study in Scarlet*, p. 14.

<sup>38</sup>Thomas, *Detective Fiction and the Rise of Forensic Science*, p. 5.

<sup>39</sup>Tattersdill, *Science, Fiction, and the Fin-De-Siècle Periodical Press*, p. 4.



colonies'.<sup>40</sup> Although undoubtedly reductive and essentialist, the persistence of Holmes as a 'new kind of hero' in the popular imagination—as, in Conan Doyle's words, 'a benefactor of the race'—owes much to the contexts of medicine and empire within which the stories were written and originally read. As I argue further, the scientific detective both reinforced—and was reinforced by—a popular understanding of science as a modern form of romance.

Caroline Reitz claims that 'nineteenth-century detective fiction helped a national readership imagine the British Empire in a way that was at once destabilising and reassuring'.<sup>41</sup> Empire in these fictions offers mystery and adventure but also danger and peril. She reads Sherlock Holmes in the context of a historical moment that also produced Rudyard Kipling's *Detective Strickland*. In doing so, she draws our attention to the formal similarities between English crime fiction and imperial adventure fiction, genres that are often simultaneously concerned with a fantasy of surveillance and the ideology of empire (65–66). Arata also reads Holmes in the context of fictions of empire, arguing that the stories are indebted to the genre of male romance. The romance genre, 'like late-Victorian imperialist ideology generally', he argues, 'is centrally concerned with the possibility of renewal'. It provided 'a stage on which fantasies of a revitalised masculinity [were] played out', where the perceived moral and physical decline of England might be reversed through a commitment to the masculine pursuits of empire.<sup>42</sup> For Holmes and Watson, the masculine pursuits of empire play out in the 'exotic locale' of the criminal underworld where the 'Great Game' is transferred from a physical to an intellectual register and where they triumph as 'domestic versions of the romance form's stereotypical men of action'.<sup>43</sup>

Many scholars have unwittingly adopted the Victorian fantasy of a metropole-periphery divide when analysing these genres, Reitz argues, and so they taxonomise Conan Doyle as a writer of detective stories and Kipling as a writer of imperial intrigue. However, there is more to connect these genres than divide them. She identifies significant continuities, for

<sup>40</sup> Clare Clarke, *Late Victorian Crime Fiction in the Shadows of Sherlock*, p. 2; Stephen Arata, *Fictions of Loss*, p. 139.

<sup>41</sup> Caroline Reitz, *Detecting the Nation: Fictions of Detection and the Imperial Venture* (Columbus: The Ohio State University Press, 2004) p. xiii.

<sup>42</sup> Stephen Arata, *Fictions of Loss in the Victorian Fin de Siècle: Identity and Empire* (Cambridge: Cambridge University Press, 1996) pp. 79–80.

<sup>43</sup> Arata, *Fictions of Loss*, p. 147.

example, between ‘the detective who treats crime and the explorer who performs the work of imperial administration’. For Reitz, the modern detective is uniquely suited to ‘maintaining social order in a complex new imperial world [...] because his authority stem[s] from knowledge rather than force and because his knowledge promise[s] mastery of a specifically imperial world’.<sup>44</sup> The weaponisation of specialist knowledge in the service of empire also makes the detective a fitting analogue for the parasitologist or tropical pathologist, whose work, as I explored in the previous chapter, was likewise informed by the structures and fantasies of the male romance genre.

As Laura Otis argues in *Membranes* (1999), microbiologists garnered considerable popularity in this period as ‘imperial knights’ or ‘heroes’ of science, bolstered by imperialistic and sensationalised popular accounts of their research in newspapers and magazines. Conan Doyle was himself influenced by the sensation around German bacteriologist Robert Koch, who he travelled to Berlin to witness demonstrate a cure for tuberculosis in 1890. Otis identifies this as an influential moment in his career. Kathleen E. Hames also identifies the ‘Berlin episode’ as a key moment for Conan Doyle, arguing that his trip to see Koch precipitated a ‘decisive shift [which led] him to abandon his medical practice to pursue literature full time’.<sup>45</sup> It is curious that this significant bacteriological moment led ultimately to a consolidation of his interest in literature, not in medical research. Despite both scholars insisting on the significance of the trip, it reads as a somewhat underwhelming event in his autobiography (serialised in *The Strand* and published as a book in 1924). And as Otis notes, Conan Doyle never got to meet Koch in the end or even witness the ‘cure’ being demonstrated by Dr Bergmann. He did get to visit some of Koch’s patients and read the lecture notes of one of the attendees; however, in his autobiography, he writes: ‘I had the temerity to disagree with every [case] and to come to the conclusion that the whole thing was experimental and premature’.<sup>46</sup>

This sober appraisal sits uneasily with the article he wrote for *Review of Reviews* in which he describes Koch as a ‘great mastermind [...] bringing under subjugation those unruly tribes of deadly micro-organisms which

<sup>44</sup> Caroline Reitz, *Detecting the Nation*, p. xiv.

<sup>45</sup> Kathleen E. Hames, *Imperial Fever* p. 54.

<sup>46</sup> A. Conan Doyle, ‘Memories and Adventures—Chapter VIII. Pulling Up the Anchor’ *The Strand Magazine* 67.397 (January 1924) 85–87 (p. 85).

are the last creatures in the organic world to submit to the sway of man'.<sup>47</sup> From these imperialistic words, we see that Conan Doyle came back from Berlin, not with a passion for medicine so much as a passion for the narrative romance of medicine. Indeed, the 'romance of medicine' forms the subject and title to a speech that he gave to medical students at St Mary's Hospital in 1910. 'In every literary or dramatic romance', he asserted, once the 'villain was unmasked he was innocuous. It was the undiscovered villain who was formidable'. He goes on to characterise the recent work in the 'wonderful romance of medicine' in terms of exposing 'the villain', referring to the mosquito and rat-flea as 'accomplices'. This is an explicitly British romance, which his fellow countrymen could take 'peculiar satisfaction' in as 'protagonists in the battle'. As *The Times* reported for a popular audience, for Conan Doyle, 'the great line which honoured British medicine since the days of Harvey had never had a more brilliant group than that which contained the names of Manson, Ross, Bruce, and Wright'.<sup>48</sup>

In letter correspondence with Lady Cowan, wife of liberal MP Sir William Henry Cowan, Conan Doyle again revealed his admiration of the work of parasitologists, asserting: 'Sir Ronald Ross has always been one of my heroes of real life. If honours went by achievement he should surely be a Duke'.<sup>49</sup> The two men went on to become firm friends and in 1928 Conan Doyle wrote to the *Daily Express* to suggest that Ross should be made a member of the House of Lords, styling him 'the most successful of all Generals winning victory for the human race against the Malaria Fiend which has claimed its victims by the million'.<sup>50</sup> Using the naturalised metaphor of medicine as war, Conan Doyle suggests that Ross has earned the political and social power reserved for the English nobility.

Whilst many of the Holmes stories clearly predate the discoveries made by Ross and his colleagues, Conan Doyle and Ross share a kindred fantasy about the power of the specialist to neutralise threats to the individual, and by extension, the nation. His characterisation of Ross as a general 'winning victory for the human race' suggests that he, like Ross, thought

<sup>47</sup> Arthur Conan Doyle, 'Dr Koch and his Cure' *Review of Reviews* 1 (1890) 552–56 (p. 552).

<sup>48</sup> 'The Medical Session: St Mary's Hospital' *The Times*, 4 October 1910, p. 7.

<sup>49</sup> London, LSHTM. RC. GB 0809 Ross/146/16/69. Doyle to Lady Cowan. January 1914.

<sup>50</sup> 'Fashionable and Personal' *Kent & Sussex Courier*, Friday 12 October 1928, p. 8.

of medicine as ‘an imperialistic battle fought on the home front’.<sup>51</sup> Indeed, Conan Doyle used medico-military analogies to this end in *The Narrative of John Smith*—a semi-autobiographical novel that was ostensibly written in 1883, lost in the mail on its way to the publisher, and rewritten from memory several years later. He never finished rewriting the narrative and it remained unpublished until 2010 when it was published by The British Library.

The story is told through a series of conversations and soliloquies involving John Smith, a bedridden man recovering from rheumatic gout. As the nascent voice of Conan-Doyle-as-author, the *Narrative* brings into clear focus many of the ideologies that would come to underpin his later writing: his ambivalence about the colonial encounter, his anxieties about the health of the British, and his idealisation of medical science and adulation of its researchers. In chapter two, Dr Turner explains the power and potential of scientific research:

‘Typhus, typhoid, cholera, malaria, hydrophobia, scarlatina, diphtheria, measles and probably consumption will cease to exist—and all owing to the labours of Louis Pasteur—God bless him!’

‘Why, Doctor,’ said I, ‘you are quite an enthusiast.’

‘Yes,’ he answered, mopping his flushed face. ‘It’s a subject which warms my very heart. We are at war with these pestilential atoms and when we gain a victory over them the whole human race should light up their candles and sing “Te Deum.”’<sup>52</sup>

In the final chapter of the unfinished manuscript, Conan Doyle again invokes warfare as a frame of reference for understanding the maintenance of health:

‘How preposterous it seems,’ I remarked. ‘We are like some defenceless country with open frontiers, exposed to the invasion of every wild tribe of microbes who choose to attack us.’

‘Very true. But you have an admirably drilled standing army for your defence.’

<sup>51</sup> Otis, ‘The Empire Bites Back’, p. 33.

<sup>52</sup> Arthur Conan Doyle, ‘The Narrative of John Smith’ *The Arthur Conan Doyle Encyclopaedia* (2020) [https://www.arthur-conan-doyle.com/index.php/The\\_Narrative\\_of\\_John\\_Smith](https://www.arthur-conan-doyle.com/index.php/The_Narrative_of_John_Smith) [accessed 18 January 2021] (Ch. 2).

‘In my case, then,’ said I, ‘the standing army appears to have been defeated, and I am falling back upon my auxiliary forces.’

‘Not at all. It has been a contest of six days, but your guards have been victorious. You have read, I presume, the recent investigations on the subject of the functions of the leucocytes [...] They outdo the wildest dreams of Romance. You know what a leucocyte is? They are little microscopic jelly-like creatures which are found drifting along in our bloodstream [...] recent experiment[s have shown] that these creatures are the most trusty and energetic friends of the human race—the special bodyguards and household troops which garrison his system.’

This conceptualisation of the immune response was continuous with dominant analogies that became idiomatic following the development of immunology. In 1883, Russian embryologist Elias Metchnikoff had put forward his theory of phagocytosis wherein certain cells of the body, which he termed phagocytes, actively worked to preserve host integrity by engulfing and digesting, not just nutrients, but also foreign pathogenic material. As Edith J. Claypole summarised for readers of *The American Naturalist* in 1894, white blood cells ‘form, as it were, a guardian army in the animal body, ever alert and watchful for the invading enemy. A constant warfare is being waged between these leucocytes and all foreign material’ (316).

The use of such medico-military language long predates the popular acceptance of germ theory, as Lorenzo Servitje has recently investigated. Servitje grounds martial figurations of disease in the material intersection of medicine and the military at the turn of the eighteenth into the nineteenth century. From the impact of military campaigns on the spread of epidemics, to public health measures based on the model of *cordon sanitaire*, to the discursive construction of miasma as an ‘inimical enemy’ and cholera as a marching army, the conceptual space between military and medical intervention was frequently elided. Moreover, debates concerning disease aetiologies and transmission were often staged in the context of military and colonial practices.<sup>53</sup>

Nevertheless, as Servitje contends, war, microbiology, and immunology further converged in the 1880s following the work of Metchnikoff and others (189–90). Leon Chernyak and Alfred Tauber argue that although he was not the first to claim a theory of immunity, Metchnikoff was

<sup>53</sup> Lorenzo Servitje, *Medicine is War: The Martial Metaphor in Victorian Literature and Culture* (Albany: SUNY Press, 2021) see in particular: pp. 41–64.

influential because he radically reimagined the host's maintenance of its own bodily integrity.<sup>54</sup> Phagocytosis reconceptualised immunity as an active defence rather than a passive resistance and in doing so precipitated a conceptual shift in which the rhetorical battlefield was translocated from the political terrain of international and interpersonal encounters in the world, to the microbiological terrain of intracellular encounters in the body. The use of the martial metaphor in this way was widespread, from William Osler's characterisation of phagocytosis as 'active destructive warfare' in 1889 to the translator's choice to describe the interactions between phagocytes and parasites as a 'battle' in the English edition of Julius Mannaberg's 'The Malarial Parasites' in 1894.<sup>55</sup>

The doctor's insistence in the *Narrative* that leucocytes 'outdo the wildest dreams of Romance' signals again Conan Doyle's investment in not only military metaphors but also the adventure mode. He writes, '[T]he most bloodthirsty tiger that ever trod a jungle is harmless compared to these microscopic spores and filaments', and refers to 'Koch's bacillus of phthisis and the comma-shaped bacterium of cholera' as 'little villains'. Thus, the *Narrative* contains the germs—if we can excuse the pun—of later franchises such as the expeditions of Professor Challenger and the criminal investigations of Sherlock Holmes. Indeed, the parallels between the microscopic and macroscopic gestured to here are invoked in reverse when we meet fictional microbiologist Henry Tarp in *The Lost World*. Tarp 'live[s] in a nine-hundred-diameter microscope' and is a 'frontiersman at the extreme edge of the knowable'.<sup>56</sup> Although this 1912 story concerns formidable creatures of a much larger size, readers might have gleaned an insight into the kind of adventures that populated Tarp's microscopic vision by an early nonfiction piece published by Conan Doyle in *Good Words* four years before he wrote his first Holmes story. In 'Life and Death in the Blood' (1883), Conan Doyle invites his readers to imagine shrinking down to microscopic size to travel through the arteries of the body. Using the tropes of imperialist adventure, he promises to tell us

<sup>54</sup> Leon Chernyak and Alfred I. Tauber, 'The Idea of Immunity: Metchnikoff's Metaphysics and Science' *Journal of the History of Biology* 23.2 (1990) 187–249.

<sup>55</sup> William Osler, 'Phagocytes and Parasites' *British Medical Journal* 1.1479 (1889) p. 1012; Julius Mannaberg, 'The Malarial Parasites: A Description Based Upon Observations Made by the Author and by Other Observers' trans. by R. W. Felkin in *Two Monographs on Malaria and the Parasites of Malarial Fevers* (London: The New Sydenham Society, 1894) p. 400.

<sup>56</sup> Arthur Conan Doyle, *The Lost World* (1912; London: The Folio Society, 2010) p. 17.

of ‘work which has opened up a romance world of living creatures’, which he compares to ‘venomous cobras’ and ‘savage tigers’ and, perhaps most tellingly of all, refers to as a ‘race’ of organisms living in the blood. The phrasing recalls John Smith’s conceptualisation of disease as caused by ‘wild tribes’ of microbes. Implicit in such figurative language is the idea that the ‘tropical’ and ‘microscopic’ are kindred realms.

Conan Doyle again invoked the tropical world as a frame of reference for understanding the destruction wrought by microorganisms in his article about Koch’s cure for tuberculosis published in *Review of Reviews* in 1890:

It is a strange thing to look upon these utterly insignificant creatures, and to realize that in one year they would claim more victims from the human race than all the tigers who have ever trod a jungle. A satire, indeed, it is upon the majesty of man when we look at these infinitesimal and contemptible creatures which have it in their power to overthrow the strongest intellect and to shatter the most robust frame.<sup>57</sup>

By juxtaposing microbes in the blood with tigers and cobras in the jungle—a strategy he repeats in ‘Life and Death in the Blood’ and the *Narrative*—Conan Doyle opens up imaginative space for a new kind of colonial encounter. In 1925, parasitologist and director of the London School of Tropical Medicine Andrew Balfour employed a similar rhetorical technique when speaking about the impact of malaria on the British Empire. In an address delivered at the Guild House, Eccleston Square, he asserted that if malaria ‘fastens’ upon the Indian native, ‘he has little more chance than if he were in the claws of a Bengal tiger’.<sup>58</sup>

Conan Doyle’s anxiety about the infinitesimal in ‘Life and Death in the Blood’ is matched only by his confidence in the ‘gigantic intellect’ of specialists like Koch and Pasteur. Throughout he writes repeatedly of ‘great minds’, ‘gigantic intellect[s]’, ‘rare scientific intuition’, ‘master minds of the century’, ‘active brain[s]’, ‘great thinker[s]’, and ‘savants’. Thus, he produces a binary narrative of microscopic threat versus scientific brilliance that is also modelled in many of the Holmes stories. Indeed, many scholars have argued that Holmes’s emphasis on the importance of ‘small

<sup>57</sup> Arthur Conan Doyle, ‘Dr Koch and His Cure’ *Review of Reviews* 2.12 (December 1890) 552–60 (p. 552).

<sup>58</sup> Andrew Balfour, ‘Malaria as an Enemy of the British Empire’, p. 6 [MS of address delivered 18 October 1925] London, LSHTM. GB 0809 Balfour/01/07.

trifles' parallels the microscopic vision of microbiologists. As Servitje puts it: 'microbial and immunological metaphors thematically and narratively govern' the Holmes stories.<sup>59</sup> This is, moreover, not simply a loose symbolic parallel but a conceptual exchange that was given cultural currency in journalism, biography, and popular medicine.

Just three years after his discovery and two years before he would win the Nobel Prize, London evening newspaper the *St James's Gazette* described the crescendo of Ross's mosquito-malaria work by drawing just this parallel. 'At last' they wrote, 'he traced his parasite as Sherlock Holmes might track a criminal'.<sup>60</sup> Manson was similarly compared to the great detective, and upon the death of parasitologist David Bruce, several newspapers asserted that he was known as 'the Sherlock Holmes of science'.<sup>61</sup> By invoking the romance of detective fiction and the eponymous detective as a reference point, journalists popularised an idealisation of the scientific method where talented individuals carried out research that was tantamount to bringing criminals to justice. Throughout the early twentieth century, the detective became a powerful and convenient trope for demonstrating the social value of doctors and medical researchers. 'A large portion of the modern doctor's activities is devoted to what can only be described as detective work of a very high order', asserted Adelaide's daily colonial newspaper *The Advertiser*:

Whether it be the tracing of some mysterious disease to its hidden cause, or the tracking through various intricate channels of a promising but elusive method of cure, the medical man is frequently compelled to adopt the principles and practices of Sherlock Holmes.<sup>62</sup>

<sup>59</sup> Servitje, *Medicine is War*, p. 208.

<sup>60</sup> 'Mosques and Mosquitoes' *St James's Gazette*, Monday 12 November 1900, p. 12.

<sup>61</sup> See for example: 'Funeral of Sir David Bruce' *The Scotsman*, Wednesday 2 December 1931, p. 12; 'Sir David Bruce Dead' *The Scotsman*, Saturday 28 November 1931, p. 10; 'The Sherlock Holmes of Science' *Nottingham Evening Post*, Friday 27 November 1931, p. 6; 'Sir D. Bruce Dead. Sherlock Holmes of Science. Found Fever Germ' *Liverpool Echo*, Friday 27 November 1931, p. 7; 'Sir David Bruce Dies During Wife's Funeral Service. Adventures of "The Sherlock Holmes of Science"' *Daily Mirror*, Saturday 28 November 1931, p. 6; 'Sir David Bruce Dead. Great Discoveries in the Realm of Tropical Medicine' *Coventry Evening Telegraph*, Friday 27 November 1931, p. 10.

<sup>62</sup> 'Doctors as Detectives. Tracking the Causes of Deadly Diseases' *The Advertiser*, Friday 2 March 1923, p. 17.



A correspondent for the *Daily Herald* likewise asserted, under the emotive title ‘A Romance of Science’, that upon reading Ross’s *Memoirs* ‘one realises how much more thrilling are the exploits of the detective of science—the hero of fact—than those of the detective of crime—the hero of fiction’.<sup>63</sup>

### MEDICAL DETECTIVES AND 20–20 VISION

In John Rowland’s book *The Mosquito Man*, he describes the ‘sensation’ caused at the British Medical Association when Manson read out a telegram from Ross reporting his discovery: ‘it was rather like the sensation that might be expected if a great detective at Scotland Yard announced the arrest of a criminal at the end of a long and difficult case’.<sup>64</sup> Declaring that Ross’s research was ‘not unlike a detective story’, he asserts that ‘the clues were very difficult to find and when found very difficult to interpret’ (90). This encapsulates the imagined confluences between the skill set of the idealised pathologist and of the idealised detective, both credited with the possession of a special type of vision that allows them to make deductions others cannot. In his autobiography, Italian parasitologist Aldo Castellani describes a scene in which his mentor, Patrick Manson, diagnosed a rare disease by virtue of this special vision. According to Castellani, a patient suffering from a skin disease coughed up ‘a huge gelatinous glob’ onto Manson’s prized Bokhara carpet and in his inspection of the spoiled material Manson noticed some minute rusty spots in the mucous. He rushed to his microscope and discovered ‘peculiar large ovoid bodies’ which he immediately recognised as the eggs of a worm, *paragonimus*.

Castellani breezes over any experimental proof or subsequent research in order to declare that Manson had—in that moment—‘discovered the cause of endemic haemoptysis, a common and grave disease simulating phthisis [*sic*] in the Far East’.<sup>65</sup> Likewise, Castellani narrates the moment he first laid eyes on the trypanosome parasite in the cerebrospinal fluid of a patient as the moment that he discovered that it was the causative agent of sleeping sickness. The discovery was later attributed to David Bruce

<sup>63</sup> ‘A Romance of Science’ *Daily Herald*, Thursday 28 June 1923, p. 4.

<sup>64</sup> John Rowland, *The Mosquito Man. The Story of Sir Ronald Ross* (London: Lutterworth Press, 1958) p. 130.

<sup>65</sup> Aldo Castellani, *Microbes, Men, and Monarchs. A Doctor’s Life in Many Lands* (London: Richard Clay and Company, 1960) p. 28.

who joined the sleeping sickness expedition after Castellani and continued his work. The question of priority subsequently occupied the medical and national presses, just as Ross's bitter public dispute with Italian investigator Giovanni Battista Grassi had done.<sup>66</sup> Here and in many medical biographies and travelogues, sight is privileged as a tool of scientific discovery. The act of seeing is made synonymous with the material practices of experimental medicine—a dynamic that found embodiment in Holmes's powerful diagnostic gaze.

And yet, as William Bynum has argued 'seeing microscopically was something that had to be learned, and there was much disagreement about what was seen, to say nothing of the significance of the images the microscope revealed'.<sup>67</sup> Although Ross would eventually prove that mosquitoes transmitted the parasite responsible for malaria via their bites in 1897, just a few years earlier he had been vehemently against the idea that malaria was caused by a parasite at all. In 1889, he wrote four papers hypothesising that malaria was due to intestinal poisoning, and in 1892, four more papers denying the existence of Laveran's malaria parasite altogether.

In 1880, French doctor Alphonse Laveran had discovered microscopic bodies containing black pigment in the blood of patients suffering from malaria, which he believed to be protozoan parasites responsible for causing the disease. Whilst some supported Laveran's findings, many did not, and the identification of a bacillus supposedly responsible for malaria in the pontine marshes by Corrado Tommasi-Crudeli and Edwin Klebs the previous year threw Laveran's claims into further doubt. Ross believed, like many others, that Laveran's 'parasite' was in reality a degenerated red blood cell or the nuclei of a leucocyte, or some other microscopy viewing error. He doubted its connection to malaria, citing the plethora of microorganisms found in the blood and in drinking water as a reality that precluded the case for any one microorganism over another. Mary Kingsley humorously outlined the confusion over the causative agent of malaria in her *Travels in West Africa* (1897) when she asserted: 'when the peculiar microbes of everything from measles to miracles were being "isolated",

<sup>66</sup> Castellani, p. 50. Also see: Emilie Taylor-Brown, "'Petty Larceny" and "Manufactured Science": Nineteenth-Century Parasitology and the Politics of Replication' in *Replication in the Long Nineteenth Century: Re-makings and Reproductions* ed. by Julie Codell and Linda K. Hughes (Edinburgh: Edinburgh University Press, 2018) pp. 67–83.

<sup>67</sup> W. F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge: Cambridge University Press, 1994) p. 101.

several bacteriologists isolated the malarial microbe, only unfortunately they did not all isolate the same one'.<sup>68</sup>

By 1895, however, Ross had changed allegiances, describing the parasite's life cycle for readers of *The Spectator* and insisting that its presence in the blood as a cause of malaria was 'now an old tale, known for about fifteen years'.<sup>69</sup> This radical change in stance was partly a product of his improved microscopy training—in his *Memoirs*, he attributes his interpretative errors to his former microscope technique being 'too beautiful and complicated'.<sup>70</sup> But it was also a product of his newfound friendships with Laveran and Manson, and a willingness to 'see' the parasite within new frames of reference.<sup>71</sup> In *Vision, Science, and Literature*, Martin Willis draws our attention to the 'historical fragility' of vision. He examines how 'instruments, objects, people, eyes, ideologies, discourses, and imaginations together ma[de] the many ways of seeing that characterise[d] the second half of the nineteenth century and the opening decades of the twentieth'. In this period, vision came to be experienced as a 'negotiation between the actual and the metaphoric, the real and the imagined'.<sup>72</sup> This is aptly illustrated by a heated debate between Ross and fellow Indian Medical Service officer, Edwin Lawrie, which was covered by *The Times*, the *British Medical Journal*, the *Indian Lancet*, and English-language Indian newspaper *The Pioneer* in 1897. Lawrie contended that Laveran's malaria parasite did not exist, describing Laveran's diagrams as 'fanciful pictures [...] drawn from the imagination'.<sup>73</sup> Despite holding the same opinion just a few short years before, Ross was now so sure of Laveran's parasite that he compared Lawrie's disbelief in it to a disbelief in the existence of the moon. Lawrie challenged supporters to prove that what

<sup>68</sup> Mary Kingsley, *Travels in West Africa: Congo Francais, Corisco and Cameroons* (London: Macmillan, 1897) p. 681.

<sup>69</sup> Ronald Ross, 'Malaria and the Mosquito' *The Pioneer*, Saturday 3 August 1895, p. 3.

<sup>70</sup> Ronald Ross, *Memoirs*, p. 126.

<sup>71</sup> As I have written about elsewhere: Emilie Taylor-Brown, "'Petty Larceny" and "Manufactured Science": Nineteenth-Century Parasitology and the Politics of Replication' in *Replication in the Long Nineteenth Century: Re-makings and Reproductions* ed. by Julie Codell and Linda K. Hughes (Edinburgh: Edinburgh University Press, 2018) pp. 67–83 (p. 73).

<sup>72</sup> Martin Willis, *Vision, Science, and Literature 1870–1920: Ocular Horizons* (Pittsburgh: University of Pittsburgh Press, 2016) pp. 1–2.

<sup>73</sup> 'The Cause of Malaria. Extract from an Address Delivered at the Grant Medical College, Bombay, April 4th 1896 by Surgeon-Lieutenant-Colonel E. Lawrie, M.B., Residency Surgeon, Hyderabad', *British Medical Journal* 1.1845 (1896) 1135–38 (p. 1135).

Laveran had seen beneath the microscope was not simply a degenerated red blood cell or immature white blood cell, and, as the debate raged on, Ross responded that Lawrie's position was akin to suggesting that the moon was made of 'green cheese':

Any attempt to prove that the malaria parasite is not a degenerate red corpuscle is like an attempt to prove that the moon is not made of green cheese; most of us, I believe, are pretty confident that our satellite is not composed of that substance, but I fancy it would be somewhat difficult to prove the point, especially in the limits of a letter to the Daily Press, against a person obstinately possessed of the green cheese theory.<sup>74</sup>

We now know that Laveran's parasite is indeed the parasite responsible for malaria. However, the point here is not that Ross was correct the second time around, but that the scientific method—with its imagined objectivity and impartiality—is an idealisation that rarely maps onto science as a material practice.

As Willis argues, 'microscopic vision' became one of the most influential modalities of seeing across the nineteenth century. Whilst the microscope roundly failed to deliver the objectivity it promised, it nevertheless shaped a new kind of visual experience that emerged at the intersections of experimental practice, public understandings of science, and imaginative responses to scientific knowledge. This new kind of visual experience and the tensions it embodied were encoded in the many contradictions at work in the Holmes canon, which Jonathan Smith argues 'were absorbed from and participated in the cultural debate about the scientific method'.<sup>75</sup> Smith ultimately conceptualises Holmes's engagement with the cultural imaginary of science in terms of 'complementarity between the *attic* [...] and the *magnifying glass*'. These metaphors, which he borrows from Gian Paolo Caprettini, correspond to Holmes's collection and storage of facts on the one hand and to his deductive powers on the other.

This complementarity is embodied by the kind of diagnostic parlour trick for which Holmes is most famous. Upon first meeting a stranger, Holmes uses his expert knowledge and specialist gaze to glean revealing biographical information. The practice was famously modelled on

<sup>74</sup> London, LSHTM. RC. GB 0809 Ross/39/03. Clipping: 'Existence of the Malaria Parasite' *The Pioneer*, 28 September 1897, n.p.

<sup>75</sup> Jonathan Smith, *Fact and Feeling: Baconian Science and the Nineteenth Century Literary Imagination*, p. 215.

Edinburgh physician Joseph Bell. Bell illustrated his fabled diagnostic method for the *Pall Mall Gazette* with an anecdote in 1893:

A man walked into the room where I was instructing the students and his case seemed to be a very simple one [...] “Of course, gentlemen”, I happened to say, “he has been a soldier in a Highland regiment, and probably a bandsman”. I pointed out the swagger in his walk, suggestive of the piper; while his shortness told me that if he had been a soldier it was probably as a bandsman. In set, he had the whole appearance of one of the highland regiments.<sup>76</sup>

As Bell notes, he was subsequently proven incorrect: ‘the man turned out to be nothing but a shoemaker and said he had never been in the army in his life’. ‘This’, he admitted, ‘was rather a floorer’. However, being ‘absolutely certain’ that he was right, he had the man detained by his strongest clerks and forcibly stripped him. He found a small blue ‘D’ branded on his skin, indicating that the man was a deserter from the army, and thus vindicating his deductions.

Aside from the reprehensible biopolitics of forcibly stripping a man to prove a point (the outcome of which does not appear to contribute to a diagnosis), the encounter is not a good demonstration of the scientific method that Bell advocates. Bell bases his hypothesis on the characteristic ‘swagger’ of the Highland piper, his shortness and build giving away role and regiment. However, this seems like thin evidence. And although the man did in the end have an association with the army, his regiment and role were never explicitly established. It was also not clear how long he was associated with the army or when he deserted. Moreover, Bell was not able to deduce anything else about the man like his current practising profession as a shoemaker. Nevertheless, the anecdote was reprinted in several later articles on Bell as a triumph of his powers of deduction because it played into a popular fantasy about the superior interpretive skills of medical experts.

Similar anecdotes circulated. In an article in *The Bookman* in 1892, Conan Doyle recounted Bell’s treatment of another highland soldier:

“Ah!” he would say to another man, “you are a soldier, a non-commissioned officer, and you have served in Bermuda. Now, how did I know that,

<sup>76</sup>“The Original of “Sherlock Holmes”. An Interview with Dr Joseph Bell’ *Pall Mall Gazette* (Thursday 28 December 1893) 1–2.

gentlemen? He came into the room without taking his hat off, as he would go into an orderly's room. He was a soldier. A slight, authoritative air, combined with his age, shows he was a non-commissioned officer. A slight rash on the forehead tells me he was in Bermuda, and subject to a certain rash known only there".<sup>77</sup>

The story was repeated in Conan Doyle's *Memories and Adventures* but with some of the details altered. This time it is Barbados, not Bermuda, and the rash is now elephantiasis—a condition characterised by extreme swelling of limbs (most often the legs) and thickening of the skin and subcutaneous tissue.

In one of his best cases he said to a civilian patient: "Well, my man, you've served in the army." "Aye, sir." "Not long discharged?" "No, sir." "A Highland regiment?" "Aye, sir." "A non-com. officer?" "Aye, sir." "Stationed at Barbados?" "Aye, sir." "You see, gentlemen," he would explain, "the man was a respectful man but did not remove his hat. They do not in the army, but he would have learned civilian ways had he been long discharged. He has an air of authority and he is obviously Scottish. As to Barbados, his complaint is elephantiasis, which is West Indian and not British". To his audience of Watsons it all seemed very miraculous until it was explained, and then it became simple enough.<sup>78</sup>

Bell—or perhaps Conan Doyle in embellishing the memory—utilises the geographical specificity of tropical illness to discern this unnamed patient's travel history. The characterisation of his fellow students as 'an audience of Watsons' suggests that this particular memory is thoroughly entangled with his creation of Holmes, who, of course, makes a similar diagnosis of Watson when they first meet. However, in this case, Bell's strategy would not have been a particularly effective one for deducing where the soldier was stationed because elephantiasis was not confined to Barbados. Rather it was prevalent in many parts of the empire, including India and Africa. Patrick Manson's elucidation of the mosquito vector for this condition in 1877 famously took place in Amoy, China.

<sup>77</sup> Raymond Blathwayt, 'A Talk with Dr Conan Doyle' *The Bookman* 2.8 (May 1892) 50–51 (p. 50).

<sup>78</sup> Arthur Conan Doyle, *Memories and Adventures* (Boston: Little, Brown, and Company, 1923) pp. 20–21.

Nonetheless, this kind of encounter became a central fiction of the scientific detective. In making Holmes the ‘literary embodiment’ of his memory of Bell, Conan Doyle adopts a mode of diagnostic reasoning that is more about logic, story-telling, and showmanship than it is about science. As Holmes himself remarks in *A Study in Scarlet*: ‘You know a conjurer gets no credit once he has explained his trick; and if I show you too much of my method of working, you will come to the conclusion that I am a very ordinary individual after all’ (34). Other fictional detectives also play on the showmanship of detection by emphasising the superior gaze of the detective over the ordinary medical man. Fictional detective, Dr Thorndyke, acerbically invites his Watson-counterpart, Dr Jervis, to solve the mystery in *Dr Thorndyke Intervenes*: ‘You know what the known facts are, Jervis, and you will see for yourself, if you consider them critically, which are the significant ones’ (168). ‘Go carefully over all the facts in [your] possession’, he urges, ‘and I think [you] will find that some extremely interesting conclusions will emerge’ (165).

Holmes often baits Watson to do the same in an attempt to demonstrate the teachability of the science of detection. However, both Holmes and Thorndyke repeatedly outshine their companions by making those dazzling inductions, deductions, and abductions of which the general reader and poor Drs Watson and Jervis are not capable. This, of course, is the long-standing joke of the genre: the detectives’ companions and we—the readers—are often denied access to critical information: we are given the magnifying glass but not the attic. Thus, we are unknowingly tricked into making that ‘capital mistake’ of theorising with incomplete data.

### (RE)DIAGNOSING THE COLONIAL ENCOUNTER

In ‘The Adventure of the Dying Detective’ (1913), English planter and antagonist Culverton Smith, who has made a study of the mysterious Sumatran disease that forms the basis of the plot, compares his skills with Holmes:

“He is an amateur of crime, as I am of disease. For him the villain, for me the microbe. There are my prisons,” [...] pointing to a row of bottles and jars which stood upon the side table. “Among these gelatine cultivations some of the very worst offenders in the world are now doing time”. (1176)

Here we are invited to consider how knowledge about microbes and about criminals intersect. Thirteen years earlier, in a remarkably similar scene, Ross had held up a glass phial during a lecture given at the Royal Society of Arts and exclaimed:

We now keep diseases labelled in our laboratories; we measure them; we examine them under the microscope [...] we prevent great outbreaks and save the lives of thousands [...] we put plague, cholera, typhoid, diphtheria in bottles so that we can hold them in our hands and look at them. It is my privilege to describe to you tonight one of the most remarkable of these revelations. In this small glass phial I have some of the deadly fevers of the west African marshes.<sup>79</sup>

Both scenes invoke the materiality and confinement of pathogens in celebration of the power of the diagnostic or investigative gaze. Ross forges an association between ‘examining [microbes] under the microscope’ and preventing outbreaks—an elision of ‘seeing’ and ‘doing’ that linguistically characterised popular accounts of microbiology. Conan Doyle indulges in a kindred fantasy in *A Study in Scarlet*. In the first few pages, Holmes develops the ‘Sherlock Holmes test’ for detecting blood, which promises to make ‘hundreds of men now walking the earth [...] pa[y] the penalty of their crimes’ (14). Here the complications of the legal system are sidelined in favour of a reductive model of identification-as-power.

Whilst the test is ostensibly for detecting invisible traces of blood at crime scenes, it discursively intersects with a broader association between the examination of the blood and biopolitical control. In 1898, for example, the *Indian Medical Gazette* had recommended that returning soldiers should be confined to hospitals and kept there ‘as long as the microscope shows them capable of being a source of infection to others’.<sup>80</sup> In this way, the microscope was able—through the act of visualisation—to neutralise the threat posed by soldiers as conduits of tropical dysentery. As an advertisement for Bausch and Lomb Optical Company demonstrates in 1920, the microscope was increasingly conceived as a weapon in the ‘crusade against disease’. ‘Invisible, they were also invincible’, it argued (in reference to microorganisms), ‘but once discovered and identified, science

<sup>79</sup> ‘Malaria and Mosquitoes’ *Journal of Society of Arts* (30 November 1900) 18–26 (p. 18).

<sup>80</sup> ‘Infection of Healthy Areas by Diseased Troops’ *Indian Medical Gazette* 33.12 (1898) p. 463.



devised safeguards against infection, and commenced its patient cataloguing of these, man's ancient enemies'.

Such language supports a slippage between microbe and criminal that furnishes Holmes's bloodhound-like pursuit of the 'scarlet thread of murder' with new currency. Like a literary embodiment of the haemoglobin reagent he invents in a *Study in Scarlet*, Sherlock Holmes is able to detect and make visible what others cannot. As Otis argues, he acts as an 'imperial leukocyte or antibody', sticking close to his suspects until he identifies them—his adventures a dramatisation of an imperial immune response.<sup>81</sup> Ross drew on a similar parallel in his *Memoirs*, insisting that 'phagocytes have often been considered to be the policemen of the blood'. Antibodies are like detectives, he explains; they identify the pathogen in preparation for phagocytes, who, 'instead of arresting the culprit, swallow him on the spot'.<sup>82</sup> As Servitje points out, however, much more is needed for the successful defence of the body or the nation. Holmes and Watson 'find the discrete pathogens and "isolate them", but they ignore the cultural medium that allows them to thrive [...] they allay the symptoms rather than curing the social disease'.<sup>83</sup> This is perhaps a consequence of Conan Doyle's engagement with discourses of microbiology, which privileged identification of pathogens over the more long-term work of public health and sanitation.

Robert Peckham and others have explored the rise of a 'political-bacteriological imaginary' from the mid-nineteenth century, which contributed to the discursive formation of the 'diseased criminal' and, as I explore here, its counterpart: the 'criminal disease'.<sup>84</sup> In 1922, *The Daily News* reported on 'an assassin whose criminal record is more formidable than that of all Scotland Yard's enemies put together' and a murderer who had 'killed thousands of persons in Great Britain last year'.<sup>85</sup> The culprits were called influenza and tuberculosis. Other reporters employed similar rhetorical strategies insisting that 'disease is the most elusive criminal in the world', and dubbing the *Report of the Medical Research Council*

<sup>81</sup> Laura Otis, 'The Empire Bites Back: Sherlock Holmes as an Imperial Immune System' *Studies in 20th Century Literature* 22.1 (1998) 31–60 (p. 33).

<sup>82</sup> Ross, *Memoirs* p. 138.

<sup>83</sup> Servitje, p. 164.

<sup>84</sup> See, for example, Robert Peckham (ed) *Disease and Crime: A History of Social Pathologies and the New Politics of Health* (London: Routledge, 2014).

<sup>85</sup> 'Doctors as Detectives. On the Track of Mankind's Greatest Enemies' *The Daily News*, Thursday 20 April 1922, p. 5.

1920–21 a ‘new book of murderers’, which reconstructs the ‘thrill and romance of medical research’ and was ‘more subtle, more daring, and more courageous’ than the ‘adventures of Sherlock Holmes’.<sup>86</sup>

In popular medical texts microbes and their vectors were also criminalised. Scottish doctor Ronald Campbell Macfie wrote a popular history of medicine in 1907—which he hoped would be ‘of interest to the Profession as well as the general public’—wherein he conceptualised disease as ‘homicide’ carried out by murderous blood-dwelling assassins.<sup>87</sup> ‘This microbe makes murder a fine art’, he wrote of the malaria parasite (145); meanwhile he characterised the parasite of sleeping sickness as ‘a noted criminal’ (144). In Paul de Kruif’s *Microbe Hunters* (1926), he invoked a similar framework, identifying the mosquito as ‘the criminal in the malaria mystery’.<sup>88</sup> He insisted that Italian parasitologist, Giovanni Battista Grassi, who was working on the malaria problem at the same time as Ross, ‘compared himself to a village policeman trying to discover the criminal in a village murder’ (300). De Kruif was likely referring to an article published by Grassi in *Nature* in response to the publication of Ross’s *Memoirs* (1923). In defence of his claims for priority in the mosquito-malaria discovery, Grassi explained how his methodology differed from Ross’s method of trial and error:

I conceived, therefore, and recommended in my paper (1889) the method of limiting the search for intermediate hosts by a preliminary detection of suspected forms. To explain my meaning by a similitude, if in a village of a thousand inhabitants a theft has been committed, it will be very difficult to discover the thief, unless it is first established, by appropriate investigations, which persons fall under suspicion. Once in possession of the list of suspects, it is much easier to find the culprit, as every detective knows full well.<sup>89</sup>

<sup>86</sup> ‘Tracking the Assassins of Everyday Life. Romance of the Medical Sherlock Holmes’ *Yorkshire Evening Post*, Friday 13 January 1922, p. 6; ‘Doctor Detectives. Tracking Disease Criminals. Research Work Romance’ *Cairns Post*, Monday 10 April 1922, p. 7.

<sup>87</sup> Ronald Campbell Macfie, *The Romance of Medicine* (London: Cassell and Company, 1907) p. v.

<sup>88</sup> Paul de Kruif, *Microbe Hunters* (New York: Harcourt, Brace and Company, 1926) p. 278. Ross threatened to sue the publishers of the British edition of *Microbe Hunters* for libel and they subsequently omitted the chapters on Ross and David Bruce from the book. Ross, Aldo Castellani, George Low, and David Nabarro published their objections in a letter to the *British Medical Journal*, see: Aldo Castellani, George C. Low, David Nabarro and Ronald Ross, ‘A Disclaimer’ *British Medical Journal*, 2.3430 (2 October 1926) p. 617.

<sup>89</sup> Giovanni Battista Grassi, ‘The Transmission of Human Malaria’ *Nature* 113.2835 (1 March 1924) 304–07 (p. 304).

Grassi's choice of words might well have in turn been informed by Lt. Col. Walter Gaven King's review of Ross's *Memoirs* published in *Nature* the preceding year. King, then sanitary officer in Madras, insisted that the book would be interesting to a 'wide circle of readers, in that the subjects treated must appeal to the Imperialist, the political economist, the sanitarian of the tropics, and the cosmopolitan science research worker'. In 'the laborious experimental efforts of the author' will be found, he argued, 'a tale [...] of relentless search for a scientific truth, with its recurring disappointments, baffled schemes, renewed hopes, and ultimate victory, which, in entrancing interest, may compete with Sherlock Holmes's efforts at his best'.<sup>90</sup> King's comments and Grassi's 'similitude' demonstrate the widespread currency of the tropes of crime fiction to characterise the relationship between tropical pathologists and tropical disease. In one of his medical notebooks, Ross scribbled 'villain classification' above a list of causative agents of skin disease, invoking a similar juxtaposition between criminals and pathogens, and suggesting that the framework was not only communicative but also hermeneutic.<sup>91</sup>

For a popular audience, the discursive relationships between crime and pathology were dramatically expressed in stories like 'The Adventure of the Blanched Soldier' (1926) where tropical illness narratively replaces crime altogether and Holmes is called upon not to detect so much as to diagnose. The story is set in 1903 just after the conclusion of the Anglo-Boer war and is one of the few narrated by Holmes. One morning he receives a visit from Mr James M. Dodd who entreats him to investigate the strange behaviour of his comrade-in-arms Godfrey Emsworth. He has not heard from Godfrey, his closest pal, for six months and is certain Godfrey's father, Colonel Emsworth, is keeping him in an outbuilding against his will. When Dodd briefly glimpses Godfrey peering through his window, he is no longer the 'manly lad' he once knew. With a 'deadly pale' face and a 'slinking', 'furtive', 'guilty' demeanour, he is a complete contrast to Dodd—'a big, fresh, sunburned, upstanding Briton'.<sup>92</sup> After a few questions, Holmes concludes that Godfrey has contracted leprosy,

<sup>90</sup>W. G. King, 'Memoirs: With a Full Account of the Great Malaria Problem and its Solution' *Nature* 112.2801 (7 July 1923) 3–5 (p. 3).

<sup>91</sup>London, LSHTM. RC. GB 0809 Ross/157. Undated Notebook.

<sup>92</sup>Arthur Conan Doyle, 'The Blanched Soldier' *The Complete Stories of Sherlock Holmes* (1926; Ware: Wordsworth Editions, 2008) pp. 1254–69 (p. 1256).

which he notes ‘is not uncommon in South Africa’.<sup>93</sup> Holmes and Dodd travel to Colonel Emsworth’s house where Godfrey relays his story.

In a wounded state, having been shot in the shoulder and suffering from severe exhaustion, Godfrey had stumbled upon an apparently empty building near Pretoria and collapsed into one of the many unmade beds. His tale is framed by a climatological discourse that associates danger and pathology with the tropical environment. He was ushered into the building by ‘a deadly, sickening sort of cold, very different from a crisp, healthy frost’, and awakens to the ‘African sun’ flooding through the windows. What that sun illuminates is an ‘extraordinary nightmare’ of ‘strange monstrosities’. He had stumbled across a leper hospital and slept in a leper’s bed. The hospital’s medical superintendent remarks: ‘you are in far greater danger here than ever you were on the battlefield’ setting up a medico-military parallel that provides a lexis for conceptualising the dynamic of medical specialism during the story’s dénouement. Godfrey subsequently made his way back to England where he began to develop the symptoms of leprosy. His parents confined him to the outbuilding to prevent him from being removed to a leper hospital and segregated for the rest of his life.

Holmes asks Emsworth’s attendant surgeon, Mr Kent, if he is an authority on such diseases, ‘which are [...] tropical, or semi-tropical in their nature’. The surgeon admits that he is not a specialist, somewhat defensively explaining that he has the ‘ordinary knowledge of the educated medical man’. Holmes’s framing of leprosy as a tropical disease follows Patrick Manson’s inclusion of the complaint in his seminal textbook *Tropical Diseases* published in 1898, in which he described it as ‘an important element in the pathology of nearly all warm countries’.<sup>94</sup> Rod Edmond argues that Manson’s decision to include leprosy, despite it having no specific geographical or climatic associations with the tropics, represents ‘an attempt to put a fence around Europe’ and protect it from the tropical world.<sup>95</sup> Manson admits that lepers exist in Australia, the United States, Canada, and Iceland but insists that his designation is justified—that although not caused by them, leprosy is associated with ‘social conditions’ like ‘uncleanly habits, squalor, dirt, and poverty’, which he locates in the

<sup>93</sup> Arthur Conan Doyle, ‘The Blanched Soldier’, p. 1268.

<sup>94</sup> Patrick Manson, *Tropical Diseases: A Manual of the Diseases of Warm Climates*, p. 417; Cutaneous leishmaniasis or Oriental Sore, a tropical disease caused by a protozoan parasite, was often called ‘white leprosy’ owing to its characteristic lesions.

<sup>95</sup> Rod Edmond, ‘Returning Fears: Tropical Disease and the Metropolis’, p. 184.

colonial environment (418). Conan Doyle thus plays into a common anxiety about the colonial encounter as morally and physically pathogenic. Godfrey's 'slinking' guilt and the undertones of sexual transmission implicit in sharing a bed and in Dodd's 'real love' for his comrade—'the sort of friendship which can only be made when one lives the same life and shares the same joys and sorrows'—further compounds this anxiety.

Holmes, however, does not give up hope so easily. He brings with him a specialist: renowned dermatologist Sir James Saunders, who is able to absolve Godfrey of his fate by re-diagnosing his complaint as 'pseudo-leprosy' or 'itchthyosis'—a curable skin disease that merely resembles the symptoms of leprosy. He speculates that Godfrey's complaint is psychosomatic, owing to the mental trauma that he had been through, illustrating the devastating impact of colonial conflict on the returning British body, but also suggesting that this impact might be neutralised by British medical expertise. Holmes observes that general practitioner, Mr Kent, is in awe of the medical specialist: 'The prospect of an interview with Lord Roberts would not have excited greater wonder and pleasure in a raw subaltern than was now reflected upon the face of Mr. Kent'. His military simile (Lord Roberts was Commander-in-Chief of the Forces and involved in the Indian Rebellion, the Second Anglo-Afghan War, and the Anglo-Boer War) recalls Conan Doyle's martial understanding of white blood cells and creates a hierarchy between the medical specialist and the general practitioner that relies on a collapsing of medical and imperial authority.<sup>96</sup>

Conan Doyle also strategically deploys the hierarchy of medical specialism in 'The Adventure of the Dying Detective' (1913). In this tale, Watson finds Holmes suffering from a tropical illness but is hurt when he is denied the opportunity to examine him:

'You have [no confidence] in me?'

'In your friendship certainly. But facts are facts, Watson, and after all you are only a general practitioner with very limited experience and mediocre qualifications [...] Shall I demonstrate your own ignorance? What do you know pray of Tapanuli fever? What do you know of the black Formosa corruption?'

'I have never heard of either.'

<sup>96</sup>Holmes's 'renowned dermatologist' might have been inspired by Malcolm Morris, who Conan Doyle met on his Berlin trip and recalls fondly in his autobiography *Memories and Adventures*, serialised in *The Strand* two years earlier (October 1923 to July 1924).

‘There are many problems of disease, many strange pathological possibilities, in the East, Watson.’

As Susan Cannon Harris has observed, here is the ‘voice of the specialist declaring that the “general practitioner” is not competent to treat this kind of complaint. The “pathological possibilities” of “the East” require a new kind of medico-criminal knowledge’.<sup>97</sup> Such an opinion is what led to the establishment of the London and Liverpool Schools of Tropical Medicine at the turn of the century. In 1894, an article in the *British Medical Journal* had criticised the ‘general absence in the English medical schools of any provision for teaching or acquiring even a rudimentary knowledge of the important subject of tropical disease’. The article referred to a recent address given at the Indian Medical Congress by Ernest Hart, medical writer and editor of the journal. ‘Considering England’s position as incomparably the greatest tropical as well as colonial power’, it is unacceptable, Hart asserted, that the ‘hundreds of young medical men [sent] to combat disease in tropical countries’ should meet dangerous diseases that they have never heard of and learn by ‘dearly bought experience’ what they ought to have learnt in medical school.<sup>98</sup>

In 1897, Patrick Manson wrote to the *British Medical Journal* arguing similarly that a specialised form of training was needed for colonial doctors owing to the unique knowledge and diagnostic methodologies required when dealing with tropical diseases: ‘a physician may be competent to deal with diseases in England but sadly incompetent to deal with disease in Africa’. In making this argument, he characterised tropical diseases as predominantly caused by parasites and highlighted a need for specific training on how to identify them correctly beneath the microscope. In illustration of his point, he insisted:

Ten chances to one if one asks a student or even a medical practitioner to set about examining a patient for filariae, he will prepare a very fine film of blood, just as would be suitable for the demonstration of bacteria [...] with

<sup>97</sup> Susan Cannon Harris, ‘Pathological Possibilities: Contagion and Empire in Doyle’s Sherlock Holmes Stories’ *Victorian Literature and Culture* 31.2 (2003) 447–66 (p. 447).

<sup>98</sup> ‘Ignorance of Tropical Diseases’ *British Medical Journal* 2.1774 (29 December 1894) 1491–92.

a twelfth of an inch immersion lens and an Abbe condenser [however] filariae should be sought with an inch objective, otherwise they will be missed.<sup>99</sup>

The unique diagnostic methodologies of the specialist are unsubtly paralleled by Holmes who is to the ordinary policeman what Watson is to the tropical specialist.

The real reason Holmes doesn't want Watson to examine him, however, is because he is only pretending to suffer from a tropical illness in order to entrap antagonist Culverton Smith, an English plantation owner who murdered his nephew with a tropical pathogen. By having Holmes feign illness, Conan Doyle places his tale in the context of debates about tropical invalidism, which Upamanyu Pablo Mukherjee characterises as part of a pathology of 'imperial intimacy'.<sup>100</sup> Identifying a tension between Holmes as a 'defender of the British world order' and Holmes as a 'drug-riddled, neurotic' malingerer, Mukherjee argues that stories like 'Dying Detective'

dramatise a particular set of anxieties about the decay, contamination, or dilution of 'Englishness' in the era of the British world empire, and that these anxieties are often staged through the language of tropical infection, disease, and detection. (80)

In Conan Doyle's description of Smith, Mukherjee reads the 'vivid signs of tropical toxicity' that were often interpreted in the bodies of English returnees (84). Smith is 'small and frail, twisted in the shoulders and back' with 'a great yellow face' that suggests both the jaundice of chronic ill health and a racialised cultural contamination, emphasised by the Orientalist overtones of the 'small velvet smoking cap perched coquettishly' on his 'high bald head'. Smith is also connected to tropical toxicity through his choice of murder weapon. As Cannon Harris argues, criminal poisoning was popularly perceived to be 'a crime peculiar to the tropics' and thus cases of homicidal poisoning in London suggested to many

<sup>99</sup> Patrick Manson, 'The Need for Special Training in Tropical Disease' *British Medical Journal* 2.2023 (7 October 1899) 922–26.

<sup>100</sup> Upamanyu Pablo Mukherjee, "'Out-of-the-Way Asiatic Disease": Contagion, Malingering and Sherlock's England' in *Literature of an Independent England: Revisions of England, Englishness, and English Literature* ed. by Michael Gardiner and Claire Westall (Basingstoke: Palgrave Macmillan, 2013) pp. 77–104 (p. 79).

readers that ‘Britain’s imperial expansion had allowed this vice to spread from the colonial dominions to the heart of the metropolis’.<sup>101</sup>

As she observes, Conan Doyle frequently deploys the metaphor of colonial contagion in ways that reflect ‘a contemporary rhetorical trend that lumped drugs, organic toxins, and infectious agents together as foreign-born biocontaminants returning from the colonies to afflict the English’ (449). The poisoned dart in *The Sign of Four* (1890), the Indian snake in ‘The Adventure of the Speckled Band’ (1894), the South American poisoned arrows in *A Study in Scarlet* (1887) and ‘The Adventure of the Sussex Vampire’ (1924), and the pathogen-loaded spring box in ‘The Adventure of the Dying Detective’ (1913) represent undifferentiated anxieties about the relationship between foreign pathogens, tropical nature, and criminality. These stories play into a recurring plot in which ‘exotic toxins’ reveal the pathological possibilities of Britain’s imperial project; as Holmes tells us in ‘The Speckled Band’:

The idea of a snake instantly occurred to me, and when I coupled it with my knowledge that the doctor was furnished with a supply of creatures from India, I felt that I was probably on the right track. The idea of using a form of poison which could not possibly be discovered by any chemical test was just such a one as would occur to a clever and ruthless man who had had an Eastern training.<sup>102</sup>

Here the flora and fauna of empire provide natural resources for the criminal to exploit. Through narrative manoeuvres like these, readers are reminded that ‘like the Indian snake that sinks its fangs into Dr Roylott, the Empire sometimes bites back’ (452).

A ruthless man with an ‘Eastern training’ also describes the antagonist of ‘Dying Detective’ who murders his nephew and attempts the same with Holmes by loading a spring with a tropical pathogen concealed within a box. The spring is ‘like a viper’s tooth’, recalling both the swamp adder of ‘The Speckled Band’ and the microbial cobras of Conan Doyle’s popular medical writing. The puncture of the body and subsequent injection with poison enacted by the coiled spring, swamp adder’s fangs, and the poisoned arrows and darts, all bring to mind another archetypal puncturing in tropical space: the bite of the mosquito—omnipresent in tropical travel

<sup>101</sup> Susan Cannon Harris, p. 449.

<sup>102</sup> Arthur Conan Doyle, ‘The Adventure of the Speckled Band’ *Strand Magazine* (February 1892) 142–57 (p. 157).



and, by 1898, decisively associated with tropical illness. The doubleness of these leitmotifs—of criminality and disease—encodes a latent pathogenicity into the tropical encounter that is also reflected in Conan Doyle's other fictional characterisations of empire.

In 'The Story of the Brown Hand' published in the *Strand Magazine* in 1899, the narrator, English neurologist Dr Hardacre, remarks that 'bloated organs, gaping cysts, distorted bones, [and] odious parasites' are 'a singular exhibition of the products of India'.<sup>103</sup> He has come to help his uncle, latterly a famous surgeon in charge of an 'Oriental Hospital', but now a 'broken man' with 'very pronounced nervous symptoms' from forty years residence in India. His uncle, we discover, is being haunted by the ghost of a one-handed Indian patient who nightly appears to search among the 'odious line of glass jars with their relics of disease and suffering' for his severed limb. Conan Doyle conforms to the hunting aesthetic that I examined in the previous chapter when he describes Hardacre closing the door of the laboratory with 'the pleasurable thrill of anticipation with which the sportsman takes his position beside the haunt of his game' (503).

A similar equivalence between sportsmanship and science is made in Conan Doyle's *The Voice of Science*, published in the *Strand* in 1891. In this short tale, we learn of Mrs Esdaile, the honorary secretary of the ladies' branch of the local Eclectic Society, who holds regular scientific *conversazioni* in her home: 'On her pleasant lawns in the summer, and round her drawing-room fire in the winter, there was much high talk of microbes and leucocytes and sterilised bacteria'. Her house is filled with exotic specimens and trophies, from Galapagos turtles to bits of Triassic rock, to a stuffed ornithorhynchus, and—notably—'the bacillus of Koch cultivated on gelatine'.<sup>104</sup> The collector's gaze emphasises the materiality of these 'exotic' artefacts, recalling Smith's 'rows of bottles and jars' and implying that the threat posed by the colonies might be mastered by the practices of taxonomy. Nevertheless, stories like 'Dying Detective' dramatically express the permeable boundaries of classification by relying on the collision of tropical mystery and medical authority embodied in the

<sup>103</sup> Arthur Conan Doyle, 'The Story of the Brown Hand' *Strand Magazine* (May 1899) 499–508 (p. 502).

<sup>104</sup> Arthur Conan Doyle, 'The Voice of Science' *Strand Magazine* (March 1891) 312–17 (p. 313).

narrative possibilities of tropical medicine, in the ‘strange pathological possibilities of the East’.

In ‘Dying Detective’, the plot hinges on the obscurity of Holmes’s unnamed tropical illness, described as ‘an out-of-the-way Asiatic disease’ and ‘a coolie disease from Sumatra’. The fictional ‘Tapanuli fever’ and ‘black Formosa corruption’ serve as foils that expose the lacunae in Watson’s medical knowledge and keep him and the reader in suspense. However, this same ambiguity also suggests—after the tale’s dénouement—that the mystery of ‘the East’ provides opportunities for deceit which place Holmes in uncomfortable proximity to the criminals he is charged to apprehend. Holmes’s malingering aligns him not only with tropical invalids but also with those who pretended to suffer from ill health for insurance purposes. As Mukherjee observes, the year that ‘Dying Detective’ was published also saw the publication of John Collie’s *Malingering and Feigned Sickness*, a book that sought to expose a perceived rise in fraudulent compensation claims, especially among the English working classes. It tapped into a ‘national panic about the decay of the moral and physical abilities of English working-class men that went at least as far back as the Boer War’ (86). Malingering was also, Mukherjee argues, a common accusation levelled against ‘indigenous labourers everywhere in empire’, thus Holmes’s behaviour invokes triply the faking of illness by some English workers, the genuine tropical invalidism of some returnees, and the racialised ‘laziness’ attributed to colonial labourers. For Mukherjee, ‘Dying Detective’

confirms a pathological proximity between the coolies whose ghosts flit at the margins of repressed imperial consciousness, the detective who is responsible for the defence of the imperial status quo, and the workers whose alleged shirking was seen as a symptom of an Englishness infected with the consequences of global overreach. (87–88)

Notwithstanding Mukherjee’s persuasive analysis, Collie’s advice that doctors should develop a familiarity with the methods of the malingerer opens up yet another interpretive avenue. By carrying out his act with ‘the thoroughness of a true artist’, including starving himself and applying extensive makeup, Holmes is able to entrap Smith and remove him from his affluent position (embodied by his property with its ‘smug respectability’ and Kensington address). Therefore, his malingering is also a productive

form of ‘work’ that protects the English middle classes, bolstering the political authority of practitioners of tropical medicine.

### CRIMINAL NATURES

Upon examining some blood at the scene of a murder, fictional scientist Paul Gilchrist utters the following words:

I had studied Eastern diseases with care and was well acquainted with the peculiar nature of this strange parasite. Was it possible that I held in my hand the means of clearing my friend?<sup>105</sup>

His friend Harry Lidderdale has been framed for the murder of his old flame, Alma Colthurst, whose death had been prophesied the night before by a Brahmin chiromancer. Being the kind of man of science who carries his laboratory with him wherever he goes—‘I suddenly remembered that I had some microscopical slides and a cover glass in my pocket’—Gilchrist is able to investigate on behalf of his friend and obtains a sample of the killer’s blood left on a broken wine glass. What he sees in the sample of blood (the nematode parasite *Filaria perstans*) leads to the absolution of his friend by the diagnostic incrimination of another. Gilchrist’s training in ‘Eastern diseases’ is crucial in helping him solve the crime in a story that seems almost satirical in its investment in both sensationalism and science.

In just 13 pages, this story gives us a spurned lover, a doomed romance, a Brahmin prophesy, a doppelgänger, a murder investigation, diamonds in South Africa, and a rare and deadly tropical disease. The story, written by children’s writer Elizabeth Thomasina Meade Smith and Crystal Palace GP Dr Edgar Beaumont under the pseudonyms L. T. Meade and Clifford Halifax M.D., was published in the *Strand Magazine* in 1896—three years after Holmes had gone over the edge of the Reichenbach falls in ‘The Final Problem’. The tale was part of a series called ‘The Adventures of a Man of Science’ and, like ‘Dying Detective’, the plot is built around the obscurity and specificity of a tropical pathogen. Just as Victor Savage’s ‘surprising’ contraction of ‘an out-of-the-way Asiatic disease in the heart of London’ arouses Holmes’s suspicions, the presence in a blood sample

<sup>105</sup> L. T. Meade and Clifford Halifax, ‘The Adventures of a Man of Science, IV – The Sleeping Sickness’ *Strand Magazine* 12 (1896) 401–14 (p. 411).

of nematode worms specific to the west coast of Africa alerts Gilchrist to the killer's identity. In the scene with which I opened, Gilchrist discovers that the killer's blood is tainted with *filaria* parasites—a fact which exposes his travel history in a literalisation of the aphorism: you can take the man out of [the Tropics], but not [the Tropics] out of the man:

The blood [...] contained a large quantity of the remarkable parasite *filaria perstans*. As this parasite has never been contracted anywhere except on the West Coast of Africa, this fact proved at a glance that it was not the blood of Mrs. Colhurst. It must therefore follow, as a natural consequence, that it could only come from a person who had been in West Africa. (411)

Gilchrist subsequently, and fortuitously, hears of a patient with sleeping sickness in London (who turns out to be the killer) when visiting a 'Harley Street doctor who was celebrated for his treatment of Eastern disease' (411). The specialist, a 'Dr. Materick', is perhaps a loosely veiled reference to Dr Patrick Manson, who championed a connection between *filaria perstans* and sleeping sickness in the 1890s.<sup>106</sup>

Manson, now widely considered to be a founder of modern tropical medicine, had famously uncovered the mosquito as a vector for filarial parasites in 1877. In 1889, after spending several years in medical practice in Hong Kong, he returned to London and became a lecturer in tropical diseases at St George's Hospital. Conan Doyle also likely meant to reference Manson when he had Watson remark in 'Dying Detective' that 'Dr Ainstree, the greatest living authority upon tropical disease is now in London'. Manson championed an environmentalist view of tropical diseases, which he believed were mostly caused by animal parasites that relied on the specific flora and fauna of warm climates. In his seminal textbook *Tropical Diseases*, he argued that tropical illness was geographically restricted because, unlike bacterial infections, for a tropical disease to become endemic it required 'the double condition of the introduction of not only the germ itself but also of the intermediary'.<sup>107</sup> Thus, in 'Dying Detective', Culverton Smith must contrive a novel transmission medium (the spring box) in order to affect his plan, whilst in Meade and Halifax's

<sup>106</sup> Manson discovered *F. perstans* in the blood of a West African patient suffering from sleeping sickness in 1890 and proposed a connection, which was later disproven by the Royal Society Sleeping Sickness Commission of 1902.

<sup>107</sup> Patrick Manson, *Tropical Diseases. A Manual of the Diseases of Warm Climates* 4th edn (London: Cassell and Company, 1912) p. xiii.

story, the very specific geographical distribution of sleeping sickness is mobilised to prove the killer's recent travel history.

Although the British killer's motive for murder is garden-variety jealousy, he admits that immediately after killing Alma—'in a fit of fury'—he ran to fortify himself from the decanter, as he had 'been queer for days and weeks', and was subsequently seized by 'those awful tremors' (414). Such an admission complicates a straightforward reading of domestic criminality by suggesting that his infection with tropical illness might have contributed to his behaviour. Colville's 'awful tremors' might here allude to the 'epileptiform seizures' of late-stage sleeping sickness, which Manson considered to be 'by no means rarely' accompanied by 'maniacal outbursts' that can include 'delusions of all sorts, hallucinations, homicidal or suicidal impulses'.<sup>108</sup> By obliquely connecting this tropical disease with a crime of passion, Meade and Halifax played into a wider narrative pattern that dramatised sleeping sickness as a form of tropical violence—a concept I explore further in the following chapter.

Richard Austin Freeman also drew on the narrative potential of sleeping sickness in his 1912 novel *The Mystery of 31 New Inn*. The case, ostensibly about a legal problem concerning the details and wording of a will, hinges on a medical diagnosis that reveals an elaborate ruse designed to disguise murder as death from chronic tropical illness. Briefly, Dr Christopher Jervis, a London doctor working late one night as a locum, is called to visit the house of a German man named Mr Weiss. Weiss's friend, 'Mr Graves', is deathly ill and will only permit to be examined by a doctor on the agreement that the doctor does not know who he is, where he lives, or anything about him. This is afforded by a carriage with blacked out windows and an erratic and looping trajectory taken by the coachman. Mr Weiss describes Mr Graves's condition as alternating between a state of stupor and an almost normal health condition. When Jervis first lays eyes on Graves, he immediately perceives that his 'dreamy, somnolent, and lethargic state' is 'as if under the influence of some narcotic', and quickly comes to a diagnosis of opium or morphine poisoning.<sup>109</sup> Weiss is unsatisfied with this answer however and after trying to coax Jervis in a different

<sup>108</sup> Patrick Manson, 'A Clinical Lecture on the Sleeping Sickness. Delivered at Charing Cross Hospital, October 1898' *Journal of Tropical Medicine* (December 1898), 121–28 (p. 125). Also in *British Medical Journal* (3 December 1898) 1672–77.

<sup>109</sup> R. Austin Freeman, *The Mystery of 31 New Inn* (loc. 12740).

direction eventually asks him directly if he has any experience with sleeping sickness. Jervis notes that at the time of the case

practically nothing was known about the disease. It was a mere pathological curiosity, almost unheard of except by a few practitioners in remote parts of Africa, and hardly referred to in the textbooks. (loc. 12819)

Weiss does the diagnostic work for Jervis by informing him that Graves has recently been in West Africa ‘where this disease occurs’ and that it is ‘invariably fatal, sooner or later’. Weiss has in fact (as Jervis correctly surmised) been dosing Graves with morphine. He exploits the obscurity of sleeping sickness to try to trick Jervis into making an erroneous diagnosis; however, the plan backfires because the symptoms seem contradictory and sleeping sickness seems too improbable a solution. As his friend detective Thorndyke asserts: ‘the probabilities are against sleeping sickness [...] common sense of the matter is therefore that we adopt morphine poisoning as our working diagnosis [...] For medical purposes you adopted the more probable view and dismissed the less probable’ (35).

The apparent ‘probability’ of the poisoning diagnosis relies on the presence of one symptom: contraction of the pupils, which is not associated with sleeping sickness, but is associated with morphine poisoning. Jervis asks his friend ‘medical jurispractitioner’ Dr John Thorndyke, to consult on the case owing to his ability to ‘view things from a radically different standpoint and [bring] a new and totally different kind of knowledge into the case’—a knowledge, which lawyer Mr Marchmont describes as ‘a positive encyclopaedia of [the] out-of-the-way and unexpected’ kind. This admission offers a striking parallel to Stamford’s description of Holmes in *A Study in Scarlet*: ‘he has amassed a lot of out-of-the-way knowledge which would astonish his professors’.<sup>110</sup> This description is repeated in a later story when Holmes himself admits: ‘I hold a vast store of out-of-the-way knowledge’.<sup>111</sup> Such out-of-the-way knowledge is invaluable when appraising an out-of-the-way disease like sleeping sickness.

Freeman, like Conan Doyle, was a trained medical practitioner who entered the colonial services in 1887 and spent several years as an assistant surgeon in and around West Africa. He was invalided home with

<sup>110</sup> Doyle, ‘A Study in Scarlet’, p. 10.

<sup>111</sup> Arthur Conan Doyle, ‘The Lion’s Mane’ *The Complete Stories of Sherlock Holmes* (1926; Ware: Wordsworth Editions, 2008) pp. 1360–73 (p. 1368).

blackwater fever (a complication of malaria) in 1891 and after a brief stint in London medical practice began to write detective fiction. Like his contemporary, he was attracted by the imaginative continuities between diagnosis and detection. In 1898, he published *Travels and Life in Ashanti and Jaman*, which contained a chapter on malaria advised upon by Patrick Manson, a detail that suggests an intimate familiarity with the work of Manson, Ross, and parasitology research more generally. Freeman was (perhaps significantly given his story's German antagonist) the Anglo-German boundary commissioner of the Gold Coast and in the introduction places himself in the position of the 'scientific traveller' or 'anthropologist'.<sup>112</sup>

It was during his travels in Ashanti and Jaman that he likely encountered the disease that inspired part of the plot for *The Mystery of 31 New Inn*. Freeman first tried it out in short story form as '31 New Inn' in 1905—the first Thorndyke story he wrote—and adapted it into a full novel six years later. In the novel, Thorndyke teaches Jervis a tracking technique to map his blind journey, using a modified wooden board with a compass attached. The 'experiment' is one, as Freeman proudly tells us in the preface to the novel, that he devised and carried out himself during his time in West Africa. The track chart and route map produced from the process were used to map Ashanti and the surrounding region and were subsequently published by the Royal Geographical Society, compiled into a map by the intelligence branch of the War Office, and accompanied his *Travels in Ashanti and Jaman*. Freeman thus mobilises a technique for mapping the far interior of Africa to cartographically illuminate the English capital in his fiction, an experimentation in form that imaginatively explores the limits of the scientific method.

The legacies of the entanglements between the tropics, medicine, and crime fiction analysed in this chapter are visible in popular conceptions of diagnostic medicine today, in which the patient is frequently decentred and diagnosis is framed as the solution to a pathological enigma—as one practitioner characterises it: 'diagnosing an illness is often like trying to put together a complicated jigsaw puzzle'.<sup>113</sup> Such approaches posit a 'one

<sup>112</sup>R. Austin Freeman, *Travels and Life in Ashanti and Jaman* (Westminster: Archibald Constable and Co., 1898) p. xvii.

<sup>113</sup>R. E. Peschel and E. Peschel, 'What Physicians Have in Common with Sherlock Holmes: A Discussion Paper' *Journal of the Royal Society of Medicine* 82 (January 1989) 33–36 (p. 33).

illness, one solution' model that discourages a multi-systems approach to health and encourages unrealistic expectations of standard medical practice. In addition to the dizzying array of cultural artefacts and franchises that owe their genealogy to Sherlock Holmes, the 'great detective' is still routinely invoked as a model for evidence-based medicine. His aphorisms inform models of diagnostic reasoning, and in one article, he is even used as a tool with which to explore 'the cognitive processes and structures underlying expert behaviour'.<sup>114</sup> In order to fully appreciate the enduring appeal of Holmes—and the doctor-detective dyad more broadly—we must first appreciate the shifting medical and imperial contexts that produced him. Holmes holds cultural currency not simply as an idealisation of science, or as a reductive metaphor for domestic authority, but as a rich and contradictory archetype that articulates our perennial desire for a 'complete form of knowledge'.

<sup>114</sup> André Didierjean and Fernand Gobet, 'Sherlock Holmes – an Expert's View of Expertise' *British Journal of Psychology* 99.1 (February 2008) 109–25.

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## Imperial Aetiologies: Violence, Sleeping Sickness, and the Colonial Encounter

There are some places in the world where a curse seems to brood in the atmosphere. Msala was one of these. Perhaps these places are accursed by the deeds that have been done there.<sup>1</sup>

This passage from Henry Seton Merriman's *With Edged Tools* (1894) opens a pivotal chapter in the novel. A few pages later antagonist Victor Durnovo will die, melodramatically, of sleeping sickness—the drama heightened by his recently mutilated face. As his companions shake his lifeless body in an attempt to rouse him from a sleep ‘that knows no earthly waking’, we are confronted with a memorably violent image. Durnovo’s ‘mutilated inhuman head’ rolls on his shoulders, round lidless balls staring. The sleeping sickness is both retribution for his crime of keeping slaves under the guise of fair employment and a Divine concession to ‘soften’ the punishment dealt out by those slaves when they finally revolt. Durnovo’s contraction of sleeping sickness is foreshadowed by his own suggestion early in the tale that should he go back on his words, God should strike him dead. Later, as he flees across the country spreading the illness in his wake, the sleeping sickness becomes a ‘grim legacy to his torturers’ (382).

<sup>1</sup>Henry Seton Merriman, *With Edged Tools* (1894; London: Smith, Elder, & Co., 1909) p. 373.

Enmeshed within a lexis of curses, bad deeds, and retribution, sleeping sickness is difficult to separate from the violence that surrounds it. Indeed, violence and disease become the dominant lenses through which readers of *With Edged Tools* experience the colonial world. Merriman introduces his adventurers to outbreaks of malaria, smallpox, and sleeping sickness on their journey, and employs a metaphor of ‘irritability’ that stands in for both Africa’s tropical diseases and its imagined moral shortcomings. In a narrative entanglement between climatism, germ theory, and racialised understandings of emotion, Merriman casts tropical disease and violent behaviour as issuing from the landscape at large:

[T]he irritability of Africa [...] no one knows what it is, but it is there, and sometimes it is responsible for murder [...] inhaled into the white man’s lungs with the air of equatorial Africa [...] there are moral microbes in the atmosphere. (51–52)

Here the vocabularies of germ theory and of miasmatism provide a rhetorical multivalence that enables Merriman to map the medical and moral dangers of inhabiting African space in close proximity.

Alan Bewell has argued that during the eighteenth and nineteenth centuries, ‘medicine shaped how space was perceived’, medical cartography offering writers ‘a vocabulary [...] for conceiving colonial spaces as spaces that were sick and needed to be cured’.<sup>2</sup> This stems, as Bewell is careful to note, from an epidemiological reality—from what he refers to as the ‘world-making and world-shattering traffic in pathogens’ that colonial expansion entailed (9). The characterisation of parts of the globe as morbidly dangerous to Europeans was therefore much more than ‘a metaphoric projection of European insecurities or biases’ (10). The inclusion of parasitic diseases like malaria and sleeping sickness in imperial fiction reflects a very real part of the colonial encounter. Nevertheless, the nature of these inclusions also reflects ideological assumptions about the epidemiological, political, and social relationships between Britain and the rest of the globe. In this chapter, I explore how writers’ engagement with the relationship between tropical disease and space created rhetorical opportunities for shaping not only the geographical and etiological but also the sociocultural topographies of empire.

<sup>2</sup> Alan Bewell, *Romanticism and Colonial Disease* (Baltimore: Johns Hopkins University Press, 1992) p. 18.

Merriman's irritability metaphor in *With Edged Tools* is one that pathologises the colonial encounter and collapses the perceived medical and moral problems of West Africa into one. It joins a string of verbal depictions that painted Africa as part of an archetypal tropics that was productive of violence, immorality, and illness in equal measure. Such depictions are recognisable in a range of texts from Patrick Manson's 1898 textbook *Tropical Diseases*, which claimed 'backwards social and insanitary conditions' are 'more or less an indirect outcome of tropical climate', to British explorer Edward Glave's travel narrative in which he describes the colonial encounter as a struggle against 'jabbering natives', 'fierce savages', 'mosquitoes', and 'deadly fever'.<sup>3</sup> As scholars such as Warwick Anderson, David Arnold, Anna Crozier, Charlotte Rogers, Nancy Leys Stepan, and Mary Louise Pratt have argued, the colonies—especially those possessions characterised as 'tropical'—occupied a prime position in the imperial imagination as spaces of social and sanitary inferiority onto which Europeans could project their 'fears, fantasies, and assumptions about non-Western cultures'.<sup>4</sup> 'Tropicality' became an ideologue that signified not just geography, but 'radical otherness to the temperate world'.<sup>5</sup>

This 'otherness' was increasingly medicalised as the nineteenth century drew to a close, bringing the administration and management of the colonies within the purview and authority of tropical medicine. Writing about American colonialism, Anderson lays out the 'civic vision' (though we might also say civic 'mission') of medicine and science in colonial settings. He argues that since defeating Spanish powers in the Philippines 'American colonial authorities had eagerly taken up the burden of cleansing their newly acquired part of the Orient, attempting to purify not only its public spaces, water, and food, but also the bodies and conduct of its inhabitants'.<sup>6</sup> More generally, tropical medicine was mobilised to 'diagnose' undesirable ideologies and behaviours; Crozier has argued, for example,

<sup>3</sup> Patrick Manson, *Tropical Diseases: A Manual of the Diseases of Warm Climates* (London: Cassell and Company, 1898) p. xvi; E. J. Glave, *Six Years of Adventure in Congo-Land* (London: Sampson Low, Marston and Company, 1893) p. 39.

<sup>4</sup> Charlotte Rogers, *Jungle Fever: Exploring Madness and Medicine in Twentieth-Century Tropical Narratives* (Nashville: Vanderbilt University Press, 2012) p. 8.

<sup>5</sup> Nancy Leys Stepan, *Picturing Tropical Nature* (London: Reaktion Books, 2012) p. 17.

<sup>6</sup> Warwick Anderson, *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines* (Durham: Duke University Press, 2006) p. 1.

that the sociocultural habits of native Africans were routinely associated with disease in European medical writing.<sup>7</sup>

In his 2017 book *Malarial Subjects*, Rohan Deb Roy ascribes a complex clinical, ideological, and instrumental multiplicity to depictions of malaria—an illness that dominated nineteenth-century tropical narratives:

Malaria became entangled with the diagnoses of an exhaustive range of everyday and spectacular illnesses; the management of individual and collective bodies; the prejudices of smell, colour, and class; efforts to make sense of lands, landscapes and objects; and debates about agricultural improvement, land revenue, as well as urban and sanitary governance.<sup>8</sup>

Anne H. Kelly and Uli Beisel likewise write of multiple ‘malarias’, recognising the divergent biological, behavioural, and sociopolitical understandings and experiences of the disease in the past. ‘By referencing “malarias” at times in the plural’, they assert, ‘we seek to unpack the multiple concepts of disease, their attendant differences in intervention and the various biomedical realities that are often elided by the single word “malaria”’.<sup>9</sup> Meanwhile, Jessica Howell has argued that malaria wields narrative power in nineteenth-century fiction as ‘an iconic disease of empire’ owing in part to its rhetorical flexibility.<sup>10</sup> Here I broaden the focus to include another iconic disease of empire, sleeping sickness, and explore how one sociopolitical understanding of this disease—as a form of tropical violence—emerged at the intersections of literature and medicine.

At the turn of the century, entanglements between anthropological, literary, and medical observations were difficult to tease apart because they operated within the echo chamber of the medico-literary imagination. For example, Glave encoded an association between Africa, violence, and disease in his travel narrative when describing a combat between ‘two young warriors’.<sup>11</sup> The fighters ‘presented a ghastly appearance’, their bodies

<sup>7</sup> Anna Crozier, ‘Sensationalising Africa: British Medical Impressions of Sub-Saharan Africa, 1890–1939’ *The Journal of Imperial and Commonwealth History* 35.3 (September 2007) 393–415.

<sup>8</sup> Rohan Deb Roy, *Malarial Subjects: Empire, Medicine, and Nonhumans in British India, 1820–1909* (Cambridge: Cambridge University Press, 2017) p. 5.

<sup>9</sup> Anne H. Kelly and Uli Beisel, ‘Neglected Malarias: the Frontlines and Back Alleys of Global Health’ *BioSocieties*, 6.1 (2011) 71–87 (footnote 4, p. 73).

<sup>10</sup> Jessica Howell, *Malaria and Victorian Fictions of Empire* (Cambridge: Cambridge University Press, 2019) p. 1.

<sup>11</sup> Glave, *Six Years of Adventure in Congo-Land*, p. 140.

‘flooded with crimson’ and the ground beneath their feet ‘saturated with their blood’. The fight, he informed his readers, was started over a phrase: *owa na ntolo*, which means ‘may you die of sleeping sickness’. So dreaded is this disease that

it has been embodied into one of [Africa’s] bitterest curses, and no man expresses his hatred of another in this insulting form [...] without first grasping his knife in readiness, as this utterance is a direct challenge to fight, and no one but a coward will fail to accept it. (141)

The story was repeated in a clinical account of sleeping sickness written by Patrick Manson for the multi-volume textbook *A System of Medicine* in 1897 and retained in the entry written by G. C. Low in the 1907 edition: ‘The bitterest malediction one negro can pronounce on another is *owa na ntolo*—may you die of sleeping sickness’.<sup>12</sup> The sentiment was also repeated in two ethnographic texts on the Congo tribes published by Herbert Ward in 1891 and 1910—‘the direst curse a native can call down on an adversary is to express a wish that he may be “waka ntolo” (struck with sleep)’; ‘the direst and most effective curse a Babangi native can pronounce is “waka ntolo” (may you die of sleep)’.<sup>13</sup> As we have seen, the disease was similarly characterised as a violent curse in imperial romance fiction—perhaps most memorably by Merriman in the scene with which I opened—and, coming full circle, Merriman’s novelistic encounter with sleeping sickness was itself widely cited as a cultural referent in medical articles as well as international journalism regarding outbreaks of the disease in the British protectorate of Uganda. The use of such a sensational literary moment to facilitate the public understanding of problems facing

<sup>12</sup> Patrick Manson, ‘Negro Lethargy, or Sleeping Sickness’ in *A System of Medicine by Many Writers* vol II. ed. by Thomas Clifford Allbutt (London: Macmillan and Co., 1897) p. 480; G. C. Low, ‘Sleeping Sickness’ *A System of Medicine, by Many Writers* Vol II. Part II. ed. by Thomas Clifford Allbutt and Humphrey Davy Rolleston (London: Macmillan and Co., 1907) p. 210. The entry by Low was specifically referenced in John Masefield’s sleeping sickness novel *Multitude and Solitude* (1909).

<sup>13</sup> Herbert Ward was an officer in Sanford Exploring Company alongside Joseph Conrad and worked in the Upper and Lower Congo region before joining H. M. Stanley’s Emin Pasha Relief expedition in 1887. He went on to publish *Five Years with the Congo Cannibals* (1891), *My Life with Stanley’s Rear Guard* (1891), and *A Voice from the Congo* (1910). Ward, *Five Years with the Congo Cannibals* (London: Chatto & Windus, 1891) p. 51; Ward, *A Voice from the Congo; Comprising Stories, Anecdotes, and Descriptive Notes* (London: William Heinemann, 1910) p. 254.

imperial administration reveals how conceptions of empire were augmented by a multi-vocal medicalisation of the colonial encounter. Moreover, depictions of sleeping sickness as a racially specific and violent curse perpetuated ideas about the distinctness of African experiences of illness, culminating in diagnoses like ‘negro lethargy’ and ‘white-man lethargy’ as I examine towards the end of the chapter.

### STRANGER THAN FICTION

When *The Bookman* reviewed John Masefield’s imperial romance novel, *Multitude and Solitude* (1909), the anonymous reviewer dubbed it ‘an all-absorbing study of that most interesting tropical disease, Sleeping Sickness’.<sup>14</sup> The novel, which follows failing-playwright-turned-amateur-explorer, Roger, as he travels to Africa to find a cure for sleeping sickness, is full of technical language and—as both this and other reviewers noted—has a ‘striking image of *glossina palpalis*’ (a tsetse fly) on its cover. Thus, it shared aesthetic convention with textbooks of tropical medicine. Such paratextual elements contributed to the ambiguous epistemic status of the novel, which included detailed information about the aetiology and prophylaxis of sleeping sickness and dedicated considerable space to descriptions of microbes: ‘[trypanosomes are] like little wriggly flattened membranes. Some of them have tails. They multiply by longitudinal division’, as well as to the aetiology and prophylaxis of tropical illness.<sup>15</sup> Masefield’s more-than-literary interest in sleeping sickness is evident in his staging of contemporaneous medical debates through stilted character dialogue:

“I believe that the cure (if there is one) will be got by injecting the patient with dead trypanosomes, or very very weak ones. I’m going to make a special artificial culture of trypanosomes in culture tubes. I shall then weaken the germs with atoxyl.”

“And I,” rejoined Roger, “believe that your methods will be useless. I believe that the cure (if there is one) will be obtained from naturally or artificially immunised animals”. (231)

<sup>14</sup> ‘Multitude and Solitude by John Masefield’ *The Bookman* 37.217 (October 1909) p. 58.

<sup>15</sup> Masefield, *Multitude and Solitude*, p. 142.

The novel also nods to the racial politics that underpinned medical discussions of the disease when Lionel drily observes ‘sleeping sickness must be getting worse. It attacks Europeans sometimes. Mackenzie said that in his time it never did’ (120).

Such detours are probably what led Miss G. C. Westbrook to scathingly characterise the second half of the book as ‘a rather monstrous dissertation concerning sleeping sickness’.<sup>16</sup> With a similar tone a reviewer for *The Sketch* predicted that ‘the seriousness of *Multitude and Solitude*’ would ‘prevent it from attaining any high degree of popularity’ especially ‘when it is written with the accuracy that Mr John Masefield exhibits’. Nevertheless, they asserted that the novel is a ‘better sermon than you are likely to hear in a hundred churches’.<sup>17</sup> This was a novel with a message, and many reviewers praised its attention to ‘really fundamental things—art, love, religion, science, work’.<sup>18</sup> Advertisements for the book seemed to agree with Masefield’s protagonist that ‘science is the art of the twentieth century’ (138), insisting:

In ‘*Multitude and Solitude*’, Mr Masefield endeavours to treat the problem that presents itself to the artistic temperament in a generation whose inspiration is scientific rather than artistic. His first novel ‘*Captain Margaret*’ was romantic and of a past age; ‘*Multitude and Solitude*’ is actual and of the present day.<sup>19</sup>

In *Multitude and Solitude*, critics agreed, Masefield had ‘left the romantic period in which he placed *Captain Margaret* and has given us a study of to-day’.<sup>20</sup>

In 1929, the novel was invoked by a journalist reporting on a speech given by South African politician Jan Hendrik Hofmeyr (1894–1948). Hofmeyr, speaking at the British Association meeting in Cape Town, made clear his feelings that Afrikaners could have their own distinct national identity whilst remaining under British imperial rule. He spoke of

<sup>16</sup> ‘“The Bookman” Prize Competitions’ *The Bookman* 36.216 (September 1909) 268–70 (p. 270).

<sup>17</sup> ‘*Multitude and Solitude*’ *The Sketch*, Wednesday 11 August 1909, p. 34.

<sup>18</sup> ‘*Multitude and Solitude* by John Masefield’ *The North American Review* 204.733 (1916) 941–42.

<sup>19</sup> ‘*Multitude and Solitude* by John Masefield’ *Athenaeum* 4261 (Saturday 26 June 1909) p. 769.

<sup>20</sup> ‘*Multitude and Solitude*’ *Dundee Courier*, Saturday 24 July 1909, p. 7.

‘one great land—Briton and Afrikander—a civilised native raised and treated with justice’. The reporter argued that

the South Africa of which he speaks is not that of “She” and “King Solomon’s Mines” but of John Masfield’s “Multitude and Solitude”. Allan Quatermain saw his enemies as the native and the lion. Masfield sees more clearly. Man’s enemy there is the small, the invisible, the tse-tse fly and the mosquito.<sup>21</sup>

By invoking a comparison between the romance of *King Solomon’s Mines* and the realism of *Multitude and Solitude*, the reporter tacitly inscribes a watershed in colonial relations in which the threat posed by indigenous people and animals is replaced by the threat of indigenous parasites and their vectors. The comment reminds us that, for many, the British Empire was made visible and coherent by imperial fictions, which, in turn, influenced popular understandings of colonial politics.

At the turn of the century, another novelistic encounter that was invoked to contextualise British imperial politics was Henry Seton Merriman’s *With Edged Tools* (1894). Merriman, a pseudonym for Newcastle-born author Hugh Stowell Scott (1862–1903), was a keen traveller and novelist. *With Edged Tools* was his fifth novel and it became an instant hit. He was widely praised for steeping the tale in ‘African feeling and sentiment’, with critics comparing him to Kipling, Conan Doyle, and Thackeray.<sup>22</sup> One reviewer, wondering whether Merriman was bound for greatness, remarked ‘Mr Merriman writes so well that one is disappointed that he does not write better, [he writes] as an English gentleman talks in mixed company’ but is, they note, like Thackeray, ‘too fond of the cynical aside’. They concede however that his men are ‘real flesh and blood creations; his scenery—whether it be the Russian steppes in *The Sowers* or the tangled jungle of Africa in *With Edged Tools*—is vividly photographed upon the mind’s eye of the reader’.<sup>23</sup> Indeed, Merriman was such a good storyteller that in 1898, one correspondent wrote to Adelaide’s *Express and Telegraph* to ask whether it was fiction at all: ‘Having just read a book called “With Edged Tools,” by H. Seton Merriman, I should like to know

<sup>21</sup> ‘South Africa’ *Northern Whig and Belfast Post*, Tuesday 23 July 1929, p. 6.

<sup>22</sup> ‘With Edged Tools’ *London Daily News*, Wednesday 25 April 1894, p. 6.

<sup>23</sup> ‘Mr Henry “Seton Merriman”’ *The Academy*, 1335 (4 December 1897) p. 490.



whether it was true that there was a very valuable drug found in Central Africa, called “Simiacine”.<sup>24</sup>

The novel was serialised in Britain’s *Cornhill Magazine* (July 1893–June 1894), in Melbourne’s *The Age*, and *The Leader*, and in Brisbane’s *Queenslander*. It was novelised the same year by Elder Smith and Co., quickly reprinted as ‘cheap’, ‘thin paper’, and ‘popular’ editions, and published with Macmillan’s Colonial Library. The *News of the World* dubbed the novel ‘one of the best novels of the English spring season’ and the *Daily Telegraph* remarked that it was ‘a really fine and thoroughly original story’ that ‘cannot be praised too highly’.<sup>25</sup> The *Sheffield Daily Telegraph* called it a ‘deservedly popular novel’, the *Derby Daily Telegraph* thought it a ‘widely-read masterpiece’, and the *Lancashire Evening Post* regarded it as Merriman’s ‘greatest work’.<sup>26</sup> In 1909, the *Shields Daily News* proclaimed it was ‘the most widely read novel in the world’.<sup>27</sup> It was adapted for the stage in 1907 and toured throughout England and Scotland with great success.<sup>28</sup> National newspaper *The Era*—famous as one of the most important theatrical journals in London—reported warmly on the adaptation, claiming that the book had been ‘read by over two million people’.<sup>29</sup> Meanwhile, the *Staffordshire Sentinel* reported that the play being in town had caused ‘a run on copies of Newnes’ sixpenny copyright edition being sold at the Hanley railway bookstall’.<sup>30</sup> When it was adapted for the silver screen in 1920, early cinema journal *The Bioscope* noted it was a ‘world

<sup>24</sup> F. M. V. Hector, ‘Dispatch Bag’, *The Express and Telegraph*, Saturday 10 September 1898, p. 2.

<sup>25</sup> Quoted in ‘Foreign and British News’ *The Mount Barker Courier and Onkaparinga and Gumeracha Advertiser*, Friday 14 December 1894, p. 3, and ‘With Edged Tools’, *Truth*, Thursday 17 May 1894, p. 44.

<sup>26</sup> ‘With Edged Tools’, *Sheffield Daily Telegraph*, Tuesday 29 September 1908, p. 11; ‘With Edged Tools’, *Derby Daily Telegraph*, Wednesday 23 February 1921, p. 5; ‘With Edged Tools’, *Lancashire Evening Post*, Thursday 25 February 1909, p. 1.

<sup>27</sup> ‘With Edged Tools’, *Shields Daily News*, Friday 10 September 1909, p. 3.

<sup>28</sup> The novel was also adapted into a play by a different company in Australia.

<sup>29</sup> *The Era*, Saturday 14 September 1907, p. 3. See also *Merthyr Express*, Saturday 10 October 1908, p. 7, who made similar claims, and the *Northern Daily Telegraph*, who stated it was the ‘most popular book in the world, it having been read by over 2,000,000 people’, Friday 11 February 1910, p. 1. It was also adapted for the stage in Australia, see: ‘Grease Paint’ *The Mirror*, Friday 18 Sep 1908, p. 16.

<sup>30</sup> ‘With Edged Tools’, *Staffordshire Sentinel*, Tuesday 16 February 1909, p. 4.

famous novel', whilst the *West Sussex County Times* considered the story 'too well known to need any description'.<sup>31</sup>

This widespread popularity perhaps explains the use of the novel to contextualise global news about sleeping sickness. Whilst reporting on two cases of sleeping sickness that had been brought to London from the Congo in 1898, the *Indian Medical Gazette* and the *Pall Mall Gazette* both invoked *With Edged Tools* as a frame of reference. The former recommended the novel as providing a description of the disease as 'a deadly sleep from which [you] never w[a]ke', and the latter wrote:

The sleeping sickness, as Mr Merriman presents it, is a sudden and fatal torpor, against which men fight bitterly; and it disposes of his villain, a half-breed negro, in the most terribly dramatic way.<sup>32</sup>

Meanwhile, a review for *With Edged Tools* in the *London Standard* immersed the novel within discussions of racial susceptibility to tropical illness, asserting:

The medical faculty knows very little about the "sleeping sickness" of Africa, regarding it as a sporadic affection peculiar to negroes; but Mr Merriman has discovered that it is a deadly and highly contagious epidemic, capable of sweeping off great companies of people at a blow, and as dangerous to white men as to black.<sup>33</sup>

In 1902, Australian newspaper the *Norseman Times*, reporting on the Ugandan epidemic of sleeping sickness, remarked that 70,000 natives had died of the disease in the preceding four years and 15,000 were at present suffering.<sup>34</sup> They further commented, 'those who have read H. S. Merriman's fascinating novel "With Edged Tools" will remember a graphic description of the disease'.<sup>35</sup> Another Australian newspaper,

<sup>31</sup> 'With Edged Tools' *The Bioscope*, Thursday 1 January 1920, p. 109; 'With Edged Tools', *West Sussex County Times*, Saturday 16 April 1921, p. 6.

<sup>32</sup> S.G. 'The Sleeping Sickness in a London Hospital' *Pall Mall Gazette*, Wednesday 12 April 1899, pp. 1–2.

<sup>33</sup> 'Five New Novels' *London Standard*, Tuesday 28 August 1894, p. 2.

<sup>34</sup> Maryinez Lyons contends that by 1905, the sleeping sickness epidemic in Uganda had killed nearly 300,000 Africans, though estimates vary considerably. Lyons, 'Public Health in Colonial Africa: The Belgian Congo' in *The History of Public Health and the Modern State* ed. by Dorothy Parker (Amsterdam: Rodopi, 1994) pp. 356–84 (p. 365).

<sup>35</sup> 'Sleeping Sickness' *Norseman Times*, Tuesday 30 December 1902, p. 2.

reporting on Lieut-Col David Bruce's investigations into the causative agent of the disease ended their report with the remark: 'a fairly popular and accurate account of its effect will be found in H. S. Merriman's "With Edged Tools"'.<sup>36</sup> Such unqualified endorsements in national newspapers and in the medical press are particularly problematic when we consider that they were invoked in the context of a colonial medical culture that depended largely on the repetition of anecdote.<sup>37</sup> Both the repetition of the story of *owa na ntolo* in medical texts and Merriman's novelistic depiction of sleeping sickness contributed to the widespread characterisation of Africa as a place of pathological violence. Writing of the Bakongo (a blend of Bantu-speaking peoples who live along the Atlantic coast of Central Africa) explorer Herbert Ward insisted that anger 'is an emotion they feel very powerfully' and that it sometimes drives them to suicide (45).

*With Edged Tools* employs what Neil Hultgren calls the 'melodramatic mode', a mode that was 'one of the central fictions through which another fiction—that of the British Empire—might be understood'. Its power to make the British Empire 'appear unified and comprehensible' lay partly in its 'reimagin[ing of the Empire's] complexities via readily accessible binaries', such as race.<sup>38</sup> Hultgren argues that these binaries entered into diverse negotiations with imperial propaganda and thus occupied a 'fraught ideological position in relation to violent imperialism' (2). We can read this fraught position in Merriman's novel where the melodramatic mode's 'obsession with moral turpitude and poetic justice' is writ large.

The novel follows British gentleman Jack Meredith as he embarks on an expedition to cultivate a secret African wonder-drug called Simiacine. Jack covets adventure and fortune so that he can marry his fiancée, Millicent Chyne, against his father's wishes. He has two business partners: British big game hunter, Guy Osgard, and West Indian trader Victor Durnovo, who we soon find out is the villain of the piece. The novel culminates in a fierce and drawn-out battle to protect the plateau where the Simiacine grows. During the siege, Guy and British domestic servant Joseph find out that Victor is a secret slave-owner, a crime so objectionable that Joseph exclaims: 'I wonder God lets yer stand there. I can only think that He

<sup>36</sup> 'Cables. The Sleeping Sickness' *Evening Courier*, Wednesday 23 September 1903, p. 3.

<sup>37</sup> Warwick Anderson, 'Immunities of Empire: Race, Disease, and the New Tropical Medicine, 1900–1920' *Bulletin of the History of Medicine* 70.1 (Spring 1996) 94–118 (p. 99).

<sup>38</sup> Neil Hultgren, *Melodramatic Imperial Writing from the Sepoy Rebellion to Cecil Rhodes* (Athens: Ohio University Press, 2014) p. 3.

doesn't want to dirty His hand by striking yer down!' (246). They wash their hands of the business and inform the slaves that they are free. When given the choice, however, the slaves elect to stay with Victor, a decision that strikes Patrick Brantlinger as Merriman 'impl[ing] that Africans are not suited to freedom'.<sup>39</sup> Indeed, Merriman describes them at length as 'dumb and driven animals' (321). However, their apparent allegiance to the slave-owner is a calculated move in order to enact their revenge: the mutilation of Victor's face: '[they cut his] eyelids away, leaving the round balls staring, blood-streaked; cut away his lips, leaving the grinning teeth and red gums; shear[ed] off his ears' (282). Victor's 'terrible caricature of a grin' is so harrowing that even stoic Guy has to 'gulp down his nauseating horror' (377). In the novel, black Africans are thus presented as either exploited slaves or violent torturers.

Not content with this graphic punishment, Merriman provides further poetic justice in the form of sleeping sickness, a death sentence that is interpreted as Divine retribution for a man who had lived 'in dread' of the disease:

So, after all, Heaven stepped in [...] but there was a strange irony in the mode of death. It was strange that this man, who never could have closed his eyes again, should have been stricken down by the sleeping sickness. (285)<sup>40</sup>

After all, 'it was one of Heaven's laws that Victor Durnovo had broken' (330). As he dies, his 'stained soul' leaves his body in the hands of 'the big strong Englishman [who shakes] the corpse, trying to awake it from that sleep which knows no earthly waking' (381). Whilst readers might have been struck by the violence of the punishment meted out by the slaves—'a yelling laughing horde of torturers' (378)—Merriman endows tropical illness with an equal capacity for horror. 'With the dread microbe of the sleeping sickness slowly creeping through his veins', Victor had fled the plateau and left 'a memento behind him surer than their torturing knives, keener than their sharpest steel—he had left the sleeping sickness behind

<sup>39</sup> Patrick Brantlinger, 'Victorians and Africans: The Genealogy of the Myth of the Dark Continent' *Critical Inquiry* 12.1 (1985) 166–203 (p. 181).

<sup>40</sup> This punishment and the 'grim legacy' that Durnovo leaves in his wake are made more poignant if we consider the historical intertwining of sleeping sickness and the slave trade. See, for example, Dietmar Steverding, 'The History of African Trypanosomiasis' *Parasites and Vectors* 1.3 (2008) 1–8.

him' (382). In this way, the colonial encounter is beset by the violence of exploitation, retribution, and deadly disease. Victor's death brings home to the reader the horror of *owa na ntolo*.

### RACE AND ILLNESS

Merriman strategically restricts the melodramatic mode to his representations of illness and Africans, complementing a trend in colonial medical writing for employing sensationalist rhetorical tropes that 'embellished the way colonial-medical experiences were conveyed'.<sup>41</sup> As Anna Crozier has argued, in colonial medical writing, 'whites were distinguished from blacks in their experience of ill health', following a 'rule of colonial difference' that often 'juxtaposed western ingenuity against racialised constructions of Africa and the African peoples as inherently pathological'. Such depictions were, she argues, 'a means by which colonial rule was conveyed as an acceptable venture at home', contributing to 'the legitimisation of whites in historically non-white places' (394). This collision between medicine and the racial politics of imperialism is particularly visible in discussions of sleeping sickness.

Sleeping sickness, or human African trypanosomiasis, is a parasitic disease caused by *Trypanosoma brucei* and spread via the bite of infected tsetse flies. Its symptoms include fever, headaches, itchiness, joint pains, fatigue, and swollen lymph nodes. As the disease progresses, neurological symptoms may develop such as tremors and seizures, and a disrupted sleep-wake cycle, as well as aggressive behaviours, apathy, and delirium. Without treatment, the condition invariably ends in coma, systemic organ failure, and death. Before the causative agent and insect vector were identified in the early twentieth century, little was known about the disease except that it was endemic to a narrow geographical range in Western and Central Africa, and was invariably fatal. Despite the *British Medical Journal* claiming in 1875 that cases of sleeping sickness had been reported in Europeans, the illness was consistently represented as one that only affected black Africans.<sup>42</sup> British family periodical *Bow bells* announced to

<sup>41</sup> Crozier, 'Sensationalising Africa: British Medical Impressions of Sub-Saharan Africa, 1890–1939' *The Journal of Imperial and Commonwealth History* 35.3 (September 2007) 393–415 (p. 393).

<sup>42</sup> See: Albert A. Gore, 'The Sleeping Sickness of Western Africa' *British Medical Journal* 1.731(1875) 5–7.

its readers in 1895 that ‘in Africa there is a disease that attacks the natives and that, although not uncommon, is yet involved in mystery’. Sleeping sickness, the writer insisted, is confined to black populations and only attacks ‘young men and boys between the ages of twelve and twenty’.<sup>43</sup> In 1898, the *Sheffield Evening Telegraph* also drew attention to the disease’s perceived racial profiling, noting that the appellation ‘negro lethargy’ was a result of it being ‘practically confined to negroes’. The article insisted that no ‘authentic cases’ had occurred in ‘pure-bred white men’ but conceded that the disease had been reported in ‘moors and half-breeds’.<sup>44</sup>

In 1899, the *Pall Mall Gazette* reported on the two Congolese cases of sleeping sickness that were currently under Patrick Manson’s care at the Charing Cross Hospital. They again drew on the cultural currency of *With Edged Tools* and perpetuated the belief that it was a racially specific illness by exclaiming:

[W]hoever read Mr Seton Merriman’s brilliant West African novel “With Edged Tools” will remember how he introduced into his plot this mysterious disease from which white men are exempt but which ravages the black populations, slowly irresistibly killing out whole villages.<sup>45</sup>

The patients—20-year-old Eli Mboko and 11-year-old Tendo Mkaloo, both from the same African village, Mbanza Manteka—had been brought to the hospital to receive treatment and to become the subjects of medical research. In describing the clinical cases, the correspondent emphasised the racial characteristics of the sufferers:

[They are] negroes of the extremist negroid type, black as a new polished boot, their hair very short and woolly, like an animal’s; the lower jaw very prominent, and the nose almost imperceptible above an enormously wide mouth, with lips that looked as if they had been rolled back. (2)

<sup>43</sup> ‘Sleeping Sickness’ *Bow bells: A Magazine of General Literature and Art for Family Reading* 32.407 (18 October 1895) p. 408.

<sup>44</sup> ‘Sleeping Sickness’ *Sheffield Evening Telegraph*, Saturday 3 December 1898, p. 3.

<sup>45</sup> ‘The Sleeping Sickness in a London Hospital’ *Pall Mall Gazette*, Wednesday 12 April 1899, p. 1. The opening was also reframed for an article in the *Greenock Telegraph and Clyde Shipping Gazette* reporting on a Royal Society-funded commission to Uganda in 1902. See: ‘Sleeping Sickness’ *Greenock Telegraph and Clyde Shipping Gazette*, Wednesday 30 April 1902, p. 4.

Such derogatory remarks were framed by a ‘medical gaze’ as the writer recounted his journey from hospital bedside to hospital bedside accompanied by celebrated tropical pathologist, Dr Patrick Manson. The writer concludes ‘this little black creature [...] on the white bed was one of the strangest objects I ever looked at [...] here was this little piece of sun-scorched humanity, drawn from his tropics, from among the sweltering rankness of jungle life, and laid down in the cold, clean whiteness of Europe’.<sup>46</sup> Felix Driver and Luciana Martins argue that ‘tropicality has frequently served as a foil to temperate nature, to all that is modest, civilized, cultivated’.<sup>47</sup> Whilst British understandings of the tropical world were by no means entirely coherent or consistent, characterisations like these helped to produce Europe as a space of temperance in nature and culture in contrast to tropical pathology and excess, to the ‘sweltering rankness of jungle life’.

The juxtaposition between Tendo Mkaloo and the ‘cold clean whiteness’ that surrounds him is reiterated when the writer interprets his experience of illness as a product of his race, writing:

Negro children, it seems, do not cry out like European children [...] his hands lay on the counterpane, not closed like a European’s would be, but slack and open, palms upward; and the inside of the palm pinkish like a monkey’s. It was pitifully unhuman, and one felt that kind of unbearable sorrow that comes from the sight of a dumb beast in pain. (2)

Whilst here the correspondent attributes the perceived emotional apathy of Mkaloo to racial difference, Manson, in his chapter on sleeping sickness, includes it in the symptomology of the disease. He recounts the symptoms as occipital headache, fever, and diarrhoea, and then he notes a trajectory in which the patient ‘becomes taciturn, morose and sad looking’, bringing emotion within the purview of medical diagnosis.<sup>48</sup> He repeats the same symptomology in *A System of Medicine* edited by English

<sup>46</sup>S. G. ‘The Sleeping Sickness in a London Hospital’ *Pall Mall Gazette* Wednesday, 12 April 1899, pp. 1–2.

<sup>47</sup>Felix Driver and Luciana Martins, ‘Views and Visions of the Tropical World’ in *Tropical Visions in an Age of Empire* ed. by Felix Driver and Luciana Martins (Chicago: University of Chicago Press, 2005) pp. 3–19 (p. 11).

<sup>48</sup>Patrick Manson, ‘Negro Lethargy, or the Sleeping Sickness of the Congo’ *Hygiene and Diseases of Warm Climates* ed. by Andrew Davidson (Edinburgh & London: Young J. Pentland, 1893) pp. 503–10 (p. 505).

physician Thomas Clifford Allbutt in 1897, adding to the diagnostic criteria for sleeping sickness ‘a sadness or apathy of expression, and a moroseness of disposition’.<sup>49</sup>

In a clinical lecture about Eli Mboko and Tendo Mkaloo given in 1898, printed in the *Journal of Tropical Medicine* and the *British Medical Journal* in the same year, Manson again conflated the emotional experience of illness with its symptoms. Alongside enlarged lymphatic glands, fever, pruritus, constipated bowels, and *Filaria perstans* parasites in the blood, he notes that ‘[Mboko’s] face has an expression of deep melancholy’. Meanwhile, he interprets Mkaloo ‘laugh[ing] occasionally’ as evidence of his clinical improvement and success of the treatment. Under a section on aetiology, he impresses his listeners with a picture of a typical patient’s emotional trajectory as the disease progresses: ‘indifference [...] a stolid rather mournful expression of countenance [...] he becomes morose and unsociable’.<sup>50</sup>

This seems like an odd diagnostic quirk on Manson’s part; indeed, one imagines it would be difficult to distinguish the sadness of sleeping sickness from the moroseness of anyone suffering from a severe, long-term illness. Manson insists that ‘the science of pathology embraces black men as well as white men; the principles of pathology are the same for all’; nevertheless, observations like those above veer from the medical to the anthropological, demonstrating a racialisation of emotions that persistently characterised sleeping sickness as an extension of what was perceived to be the innate laziness and apathy of black Africans. As parasitologist G. C. Low reported in his article on sleeping sickness, the disease had historically been linked with emotions associated with black African experience: ‘the first observers believed that it might originate from emotional distress connected with negro slavery’.<sup>51</sup>

Manson’s continued use of the outdated term *negro lethargy*, along with his insistence that the disease should be ‘theoretically interesting’ to white medical students, illustrates his implicit racial bias. Throughout the lecture he rejects the idea that sleeping sickness is ‘an ethnic disease’ and yet chooses to describe the symptom onset with reference to race: ‘A

<sup>49</sup> Patrick Manson, ‘Negro Lethargy, or Sleeping Sickness’, p. 482.

<sup>50</sup> Patrick Manson, ‘A Clinical Lecture on the Sleeping Sickness, delivered at Charing Cross Hospital, October 1898’ *Journal of Tropical Medicine*, December 1898, pp. 121–28 (p. 123).

<sup>51</sup> G. C. Low, ‘Sleeping Sickness’ p. 212.



negro, otherwise apparently in good health, is unaccountably smitten with a gradually increasing mental and bodily lethargy'.<sup>52</sup> He even frames the lecture with the caveat that medical students should 'embrace in [their] studies all forms of disease no matter though some of these diseases happen to be confined to a limited geographical area, no matter though they affect only what we, in our pride, consider an inferior race' (121). British illustrated newspaper *The Graphic* similarly perpetuated the racial politics of the disease in their fortnightly 'Chronicle of Science'. Despite admitting that several cases of the disease had been diagnosed in Europeans, they only included images of black African sufferers and described the development of the disease as the onset of headache, fever, disinclination to work, and a change in 'facial aspect' that was specific to race: 'a previously happy and intelligent looking negro becomes instead dull, heavy, and apathetic'.<sup>53</sup>

### EMOTIONAL EPIDEMIOLOGY

In 1902, Ronald Ross contributed a chapter on tropical sanitation for British journalist and human rights campaigner E. D. Morel's *Affairs of West Africa*. He began with a comparison between West Africa and India, labelling the former a 'completely barbarous country'.<sup>54</sup> Nevertheless, he rejected the common accusation that African natives were 'incorrigibly indolent', instead insisting that they were 'better material for civilisation than East Indians'. He continued: 'I do not think the backwardness of West Africa can be wholly or even largely [attributed] to defects [of] character', but to the 'unhealthiness of the region'.<sup>55</sup> He thus drew attention to pathologies of space over race. Notwithstanding what appears to be an appreciation for the universal impact of tropical illness, he nevertheless singled out the indigenous population as part of an inimical environment that challenged colonial settlement, a problem to be solved by domestic hygiene and public sanitation. To this end, he even excused the 'alcoholism and debauchery' of Europeans in the colonies as the result of the 'enervating climate' and 'the ever-present dread of serious sickness, the

<sup>52</sup> Manson, 'A Clinical Lecture', p. 123.

<sup>53</sup> 'A Chronicle of Science: The Causation of Sleeping Sickness' *The Graphic*, Saturday 18 July 1908, p. 26.

<sup>54</sup> Ronald Ross, 'Sanitary Affairs in West Africa' in *Affairs in West Africa* by Edmund D. Morel (London: William Heinemann, 1902) pp. 153–69 (p. 154).

<sup>55</sup> Ross, 'Sanitary Affairs', p. 155.

constant stings of insects, [and] the unsavoury surroundings of a squalid native population' (157). Ross demonstrates what Warwick Anderson refers to as the 'relentlessly dichotomising European imagination', in which Asian and African bodies were frequently represented as 'diseased, lazy, grotesque—as symbolic inversions of a European social body'—but also as productive subjects who might be reformed under strict medical and sanitary protocols.<sup>56</sup> In colonial medicine, 'typologies of race provided Europeans with compelling generalizations to account for an otherwise bewildering array of biological and cultural differences, allowing colonial emissaries to write homogeneity onto foreign populations and onto themselves'. Writers constructed homologues of race and environment that were contingent on a persistent belief in an 'intimate relationship between tropical vegetation, tropical bodies, and tropical mentality' (238).

*With Edged Tools* imaginatively expresses the inherent tensions between viewing Africa through the lenses of racial primitivism and environmental pathology by inscribing 'moral microbes' into the air that are partly responsible for unethical behaviour. They underwrite a metaphor of irritability that ties immorality, emotion, and illness together in a combination unique to its geography:

[T]here are moral microbes in the atmosphere of different countries, and we must not judge one land by the laws of another. There is the fatalism of India, the restlessness of New York, the fear of the Arctic, the irritability of Africa. (52)

The 'irritability' of Africa is a reference to the perceived degenerative effects of the tropical world, which Merriman's narrator insists 'makes honourable European gentlemen' descend into 'brutal passions' and 'commit crimes of which they blush to think in after days' (51). Merriman thus elaborates an amorphous relationship between feelings, behaviours, and moral principles underpinned by a language of contagion that both naturalises and medicalises brutality in African space.

In *Civilizing Emotions*, Margrit Pernau and Helge Jordheim argue that a semantic network of emotional experience became associated with the concept of civility during the Scottish Enlightenment such that emotions

<sup>56</sup> Warwick Anderson, 'The Third World Body' in *Companion to Medicine in the Twentieth Century* ed. by Roger Cooter and John Pickstone (London: Routledge, 2003) pp. 235–45 (p. 235).

like violent passion were deemed ‘primitive’, whilst emotional self-control was promoted as evidence of the civilisation of a given society. In the following century, this would become a template for defining levels of civilisation, the most civilised societies ‘characterised not only by their economic and political development, but also by their particular ways of feeling’.<sup>57</sup> Europeans came to define themselves in opposition to the peoples and societies they encountered overseas, priding themselves on being ‘active, disciplined, progressive, rational, hardworking and foresightful, while African and Asian peoples were seen as passive, stagnant, sensuous, emotional, indolent, and improvident’.<sup>58</sup> The ability to emotionally self-regulate was seen as a prerequisite for self-government and the melded discourses of primitivism and emotional violence were often wielded to justify the continued need for colonial governance, against a backdrop of circulating ideas about evolutionary polygenism, the postulation of common descent, and debates about acclimatisation.

In Merriman’s novel, these circulating ideas are distilled into an unstable narrative juxtaposition. The uncontrollable passions of the inhabitants of Central Africa are contrasted with the reserved emotions of London’s elites. When British protagonist Jack Meredith breaks off his engagement to his fiancée he acts with decorum, ‘quietly, self-composedly’, which leaves the lady frustrated: ‘Millicent Chyne felt a sudden plebian urge to scream. It was all so heartlessly well-bred’ (309). Constant self-policing and social training mean that Jack, ‘the beau-ideal of the society man’ (13), ‘never risk[s] the “gentleman” to [show] the man’ (17–18) and Millicent does not give in to her ‘plebian urge’. However, Africa—and its tropical maladies—threaten to upend the status quo. The air in Africa poses epidemiological and emotional danger to travellers who might inhale ‘wild unreasoning passion’ into their lungs along with—as many do—malaria, smallpox, and sleeping sickness.

Merriman’s emotional epidemiology is emphasised via descriptions of the landscape; ‘Loango is the reverse of cheerful’ the narrator informs us. Jack similarly remarks that the place is ‘not cheery’ (89). Meanwhile, the roar of the surf fills the atmosphere with ‘a never-ceasing melancholy’

<sup>57</sup> Margrit Pernau and Helge Jordheim, ‘Introduction’ in *Civilizing Emotions: Concepts in Nineteenth Century Asia and Europe* ed. by Margrit Pernau and Helge Jordheim (Oxford: Oxford University Press, 2015) pp. 1–24 (p. 4).

<sup>58</sup> Michael Adas, ‘Scientific Standards and Colonial Education in British India and French Senegal’ in *Science, Medicine, and Cultural Imperialism* ed. by Teresa A. Meade and Mark Walker (Basingstoke: Palgrave, 1991) p. 5.

(89)—an indictment of its insalubrity that foreshadows the somatic downfall of the characters. By using an emotional register to signal the threat of physical ill-health, Merriman mobilises a formal technique for building tension. However, the ‘irritability of Africa’ is much more than a metaphoric invocation of atmospheric danger; it is also a form that expresses the psychological labour of inhabiting colonial space and deep anxiety about European acclimatisation. When Jack first decides to travel to Africa, it is with his career and his marriage in mind. He is to become a politician and so he must ‘get a specialty’—‘I must know more about some country than any other man; and when I come back I must keep that country ever before the eyes of the intelligent British workman’ (30). Africa is ‘the coming country’, embodying the ‘brilliant conglomerate of possibilities’ of which Jack Meredith himself is described (14). However, the reality is a far cry from the tropical conservatory at home, where a thousand tiny lights ‘half hidden among languorous scented flowers’ bathe it in an English glow, and where the music of the ballroom can still be heard (19). Rather it is, in Victor Durnovo’s words, ‘a bit suggestive of hell’ (57)—a place where ‘nature is oppressive in her grandeur’ and where man is recast ‘a puny, insignificant, helpless being in a world that is too large for him’ (62).

The power of Africa lies in ‘the great African silence that drives educated men mad, and fills the imagination of the poor heathen with wild tales of devils and spirits’ (67). In John Masefield’s *Multitude and Solitude* (1909), the African silence is similarly conceived in terms of atmospheric danger. As the title suggests, it too offers a formal mirroring of the tropical/temperate divide, with the first half of the novel taking place in the ‘multitude’ of London, and the second half in the ‘solitude’ of West Africa. After his companion Lionel slips into a sleeping-sickness-induced coma, Roger (himself in an earlier stage of the same illness) appraises his surroundings: ‘the darkness of loneliness, the loneliness of silence, the imminent terror of places not yet won’ (268). ‘The terror of places not yet won’ is not only a comment on the instability of British imperial power, but of the unstable boundaries between nature and culture, a terror of ‘giving way and relapsing to the barbarism about him’ (262). Like Merriman, Masefield conceives of this relapse as precipitated by tropical space. Following a rainstorm that turns the camp into a quagmire, Roger contemplates the mud, fearing that

it had been worked, not only into his skin, but into his very nature. He had never before known what it is to be really dirty nor what continued dirt may mean to the character. (207)

The relationship conceptualised here between tropical nature and personal character reflects a belief articulated in colonial medical writing that time spent in tropical climes was both morally and physically degenerating. Edward Birch, professor of medicine in Calcutta, for example, wrote in 1893 of the adverse effects of warm climates on the constitution of Europeans. He agreed with fellow medical writers that after six or seven years of age, English children raised in India must be sent home to England or they ‘will deteriorate physically and morally’.<sup>59</sup> This deterioration is due to the physical weakening of a constitution under prolonged climatic stress and to the learning of ‘much that is undesirable’ from their surroundings. The child will have a ‘tendency’ to deceit, vanity, laziness, and ignorance unless removed to the ‘more bracing and healthy (moral and physical) atmosphere of Europe’ (7). As Harish Naraindas has observed, medical texts like Birch’s offered a generalised and generalisable characterisation of the ‘tropical native’ as ‘lazy, indolent, anaemic, asthenic, and degenerate’, and ‘naturalised [a] moral rhetoric on climate’ that ‘threatened the possibility of being cast in his likeness by a prolonged stay’ in the tropics.<sup>60</sup> Merriman and Masefield voice this same apprehension by erecting unstable boundaries between body and environment—a phenomenon articulated in *With Edged Tools* by the dual forms of microbes and miasma.

### TROPICAL NEURASTHENIA AND ‘WHITE-MAN LETHARGY’

*With Edged Tools* is haunted by anxiety about men who ‘go physically to the colonies [and] morally to the dogs’ (95–96) positioning the novel in dialogue with tropical neurasthenia—a malleable concept that was invoked to diagnose chronic, nonspecific forms of ill-health and to explain undesirable behaviours exhibited by colonial officials. As Anna Crozier argues, ‘[T]he diagnosis was useful in the colonial context as a means of

<sup>59</sup> Edward Birch, ‘The Influence of Warm Climates on the Constitution’ in *Hygiene and Diseases of Warm Climates* ed. by Andrew Davidson (Edinburgh & London: Young J. Pentland, 1893) pp. 1–24 (p. 7).

<sup>60</sup> Harish Naraindas, ‘Poisons, Putrescence, and the Weather: A Genealogy of the Advent of Tropical Medicine’ *Contributions to Indian Sociology* 30.1 (1996) 1–35 (p. 16).

categorizing and regulating the behaviours of Europeans abroad'.<sup>61</sup> Encompassing a wide range of symptoms, including fatigue and exhaustion; headache and palpitations; anxiety and depression; visual and auditory disturbances; memory and concentration problems; indigestion and bowel problems; and greater susceptibility to illness, the label was often used as a shorthand for a variety of mental and physical breakdowns in health. The condition, particularly in colonial contexts, was seen to compromise 'manly fortitude and racial strength' and was largely conceptualised in relation to white masculinity, being predominantly a diagnosis of the Caucasian middle classes (528). There were close links between this and metropolitan forms of neurasthenia that dominated diagnoses in Britain and America from the 1860s into the 1930s.

Whilst classical understandings of neurasthenia were amorphous, the family of nervous disorders to which the label commonly referred were largely conceptualised in relation to the stressors of modern life namely overwork, urban living, disrupted sleep, poor diet, mental overload, emotional strain, and new technologies of communication and commerce.<sup>62</sup> For some, it was associated with a depletion of 'nerve force', leaving the body exhausted and unable to perform. For others, it corresponded to an inherent weakness or loss of tensile strength in the nerves themselves. The versatile and semantically capacious vocabulary of nerves and nervousness was mobilised to conceptualise embodied forms of psychological distress, including sub-forms like 'nervous dyspepsia'—a condition arising from a local 'irritation' of the nerves that was then distributed sympathetically around the body causing widespread and seemingly unconnected physical

<sup>61</sup> Anna Crozier, 'What Was Tropical About Tropical Neurasthenia? The Utility of the Diagnosis in the Management of British East Africa' *Journal of the History of Medicine and Allied Sciences* 64.4 (October 2009) 518–48 (p. 519).

<sup>62</sup> For discussions of neurasthenia and nervousness more generally, especially as diseases of modern life, see: Melissa Dickson, Emilie Taylor-Brown, and Sally Shuttleworth eds. *Progress and Pathology: Medicine and Culture in the Nineteenth Century* (Manchester: Manchester University Press, 2020); Marijke Gijswijt-Hofstra and Roy Porter, eds. *Cultures of Neurasthenia: From George Beard to the First World War* (Amsterdam: Rodopi, 2001); Janet Oppenheim, 'Shattered Nerves?: Doctors, Patients and Depression in Victorian England' (Oxford: Oxford University Press, 1991). For discussions of institutional, political, and social pressures placed upon middle-class men in the wake of new forms of modernity throughout the nineteenth century, see: Emilie Taylor-Brown, Melissa Dickson, and Sally Shuttleworth, 'Structures of Confinement: Power and Problems of Male Identity' *Journal of Victorian Culture* 24.2 (April 2019) 137–45.

and psychological symptoms.<sup>63</sup> Merriman translates this nervous irritability into a metaphor for the emotional, moral, and somatic ‘dis-ease’ that is engendered by existing in the torrid zone.

Tropical neurasthenia was conceptualised as a disease of isolation that ‘provided an expedient means of categorizing European neuroses at a safe critical distance from indigenous mental health problems’.<sup>64</sup> European nervousness in the tropics was explained as the result of being exiled from family, friends, and the civilisation of home, of the exciting and depressing influences of climate, and of the ‘excessive irritation’ of dealing with Africans (534). In *With Edged Tools*, Merriman encodes the triple threat of tropical illness, neurasthenic breakdown, and sociocultural contamination into an undifferentiated atmospheric danger—an ‘irritability’ that performs a complex analogy between race, feeling, and illness. For West Indian antagonist Victor Durnovo, this irritability is an indictment of his moral shortcomings, which are couched in overtly racial terms. He is emotionally violent, cowardly, deceitful, rude, and flirts with the British heroine Jocelyn Gordon in a way that one reviewer found ‘too repulsive’ when it was adapted for the stage.<sup>65</sup> Such behaviour is frequently presented through the lens of his mixed-race heritage, his ‘dark face’ with its ‘brown marble’ skin (56), his ‘very dark eyes’ (57) and his ‘skinny yellow fist’ (50). However, this same behaviour is also framed by the language of microbiology. Victor is half-starved and restless, on the verge of jaundice, his eyes ‘bilious, fever-shot, unhealthy’, and his face ‘disease-stricken’ (56). Thus, his behaviour is delineated in relation to tropical illness—his violence, deceit, and moral bankruptcy explicitly mapped onto symptoms such as biliousness and fever. It is with the generalised pathology of Africa that he is afflicted: ‘the irritability of Africa was upon him—had hold of him—gripped him remorselessly’ (51). ‘Irritability’ thus becomes a euphemistic term for tropical experience, a conflation of a kind of moral hysterics: ‘men quarrel about trifles and descend into brutal passion’ (52) with tropical disease: ‘he was treating himself scientifically for the irritability to which he had given way’ (53). Perhaps it is the ‘impulse of expansiveness

<sup>63</sup>I have explored this at length elsewhere: Emilie Taylor-Brown, ‘Being “Hangry”: Gastrointestinal Health and Emotional Well-Being in the Long Nineteenth Century’ in *Gut Feeling and Digestive Health in Nineteenth-Century Literature, History and Culture* ed. by Manon Mathias and Alison Moore (London: Palgrave Macmillan, 2018) pp. 109–32.

<sup>64</sup>Crozier, ‘What was Tropical about Tropical Neurasthenia?’, p. 523.

<sup>65</sup>Owing to him being portrayed as ‘half-caste’. ‘With Edged Tools. The Seton Merriman Play at the Theatre Royal’ *Staffordshire Sentinel*, Tuesday 16 February 1909, p. 4.

which ever lurks in West Indian blood' that makes Victor so susceptible, the narrator reflects (63). Perhaps it is the 'treacherous climate' which undermines his health, and exacerbates his already weak nerves; he has 'been too long in Africa' (168).

The narrator offers 'Extenuating Circumstances' for Victor's behaviour in the form of his racial heritage, rendering biological the 'contact zones' of empire: 'given a mixed blood—evil black with evil white—and what can the result be but evil?' (392). In *Imperial Eyes*, Mary Louise Pratt conceptualises 'contact zones' as

spaces in which peoples geographically and historically separated come into contact with each other and establish ongoing relations, usually involving conditions of coercion, radical inequality, and intractable conflict.<sup>66</sup>

The 'intractable conflict' of Victor's racial heritage mirrors his interactions with the indigenous natures and cultures of West Africa, as well as with the 'dread microbes' moving through his veins (282). Merriman's depiction of the colonial encounter in racial, cultural, and microbiological terms refracts the broad geopolitical tensions that structure the Anglo-European imperial imagination. Representing the colonial encounter as chiefly an encounter of conflict, he insists that peace—political and emotional—cannot be achieved in Africa:

The Powers may draw up treatise and sign the same, but there will never be a peaceful division of the great wasted land so near to Southern Europe. There may be peace in Berlin, or Brussels, or London, but because the atmosphere of Africa is not the same as that of the great cities there will be no peace beneath the equator. From the West Coast of Africa to the East men will fight and quarrel and bicker so long as human nerves are human nerves. The irritability lurks in the shades of boundless forests [...] it hovers over the broad bosoms of the hundred slow rivers [...] it is everywhere. (51–52)

By projecting violent emotions and behaviours topographically, Merriman characterises Africa as a place that is environmentally and politically ungovernable.

<sup>66</sup> Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation*, 2nd edn (New York: Routledge, 2008) p. 8.



Unlike Victor, British big game hunter, Guy Osgard appears to be largely unaffected by the ‘anger of the tropical elements’ (132) owing to his ‘denser nerves’:

Osgard did not understand it. His denser nerves were incapable of comprehending the state of irritation and unreasoning restlessness into which the climate and excitement had brought Durnovo. (195)

Moreover, neither he nor Jack Meredith suffer from the smallpox epidemic that kills 10 out of the 11 natives because they have been ‘enthusiastically vaccinated’ (172). Naturally hardy constitutions and artificial immunity mean that British characters can withstand Africa’s degenerating atmosphere. They even produce their own salubrious microclimates that protect those around them: ‘the atmosphere of Jack Meredith’s presence was preferable to that diffused by Victor Durnovo. There was a feeling of personal safety and dignity in the very sound of his voice which set a weak and easily-led man upon his feet’. Guy too brings a ‘change to the moral atmosphere’, which other characters find ‘comforting’ (235). Meanwhile Jocelyn’s ‘Englishness’ is ‘like a tonic’ when Jack is recovering from illness (303). Nevertheless, at the end of the novel, Jack admits that

he was afraid of Africa; the Irritability of Africa had laid its hand upon him almost as soon as he had set foot upon its shore. He was afraid of the climate. (453)

Whilst Jack’s ‘well-bred calmness of demeanour’ (22) protects him from the ‘wild unreasoning passion’ that infects Victor, he cannot escape ‘the singular feeling of total relaxation and limpness which is only to be felt in the rain-ridden districts of central Africa’ (146–47). This atmospheric limpness maps onto the ‘singular slothfulness’ (225) and ‘constant never-ceasing fatigue’ (262) that leaves Jack towards the end of the tale ‘lying between sleep and death in his bedroom’ (275).

By invoking not only the ‘subtle, tainted air that poisons the white man’s blood’ and the ‘treacherous climate’, but also microbes, vaccination, disinfection, and the elastic vocabulary of nervousness and irritability, Merriman draws on the flexibility of multiple aetiological modes. This permits him to elaborate a complex relationship between space, race, and sensibility that makes room for conflicting anxieties about masculinity, nationhood, racial fitness, and colonial politics. It is perhaps this rhetorical

flexibility that led reviewers to disagree about Merriman's portrayal of the tropics. One critic—insisting that predictability was the 'grammar' of romance—lamented how tropical adventure was always full of illness, savagery, and failed business schemes:

when [the] twin heroes go to Africa in quest of a plant of the most grave and potent medicative virtues, they are as likely to return rich as the ordinary traveller is to return shrivelled and worn by agues and fevers; it is a 'dead cert' that they will have to fight savages.<sup>67</sup>

Another critic, however, read *With Edged Tools* as a triumph of British fortitude and imperial prowess. Comparing Merriman to Rudyard Kipling, they insisted that Merriman's novels were 'intensely patriotic', and that

to those who will read between the lines, he shows us that in his opinion the well-bred young Englishman can go anywhere and do anything. His heroes are just as much at home in Buluwayo or Bond street.<sup>68</sup>

This critic seems to be wilfully reading between the lines indeed. After all, Merriman himself writes that 'it would appear that [Jack Meredith] was not so much at home in the tangle of African forest as in the crooked paths of London society' (109). Indeed, the most pressing take away from this tale of adventure might well be how unsuited Englishmen are to African travel, Jack's 'thorough breakdown in health' (262) appearing to confirm Joseph's assertion that 'this country's not built for honest white men—least of all for born and bred gentlemen' (319).

Merriman's fraught narrative of disease susceptibility in West Africa bespeaks tensions in representation that also loomed large in medicine as writers tried to reconcile observation with ideology. The violence of sleeping sickness—embodied in Merriman's irritability metaphor and in the circulation of the cursed call to arms of *owa na ntolo*—enacts a racial politics that sought to delimit the experiences of black and white individuals in tropical space. This dynamic is apparent in the writing of British parasitologist John William Scott Macfie (1879–1948), who trained under Ross for a Diploma from the Liverpool School of Tropical Medicine in 1910. Between 1910 and 1922, he went on eight tours as a medical officer in

<sup>67</sup> 'With Edged Tools' *The National Observer* 12.296 (21 July 1894) 256–57 (p. 256).

<sup>68</sup> 'Mr. Henry Seton Merriman' *The Academy* 1335 (4 Dec 1897) p. 490.

West Africa to study malaria, yellow fever, and sleeping sickness. Among his archives is a manuscript which begins:

Early voyages to West Africa described a terrible disease of the natives which transformed men previously bright, intelligent, and hard-working into dull, apathetic creatures careless in their work and dirty in their habits.

This disease, he informs us, is sleeping sickness, or as it was originally known ‘negro lethargy’.<sup>69</sup>

For Macfie, sleeping sickness transforms useful workers into ‘dirty’ ‘creatures’ literalising an implied connection between primitivism and pathology. He then uses this concept to elaborate a new kind of aetiology, which he dubs ‘white-man lethargy’. This condition only affects Europeans and, disproportionately, newcomers to the West Coast. ‘It is not as fatal to life as is sleeping sickness’, he asserts, but ‘it is more fatal to hopes and ambitions and reputations’. The disease trajectory that Macfie goes on to relate dramatises a common medico-social anxiety: the racial and cultural degeneration of the European. The disease is insidious, beginning, as does sleeping sickness, with lethargy: ‘the intelligent individual becomes dull, the bright apathetic, the energetic indolent, and the careful careless’. Then comes a change of character marked by emotional violence—‘irritability and outbursts of anger out of all proportion’—followed by ‘obsession almost amounting to delusions of persecution’. The patient starts to display strange behaviour: ‘some dress elaborately for dinner even under the most unsuitable circumstances when on a trek or in the “bush”’. Next, they begin to lose the vocabulary of civilised conversation, those who write ‘find composition difficult or impossible’, ‘almost all fall into the habit of careless expression’, and when visiting friends in Europe find themselves ‘surprised at the sense of unfamiliarity they experience on hearing words which once they employed daily and are amazed at the shrinkage of their own vocabulary’. His depiction is less one of ill-health than of an inability to play the part of the European effectively.

The prognosis from here is not promising. Many cases develop into a neurasthenia that culminates in insanity or suicide: ‘the final act of revolt against the tendency to lethargy’. Others reach a ‘quiescent stage’ as an ‘efficient but damaged instrument’, performing their duties ‘successfully

<sup>69</sup> London. LSHTM. GB 0809 Macfie/03/05/03. Manuscript notes on Sleeping Sickness and ‘White-Man Lethargy’.

but mechanically', unable to learn new skills or assimilate new ideas. The patient is perpetually irritable and must carefully manage his energy, 'fundamentally he is slack—mentally, morally, and physically'. Such a declaration is continuous with popular conceptions of indigenous populations (who were often blamed for having 'backwards' social and sanitary predilections) and also with a history of presenting tropical climes as degenerating to white colonists. As Manson wrote in his seminal textbook in 1898, the European adjusting to the 'altered meteorological circumstances' of the tropics may undergo physiological 'irregularities' which include 'a tendency to degenerative changes'.<sup>70</sup>

Using sleeping sickness as a model, Macfie delineates a new kind of illness that offers a scientific explanation for the laziness and irritability of white colonists. In extreme cases, he insists, a complete degeneration of the patient takes place 'end[ing] in a state of utter incompetence, living a slovenly life in a dirty and disordered house, speaking little but pidgin English and apart from his work associating almost exclusively with natives'. His aetiology makes medically palpable the imagined de-civilising influence of primitive and insanitary environments, suggesting that like Roger in *Multitude and Solitude*, the dirt of Africa might be worked not only into the colonist's skin but permanently into their very nature. The patient's 'pidgin English' and alarming social integration with indigenous Africans evokes the fear of 'going native'—popularly embodied by now archetypal figures like Kurtz from Joseph Conrad's *Heart of Darkness* (1899)—and demonstrates how medical forms were mobilised to draw racial boundaries.<sup>71</sup>

When drawing these boundaries medical writers often made use of a sensational register that dovetailed with a longer literary tradition of travel writing and missionary biography. This is particularly the case in discussions of British-African territories post 1880. As Crozier argues, 'one means of articulating the huge gulf between blacks and whites [was] by re-casting ubiquitous diseases as primarily African ones'.<sup>72</sup> In addition to

<sup>70</sup> Manson, *Tropical Diseases*, p. xii.

<sup>71</sup> Charlotte Rogers has explored the complex relationships between language and madness in literary texts like *Heart of Darkness*. She argues that depictions of Africa as a place of silence or African languages as incomprehensible grunts or mad ravings were narrative strategies that attempted to maintain boundaries between sane, white, civilisation and insane, black, primitivism. Kurtz's own inability to voice himself comprehensibly demonstrates the mutability of these categories. Rogers, 'Medical Discourse and Modernist Prose' in *Jungle Fever: Exploring Madness and Medicine in Twentieth-Century Tropical Narratives* (Nashville: Vanderbilt University Press, 2012) pp. 29–62.

<sup>72</sup> Crozier, 'Sensationalising Africa', p. 407.

the persistent and sensational racialisation of sleeping sickness (as explored in this chapter), discussions of diseases like malaria were reformulated in ways that pathologised indigenous Indian and African bodies and behaviours. In his treatise on malarial fever, Ross advises the use of mosquito nets, quinine, and racial segregation as the chief prophylaxis against tropical diseases, including malaria, yellow fever, and elephantiasis: ‘avoid as much as possible sleeping in the houses of natives [...] *sleep in a native house often means death* [...] one of the chief reasons why Europeans are more healthy in India than in some other tropical countries, is, I think, because in India they generally live in separate quarters’.<sup>73</sup> He singles out the native population, particularly native children, as reservoirs for the parasites, arguing that ‘more than half the native children are sometimes found to be infected by it’. Under the title ‘domestic precautions’ he lists the following:

1. Removal or protection of all stagnant water in the vicinity
2. Protection of the windows with wire gauze
3. Segregation

These protocols, he maintains, “should be adopted in private houses, factories, plantations, hospitals, barracks, etc” and advises that Europeans should ‘double [their] precautions’ if forced to sleep in or near a native village (36–37).

At best these passages illustrate how—despite its global rhetoric—tropical medicine primarily sought to benefit colonists, and at worst, how it was used to perpetuate political ideologies by providing a medical rationale for racial segregation.<sup>74</sup> As Warwick Anderson has noted, ‘framing disease, framing “environment”, and framing “race” [were part of] the same manoeuvre—with political and social consequences perhaps as

<sup>73</sup>Ronald Ross, *Malarial Fever, Its Cause, Prevention, and Treatment; Containing Full Details for the Use of Travellers, Sportsmen, Soldiers, and Residents in Malarious Places* 9th edn (London and Bombay: Longmans, Green, and Co., 1902) pp. 41–45 [emphasis in original].

<sup>74</sup>Crozier identifies similar advice in a range of medical writing, including Dr Ryan’s 1914 health manual which begins with the statement that ‘this is par excellence the preventative measure’ and then goes on to stress ‘the vital importance of avoiding the building of European quarters in close proximity with those of the natives’. Anna Crozier, ‘Sensationalising Africa’, p. 407.

profound as any military deployment'.<sup>75</sup> These concepts: disease, environment, race, and military deployment come together in Ross's 1902 book *Mosquito Brigades* in which he seeks to 'commence a war against our winged enemies' using a regimented system of drainage, clearance, and mosquito extermination. Whilst suggesting that such brigades might be staffed by indigenous workers, they must be led and directed by European administration. He warns against starting mosquito brigades in native towns and villages where they will 'scarcely be possible' because 'there will be no one to direct them' and clarifies that they should be carried out in 'isolated houses [...] where white men live', in 'plantations, mines, and farms where white men live and labour is abundant', and in 'all settlements where white men live in any numbers'. It is advisable to start a 'campaign' he concludes 'wherever the game is worth the candle' (45). In the next chapter, I explore these intersections more fully by investigating the collision of military and medical forms in professional and popular depictions of the parasite-vector-host relationship.

<sup>75</sup> Warwick Anderson, 'Disease, Race, and Empire' *Bulletin of the History of Medicine* 70.1 (Spring 1996) 62–67 (p. 63).

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## Microbial Empires: Active Transmission Strategies and Postcolonial Critique

While Merriman's *With Edged Tools* dramatised the deleterious effects of the colonial encounter for European imperialists, four years later, another author would flip the narrative to place Britons in the position of the colonised. This new imperialist project is undertaken by invaders whose intellects are 'vast and cool and unsympathetic', drawing on a discourse that placed Britons in the emotional and intellectual space previously occupied by Africans in the imperial imagination. I am, as some will recognise, referring to H. G. Wells's *The War of the Worlds* (1898). Wells explicitly invites us to read the story as a critique of imperial relations by remapping the tropical/temperate divide onto the relationship between Earth and Mars. Aligning the Martian invasion with the political history of temperate Europe, he cautions:

Before we judge of them too harshly, we must remember what ruthless and utter destruction our own species has wrought, not only upon animals [...] but upon its inferior races. The Tasmanians, in spite of their human likeness, were entirely swept out of existence in a war of extermination waged by European immigrants in the space of fifty years. Are we such apostles of mercy as to complain if the Martians warred in the same spirit?<sup>1</sup>

<sup>1</sup>H. G. Wells, *The War of the Worlds* (London: William Heinemann, 1898) pp. 4–5. First serialised in Pearson's Magazine in 1897.

As Alan Bewell has argued, Wells encourages critical self-reflection by offering us a ‘double text’ with ‘the voice of the coloniser disquieted by the voice and experience of the colonised’.<sup>2</sup> Despite the haunting ‘ulla ulla’ of the Martians, these colonisers have no narrative voice, instead mutely reflecting British imperial attitudes back to the reader. Through the destruction of London and the establishment of the Red Weed, readers are confronted with a topographic transformation akin to the ‘ecological cris[e]s’ brought about by practices of colonisation, wherein ‘entire worlds were lost or transformed’ by European sanitation and cultivation projects (xii). As he walks now unfamiliar streets overtaken by the ‘tropical exuberance of the Red Weed’, Wells’s narrator asserts that he found about him ‘the landscape—weird and lurid—of another planet’ (240). Such a transformation echoes the introduction of European plant species into colonial space but also invokes the latent threat that tropical vegetation might reverse the power dynamic and de-cultivate the metropole. The unstable binary between coloniser and colonised is invoked at the beginning of the novel when the narrator notes that men naïvely imagined the Martians as ‘perhaps inferior to themselves and ready to welcome some missionary enterprise’ (2). In *With Edged Tools*, Merriman employs a strikingly similar environmental aesthetic, characterising the Simiacine plateau as ‘a strange landscape’ with trees that had ‘monopolised vegetable life, and slew all comers. It was like some stray tract of another planet, where the condition of living things was different’ (200).

Both authors—as Bewell notes of *The War of the Worlds*—write ‘disease [as] a more important factor in the history of empire than military or technological power’ (xiii). He points to the ‘black smoke’ as a form that reaches forward in time to the possibilities of biological warfare (fully realised during the First World War) and backward to the miasmatic atmospheres that were so associated with epidemics in the pre-germ theory imagination. Since at least the seventeenth century, the suffering of Europeans from unfamiliar illness in tropical regions was understood via a combination of miasmatic—the belief that disease issues from the environment via misty vapours, noxious air, and effluvia—and humoralism. The latter—loosely defined—implicated climate in ill-health because the high external temperatures of the tropics were thought to cause imbalance in the natural humours of European bodies. Such imbalances were

<sup>2</sup> Alan Bewell, *Romanticism and Colonial Disease* (Baltimore: Johns Hopkins University Press, 1999) p. xii.



constitutive of disease in and of themselves or were predisposing factors in the contraction of other environmentally borne illnesses.<sup>3</sup> Another competing theory was contagionism, which posited that disease was transmitted by person-to-person contact via touch or breath, associating illness primarily with people rather than with the environment. This was an association that facilitated the stigmatisation of indigenous colonial populations as themselves pathogenic, and later, with the popularisation of germ theory, as reservoirs of disease.<sup>4</sup> As Prashant Kidambi notes in relation to plague outbreaks in India, the differences in these doctrines are most notable in regard to preventative action: ‘whereas contagionist theory entailed a confinement of the human body in combating disease, [miasmaticism] emphasized the need to ameliorate its underlying “environmental causes”’.<sup>5</sup>

By the 1890s, miasmaticism had lost considerable currency in the wake of the popularisation of the germ theory of disease, which implicated distinct microorganisms in the production of illness. However, miasma continued to be an ontologically useful concept well into the twentieth century. As Jessica Howell has explored, writers mobilised miasma in a variety of contexts for the ‘unique rhetorical opportunities’ it embodied.<sup>6</sup>

<sup>3</sup>Whilst ‘imbalance’ was occasionally used in the vague sense that is suggested by my phrasing here, it is not my intention to undersell its intellectual specificity. It was often invoked to refer to increased neurological irritability or loss of tension in the nervous system, a depressing of vital energy, disruption of the biochemical functioning of the internal organs, and suspension of digestive capacity leading to auto-intoxication. The basic principle of the importance of the continuous biochemical regulation of the internal environment is preserved in the homeostatic response, based on work by French physiologist Claude Bernard in the 1860s and expanded and named by Walter Bradford Cannon in the 1930s. Homeostasis refers to the processes by which the body maintains an optimal state by regulating body temperature, pH, and concentrations of sodium, potassium, glucose, carbon dioxide, and oxygen.

<sup>4</sup>Native populations were considered to be reservoirs for parasites owing to their ‘uncleanly habits’. For a fuller discussion of the racial politics of tropical hygiene, see: Daniel Barron, ‘Tropical Medicine’s Contribution to Colonial Racism’ *Crossroads* 3.1 (2008) 86–91; David N. Livingstone, ‘Tropical Climate and Moral Hygiene: The Anatomy of a Victorian Debate’ *British Society for the History of Science* 32.1 (March 1999) 93–110; Warwick Anderson, ‘Immunities of Empire: Race, Disease, and the New Tropical Medicine, 1900–1920’ *Bulletin of the History of Medicine* 70.1 (Spring 1996) 94–118.

<sup>5</sup>Prashant Kidambi, ‘“An infection of locality”: plague, pythogenesis and the poor in Bombay, c. 1896–1905’ *Urban History* 31.2 (2004) 249–67 (p. 251).

<sup>6</sup>Jessica Howell, *Exploring Victorian Travel Literature: Disease, Race, and Climate* (Edinburgh: Edinburgh University Press, 2014) p. 15.

This was not only a stylistic strategy but reflected indistinct conceptual borders, as well as fluctuating and sometimes contradictory conceptualisations of tropical illness. Ronald Ross argued, for example, that Patrick Manson's belief in the mid-1890s that parasitic spores in the water or air might spread malaria was proof that he was 'still under the influence of the miasmatic theory'.<sup>7</sup> Ross later also used miasmatism to contextualise vector transmission. His insistence that 'malaria is due to a miasma given off by the marsh, but the miasma is not a gas or vapour—it is a living insect [...] the *anopheles* themselves are the malarial miasma', articulates complex intersections between competing theories of infection.<sup>8</sup> The tenets of humoralism, miasmatism, and contagionism came together to articulate the idea that microorganisms—supported and propagated variously by particular environments and by human-to-human contact—caused disease by infiltrating the body and disrupting its internal balance (soon to be understood in the language of immunology). As Michael Worboys has illustrated, a plurality of germ theories of disease flourished between 1865 and 1900, in which 'disease-germs' could mean many things ranging from bacteria, parasites, and helminths, to poisons, fungi, and chemical ferments.<sup>9</sup> Thus the distinctions between miasmatism, contagionism, and germ theory are difficult to tease apart; if germs existed in—and were supported by—environments *and* bodies, then disease was simultaneously 'fixed in the landscape' and 'frighteningly mobile'.<sup>10</sup>

There has been a wealth of scholarship focusing on the impact of germ theory on cultural understandings of health, disease, and identity, and on the cultural currency of ideas about contagion and immunity. Less attention, however, has been given to the impact of vectorism and active transmission strategies, especially in relation to literature. In this chapter, I explore how parasites and their vectors provided the medico-literary imagination with new forms with which to tell stories about empire, arguing that the use of military systems to conceptualise human-microbe interactions perpetuated and tacitly legitimised structural violence in colonial

<sup>7</sup>Ronald Ross, *Memories of Sir Patrick Manson* (London: [privately printed], 1930) p. 39.

<sup>8</sup>London, LSHTM. RC. GB 0809 Ross/105/06/50. 'The Practice of Malaria Prevention by Ronald Ross, Major I.M.S. Ret. Professor of Tropical Medicine, University of Liverpool', pp. 3–4 [emphasis in original].

<sup>9</sup>Michael Worboys, *Spreading Germs: Disease Theories and Medical Practice in Britain, 1865–1900* (Cambridge: Cambridge University Press, 2000) p. 2.

<sup>10</sup>Susan Cannon Harris, 'Pathological Possibilities: Contagion and Empire in Doyle's Sherlock Holmes Stories' *Victorian Literature and Culture* 31.2 (2003) 447–66 (p. 458).

medicine. I close read H. G. Wells's *The War of the Worlds* (1898) and John Masefield's *Multitude and Solitude* (1909), alongside parasitologists' characterisations of parasite-vector-host relationships, to excavate how the microbiological imagination made its mark on anxious imperial fictions in which ontological uncertainty and declining confidence in the longevity of British geopolitical dominance were aggregated. I then broaden out this analysis to consider how vectorism and active transmission strategies gave new currency to gothic forms like the vampire. Building on recent scholarship on Bram Stoker's *Dracula* (1897), I place vampirism in the contexts of the research and professional self-fashioning of parasitologists, as examined throughout this book, to explore how new understandings of disease brought to the fore the discomfiting agency of non-human vectors.

### THE VIOLENCE OF MEDICINE AND THE FEVER OF WAR

In his contribution to *A System of Medicine* (1897), British physician Surgeon-General Joseph Fayrer illustrated the entanglements between competing theories of disease causation, particularly regarding fever diseases in the tropics. He insisted that 'the effects of heat, cold, moisture, and other telluric and meteorological conditions' might themselves cause fever, or may 'render the body a congenial subject for the development of microorganisms which act as causes, either directly or by the toxic effects they produce', or may 'favour the action of telluric miasmata'. He then expanded the possibilities further by concluding:

[I]t seems probable that they are nearly allied to each other etiologically, and that a combination of the aforesaid causes, acting on individuals of a certain age, race and personal susceptibility, and under the influence of insanitary surroundings, may determine the types assumed.<sup>11</sup>

These observations do little to narrow down the causes of disease and are revealingly housed in a section of the book entitled 'Diseases of Uncertain Bacteriology'.

In his widely read textbook *Tropical Diseases* (1898), Patrick Manson also kept climate, environment, and germs in play by asserting 'nearly all

<sup>11</sup> Joseph Fayrer, 'On the Climate and Some of the Fevers of India' in *A System of Medicine by Various Writers* vol II. ed. by Thomas Clifford Allbutt (London: Macmillan and Co., 1897) pp. 295–352 (p. 313).

diseases, directly or indirectly, are caused by germs' but that these 'demand certain physical conditions for their well-being'.<sup>12</sup> He upheld a common stigmatisation of the natural abundance of the tropics by implying that the physical conditions of the tropical world are particularly favourable to pathogenic life: 'just as the flora and fauna of the tropical world are infinitely richer in species than those of colder climates, so there is a corresponding distribution in the wealth and poverty of pathogenic organisms' (xvi). The peculiar geographical ranges of many tropical diseases can be explained by their reliance on animal vectors or on particular soils, which, in turn, depend on a more or less tropical climate, he asserted. In this way, the discovery of vector transmission 'shattered the simplicity of the germ theory of disease'.<sup>13</sup> Now disease could be conceived as an active process, caused by microorganisms, transmitted by insect vectors, and supported by tropical environments. Parasitologists thus redefined the relationship between disease and environment in ways that retained the tropical-temperate divide.<sup>14</sup>

In redefining the colonies as places of parasites and vectors, parasitologists drew attention to a third realm where disease-causing organisms operated: the interstitial and still mysterious world inside vectors and human bodies. John Masefield employed this concept when trying to conceptualise the trypanosome for a popular audience in his 1909 novel *Multitude and Solitude*:

Very anxiously, after preparing the slide for observation, [Roger] focussed the lens, and looked down into the new, unsuspected world, bustling below him on the glass. He was looking down on a strange world of discs, among which little wriggling wavy membranes, something like the tails of tadpoles, waved themselves slowly, and lashed out with a sort of whiplash snout [...]. He watched them for a minute or two horrified by the bluntness and lowness of the organism, and by its blind power. It was a trembling membrane a thousandth part of an inch long. It had brought Lionel down to that

<sup>12</sup> Patrick Manson, *Tropical Diseases. A Manual of Diseases of Warm Climates* (London: Cassell and Company, 1898) p. xii.

<sup>13</sup> Anne Marie Moulin, 'Tropical without the Tropics: The Turning-Point of Pastorian Medicine in North Africa' in *Warm Climates and Western Medicine: Emergence of Tropical Medicine, 1500–1900* ed. by David Arnold (Amsterdam: Rodopi, 1996) pp. 160–80 (p. 160).

<sup>14</sup> Rod Edmond, 'Returning Fears: Tropical Disease and the Metropolis' in *Tropical Visions in an Age of Empire* ed. by Felix Driver and Luciana Martins (Chicago: University of Chicago Press, 2005) pp. 175–94 (p. 181).

restless body on the bed. [...] It was the visible pestilence, the living seed of death, sown in the blood. (245)

Masfield's 'strange world of discs' finds conceptual common ground with the idea of separate worlds, which Ross uses to piece together the life cycle of parasites found in mosquitoes: 'I believe the [parasites] are *meant for men*, as well as reinfesting the grubs, of course; hence their being discharged into *two worlds*'.<sup>15</sup> Here he refers to their presence in stagnant water and in human bodies.

The two worlds rhetoric is also reflected in Wells's collapsing of telescope and microscope at the beginning of *The War of the Worlds*. In using this formulation, Wells erects a kaleidoscopic relationship between Martians, humans, and microbes that underpins the ensuing narrative:

As men busied themselves about their affairs they were scrutinized and studied perhaps almost as narrowly as a man with a microscope might scrutinize the transient creatures that swarm and multiply in a drop of water. (1)

As I explored in my third chapter, the emergence of a visual culture concerning microorganisms encouraged narratological forms that collapsed the tropical and microscopic 'worlds' into one. By placing empire under the microscope, Wells makes use of a rhetorical strategy reminiscent of Arthur Conan Doyle's 'Life and Death in the Blood' (1883). Indeed, there is more to connect these narratives than we might think; Wells's reimagining of the imperial capital as a body 'inflamed' by Martian invaders mirrors in reverse Conan Doyle's projection of the flora and fauna of British India onto a bloodscape of arteries and veins. Whilst Conan Doyle asks us to imagine shrinking down to microscopic stature to travel through a sick body, Wells makes the body macroscopic—his narrator remarking as he walks 'through the scarlet and crimson trees towards Kew' that 'it was like walking through an avenue of gigantic blood drops' (241). The London landscape stands in for the human body, a symbolic conflation compounded by references to the 'skin' of planet Earth and to the 'inflammation' caused by the Martians (54).<sup>16</sup> The narrator aligns the Martian

<sup>15</sup> Ronald Ross, *Memoirs*, p. 176 [Emphasis in original].

<sup>16</sup> Wells's characterisation of the Martian cylinder as like a 'poison dart' piercing the 'skin' of the planet again aligns the novel with Conan Doyle, who frequently employs the imagery of puncture by poison arrows to conceptualise the threat of foreign bio-contaminants (see 'Detecting the Diagnosis').

invasion directly with the invasion of pathogenic organisms when he notes that, in the hours following their arrival, ‘the fever of war that would presently clog vein and artery, deaden nerve and destroy brain, had still to develop’ (54).

Thus, whilst Wells’s story of a war between two worlds with starkly different morphologies is usually read as an imaginative rendering of the power dynamic between Britain and her colonial territories—or an anxious challenging of the evolutionary hierarchy—it also serves to analogise the somatic war between humans and microorganisms. At the end of the novel, the Martians are slain, not by armies of men, but by the ‘putrefactive and disease bacteria against which their systems were unprepared’—bacteria to which humans, through years of coadaptation, have become immune. These once formidable germs are now our ‘microscopic allies’. As Wells’s narrator explains, ‘by the toll of a billion deaths, man has bought his birthright to the earth, and it is his against all comers’. Extending Wells’s microscopic frame narrative, the ‘toll of a billion deaths’ might just as readily describe the successful immune response, with our ‘microscopic allies’ as white blood cells winning for man his birthright to his own body: ‘we have developed resisting-power; to no germs do we succumb without a struggle’ (168).

The struggle against invasion by aliens and invasion by pathogens, if not strictly analogous, is certainly a kindred one with a curiously shared vocabulary. Wells’s description of the Martians as like ‘octopuses’ with ‘lank tentacular appendages’ finds a parallel in Manson’s descriptions of ex-flagellated malaria parasites as ‘strange, weird, octopus-like creature[s] with long, whipping, curling, lashing, tentacle-like arms’.<sup>17</sup> This kind of comparison was a common technique for conceptualising not just the appearance of microorganisms but also their mode of existence, as when Ross asserted in defence of the malaria parasite: ‘if these bodies are not endowed with an independent life, then eels, snakes and worms are dead creatures’.<sup>18</sup>

Just as Roger in *Multitude and Solitude* is struck by the incongruity between the ‘lowness’ of the trypanosome’s tadpole-like appearance and its ‘blind power’, Wells’s unnamed narrator struggles to reconcile the

<sup>17</sup> Patrick Manson, ‘The Goulstonian Lectures on the Life-History of the Malaria Germ Outside the Human Body’, *The Lancet* Vol. I (1896) p. 696.

<sup>18</sup> Ronald Ross, ‘Surgn.-Lieut.-Col. Lawrie and the Parasite of Malaria’ *Indian Medical Gazette* 11.10 (1896) 1–13 (p. 6).

Martians' degenerated morphology with their technological prowess. In 1896, Manson made use of a similar schema to conceptualise the methods by which parasites complete their life cycles within the bodies of vectors and hosts. He described the *filaria* parasite as having a 'weapon' in the form of a 'very elaborate and powerful oral armature—a piercing apparatus which it seems always eager to use'.<sup>19</sup> In the lecture delivered before the Royal College of Physicians of London and reprinted in *The Lancet* and the *British Medical Journal*, Manson contemplated the evolutionary adaptations of parasites to vector transmission. In the process, he decentres the human by describing the adjustments that 'nature' has made to ensure the success of the parasite:

[I]t is very curious and instructive to watch the behaviour of the phagocytes [immune cells] towards the plasmodium [malaria parasite], and to mark how Nature by means of corpuscular sheathing protects the parasite from harm in this quarter. (317)

He uses comparative pathology to draw attention to the parallels between the sac in which *Filaria* resides and the red blood cell in which *Plasmodium* resides. 'Nature', he argues, has 'sheathed' both to prevent *Filaria* prematurely using its 'weapon' on the blood vessels and to hide *Plasmodium* from attacks by phagocytes. 'The filaria is sheathed to prevent its committing suicide,' propounds Manson, 'the plasmodium is sheathed to protect it from being murdered' (317).

In using the emotive language of murder and suicide, Manson makes use of a linguistic strategy that Catherine Belling recognises as a common feature in narratives that structure encounters between humans and disease. She argues that 'in engaging the microbe as an anthropomorphic subject, whether as protagonist or as villain, we relinquish our own centrality and risk the vertiginous view of ourselves as no more than a setting or environment for microbial proliferation'.<sup>20</sup> This vertiginous view certainly underscores Manson's lecture in which he delineates an uncomfortable rendering of natural selection that does not prioritise humanity. Drawing us in to what he calls the 'little drama' of *Filaria*, he emotively

<sup>19</sup> Patrick Manson, 'The Goulstonian Lectures on the Life-History of the Malaria Germ Outside the Human Body', *British Medical Journal*, 1.1838 (21 March 1896) 712–17 (p. 712).

<sup>20</sup> Catherine Francis Belling, 'Microbiography and Resistance in the Human Culture Medium' *Literature and Medicine* 22.1 (2003) 84–101 (p. 86).

describes the processes by which parasites evade the immune system. A phagocyte may inspect a red blood cell by ‘touch[ing] it with its pseudopodia first at one point and then at another [...] suspicious apparently that things were not quite as they should be’. However, the deception always prevails and the ‘vigilant watchman [leaves] the masked parasite and move[s] away’.<sup>21</sup> Manson was likely inspired to use such language by a letter he received from Ross in July the preceding year in which Ross described the interactions between a plasmodium and three phagocytes beneath the microscope. He wrote:

[The parasite] was not killed [by the phagocyte] or sucked in; but kept poking him in the ribs in different parts of the body. I was astonished; & so apparently was the phagocyte. He kept at this for about ¼ hour & then went away across two fields & went straight at another phagocyte! [...] after 50 minutes the beast seemed to be getting tired, when a very curious thing happened; a third phagocyte came at him with mouth open [...] but had no sooner got near him when the flagellum left his fallen foe & attacked the new one holding on and shaking like a snake on a dog. In one minute the third phagocyte turned sharp round & ran off howling!!!—I assure you. I won’t swear I heard him howling, but I saw him howling. It went right across the whole field, the flagellum holding onto his tail [...] So was the fight between the flagellum & the three phagocytes. I shall write a novel on it in the style of the Three Musketeers.<sup>22</sup>

Ross’s characterisation of the immune response as like the exploits of the three musketeers is continuous with his use of historical tales of chivalrous adventure to contextualise parasitology research in relation to imperial politics (as explored in chapters one and two). Although the more passionate digressions were omitted from Manson’s lecture, he included a brief outline of the episode as an illustration of the parasite’s ability to actively attack and defend itself, dubbing it ‘The Adventures of a Flagellum’. Such episodes demonstrate the proximity of scientific and literary forms in professional science communications as they jointly translated medicine into war.

<sup>21</sup> Manson, ‘The Goulstonian Lectures’, p. 713.

<sup>22</sup> Letter to Manson dated 18 July 1895 quoted in Ronald Ross, *Memoirs; with an Account of the Great Malaria Problem and Its Solution* (London: John Murray, 1923) pp. 165–67 (pp. 166–67).



## INSECT WARS AND MICROBIAL THUGS

The military politics of colonial warfare were often expressed via a medical register for popular audiences, as when British-born physician and explorer Arthur Torrance impressed on his readers that ‘a victory in Siam or East Africa is a victory in America and Europe as well’ referring not to colonial conquest, but to the ‘warfare against the tiny germs that spread great plagues’.<sup>23</sup> British colonial administrator Charles Bruce (governor of Mauritius, 1897–1903) revealingly dubbed the London and Liverpool schools of tropical medicine ‘the intelligence department of the army of medicine in the tropics’.<sup>24</sup> This collision of medical and military language also dominates the publications of parasitologists, facilitating the elision of these two forms of colonial power and control. In Ross’s *Memoirs*, he uses the language of warfare to conceptualise the life cycles of parasites, writing of battles and bullets, describing mosquito eggs as ‘cartridge shaped’, and envisioning stained parasitic bodies inside cells as ‘bullets in a bag’ (274). When describing the diurnal activity of the parasite responsible for elephantiasis, *Filaria sanguinis hominis*, Manson had drawn on a similar lexis, insisting that no embryos are to be found in the blood circulation during the day but that at ‘about six or seven o’clock in the evening, with “military-like punctuality”, as Cobbold expresses it, they march to their night quarters and proliferate’.<sup>25</sup>

These kinds of military similes—the conceptualisation of microbes as bullets and their vectors as guns—dominates the historiography of tropical medicine, which Warwick Anderson summarises as ‘the glorious history of “insect wars” [and] tales of the triumph of germ theory in the tropics’.<sup>26</sup> By interpolating military forms into medicine and viewing their work as an extension of military warfare, parasitologists characterised tropical medicine as part of the machinery of national defence. When developing measures for mosquito control, Ross suggested setting up ‘mosquito brigades’,

<sup>23</sup> Arthur Torrance, *Tracking Down the Enemies of Man* (1928; London: Alfred A. Knopf, 1929) p. 318.

<sup>24</sup> ‘The Imperial Aspects of Tropical Medicine’ *British Medical Journal* 2.2285 (15 October 1904) 1022–23 (p. 1023).

<sup>25</sup> Patrick Manson, *The Filaria Sanguinis Hominis and Certain New Forms of Parasitic Disease in India, China, and Warm Countries* (London: H. K. Lewis, 1883) p. 8.

<sup>26</sup> Warwick Anderson, ‘The Third World Body’ in *Companion to Medicine in the Twentieth Century* ed. by Roger Cooter and John Pickstone (London: Routledge, 2003) pp. 235–45 (p. 236).

employing terms like ‘campaign’ and ‘operation’ to describe local sanitation measures.<sup>27</sup> In the preface to *Mosquito Brigades, and How to Organise Them* (1902), he defines the object of the book as showing ‘how we can best wage war against mosquitoes’. He ends the preface with a rallying recruitment appeal, mobilising the crusading motif examined in previous chapters:

The reader will perceive that, in fact, I am preaching a general crusade of a more novel and perhaps more useful character than most crusades. I trust that he will volunteer under the flag. (vi)

Just after the outbreak of war in 1914, Ross again invoked the military as an institution that structurally and conceptually corresponded with medicine:

The armies of science, like those of nations, commence in small beginnings and advance in parallel columns. If one column is checked by insuperable difficulties, the others endeavour to outflank the point of resistance; and a victory is often won by this means in science as in war.<sup>28</sup>

Indeed, the Liverpool School of Tropical Medicine had declared a war of its own in 1901:

Few people in this old country appear quite to understand the significance of the new kind of war which is now being started in many parts of the tropical world—notably by the Liverpool School of Tropical Medicine in West Africa [...] the tyranny of the mosquito over the principal civilised towns in the tropics must cease; and cease it will.<sup>29</sup>

Such rhetoric obscured the complexities of the localised control and treatment of parasitic disease, instead suggesting that what was needed was a show of military strength. The mosquito must be unseated, just as so many African rulers had been.

<sup>27</sup> Ronald Ross, *Mosquito Brigades and How to Organise Them* (London: George Philip & Son, 1902) p. vi.

<sup>28</sup> Ronald Ross, ‘The Huxley Lecture on Recent Advances in Science and their Bearing on Medicine and Surgery’ *The Lancet* 184.4758 (7 November 1914) 1079–84 (p. 1079).

<sup>29</sup> London, LSHTM. RC. GB 0809 Ross/70/03. Newspaper cutting ‘The War Against Mosquitoes in Sierra Leone’ (1901).

The use of martial language in medicine is not unique to the nineteenth century, to tropical medicine, nor indeed to Anglophone medicine. Traditional Chinese medicine (TCM) also uses the language of violence and warfare. The Chinese physician Xu Dachun (Hsü Ta-ch'un) wrote of the parallels between medicine and military conflict in the eighteenth century, asserting that the most effective strategies for treating illness might be found in a military text from the sixth century BCE, *Sunzi Binfa* (*The Art of War* by Sun Zi). However, the martial metaphor in TCM operates in a very different context to its Western counterpart given that Chinese military strategies like those elaborated in *Sunzi Binfa* consider the supreme principle of war is to win without fighting.

Thus, the doctor-patient relationship for TCM is more like that between a general and a king with the doctor-general helping the patient-king to strategise for a peaceful monarchy and avoid armed conflict. In contrast, the martial metaphor as it is invoked in late-nineteenth-century tropical medicine is most often one that dramatises a war between the patient-soldier and the disease-enemy, or else obscures the patient entirely by constructing a direct military stand-off between the doctor-general and an abstracted enemy pathogen—or even death itself. This is the case in novelistic encounters with disease too. In Joseph Hocking's 1915 novel *The Dust of Life*, British youth Cedric contracts sleeping sickness and 'fight[s] with the disease [...] battl[ing] with the numbing influence'. When he is given medicine, it is described as 'life fighting death' (116). Similar rhetoric can be found in Richard Burton and Verney Lovett Cameron's *To the Gold Coast for Gold* (1883) where Burton relates his recovery from malaria as a battle between 'Dr Warburg's fever tonic' and the 'Fever-fiend', in which the 'admirable drug w[i]n[s] the victory'.<sup>30</sup>

In Masfield's *Multitude and Solitude*, the enjoinder of medicine and warfare is even more pronounced; Roger considers the trypanosome to 'battle with the white corpuscles' (156); his friend Lionel's study is stocked solely with copies of *The Lancet*, *British Medical Journal* and books on military history; and in one particularly memorable hallucination, Roger is accosted by giant tsetse flies carrying guns:

He began to see an endless army of artillery going over a pass. The men were all dark; the guns were all painted black; the horses were black [...]

<sup>30</sup>Richard Burton and Verney Lovett Cameron, *To the Gold Coast for Gold. A Personal Narrative* (London: Chatto and Windus, 1883) p. 239.

Instantly they changed to tsetses, riding on dying cattle. They were giant tsetses with eyes like cannon balls.<sup>31</sup>

The tsetse flies are here made synonymous with ‘men with guns’, perpetuating the imagery of parasites as deadly ammunition. Mary Kingsley in her *Travels in West Africa* (1897) also used the metaphor of battle to describe the trials and tribulations of colonial life for British men working in West Africa. These are men whose battles

have been fought out on lonely beaches far away from home [...] sometimes with savages, but more often with a more deadly foe, with none of the anodyne to death and danger given by the companionship of hundreds of fellow soldiers in a fight with a foe you can see, but with a foe you can see only incarnate in the dreams of your delirium.<sup>32</sup>

Here Kingsley expresses the individualism of battle with disease, a battle that patients must take on alone. By identifying the microbial ‘foe’ as one that ‘you can only see incarnate in the dreams of your delirium’, she highlights the difficulty in conceptualising not only the relative invisibility of microbes, but also the experience of illness. Masfield paints a strikingly violent image of this experience when Roger hallucinates ‘a giant tsetse [...] forcing his mouth open with a hairy bill, so that the trypanosomes might wriggle down his throat’. He imagines that ‘a flattened trypanosome, tasting as flabby as jelly, [is] worming over his lips’ (196).

This hideous force-feeding characterises vector transmission as a necessarily violent act that finds congruence with popular characterisations of parasites and their vectors as military assassins, villains, and murderers. In Ronald Campbell Macfie’s *The Romance of Medicine* (1907), he describes the tuberculosis bacillus as ‘the most deadly weapon of death’, responsible for ‘massacres’. He goes on to insist that ‘the mouth of the consumptive may scatter more deaths than the muzzles of many guns’, depicting the microbe as a ‘*beau sabreur* [...] more ruthless than a Thug, more ravenous than any beast of prey’ (143). By invoking Indian Thugs—a religious cult of highway bandits famous for strangling and robbing their victims—Macfie manipulates a discourse of violence and criminality historically associated with Indians to conceptualise pathology in the early twentieth

<sup>31</sup> Masfield, *Multitude and Solitude*, pp. 195–96.

<sup>32</sup> Mary Kingsley, *Travels in West Africa: Congo Français, Corisco and Cameroons* (London: Macmillan, 1897) p. 691.

century. This is an example of a broader phenomenon whereby ‘savage’ natives and ‘savage’ microbes were constructed in tandem. Manson, for instance, erected parallels between primitivism and pathology by asserting that ‘to the scientific mind the infinitely minute bacterium is just as important as the gigantic elephant [...] a naked savage as a European potentate’.<sup>33</sup> The European is to the savage, he implies, as the elephant is to the microbe.

Macfie’s choice of the Thug reference is given further rhetorical significance in the context of recent scholarship, which has questioned the authenticity of Indian *thuggee* as represented by the British colonial archive. Postcolonial scholars argue that stories of Indian Thugs were embellished or even invented by an imperial imagination that sought to ‘make an ontological and epistemological distinction between the Occident (Europe, the West) and the Orient (the East)’.<sup>34</sup> As Subramanian Shankar has argued, the concept of *thuggee* was weaponised to justify the displacement of native Indian rulers and mark out Indians as targets for disciplinary action under the elaboration of a law-and-order state.<sup>35</sup> By aligning the causes of disease with indigenous primitivism (in the case of Manson) and a culturally specific criminal practice (in the case of Macfie), writers made similar ontological and epistemological distinctions, paving the way for kindred biopolitical interventions.

In deploying the vocabulary of warfare and military conflict parasitologists like Ross and Manson projected the essentialised violence of military enemies onto depictions of tropical parasites—and by extension the tropical environment. Justin D. Livingstone has identified similar disciplinary rhetorical strategies in what he terms ‘fictions of exploration’—fictional narratives written by Victorian naturalists and explorers. This genre was a ‘distinctive product of its historical moment’ but had considerable aesthetic and formal overlap with travelogues, medical biography, imperial romance, and handbooks of tropical medicine, as I examined in my second chapter. Straddling the line between ‘adventurous romance and

<sup>33</sup> Patrick Manson, ‘Some Problems in Tropical Epidemiology’ *Transactions of the Epidemiological Society of London* (London: Printed at Bedford Press, 1901) p. 3.

<sup>34</sup> Alexander Lyon Macfie, ‘*Thuggee*: an orientalist construction?’ *Rethinking History* 12.3 (2008) 383–97 (p. 384).

<sup>35</sup> See: S. Shankar, ‘Thugs and Bandits: Life and Law in Epicolonial India’ *Biography* 36.1 (2013) 97–123; S. Shankar, *Textual Traffic: Colonialism, Modernity, and the Economy of the Text* (Albany: SUNY Press, 2001). See also: Sagnik Bhattacharya, ‘Monsters in the Dark: The Discovery of *Thuggee* and Demographic Knowledge in Colonial India’ *Palgrave Communications* 6.78 (2020) 1–9.

authoritative travel narrative’, it was a genre that helped to produce ‘cartographies of violence’ in which Africa was reimagined as a space of tribal conflict.<sup>36</sup> Rather than reflecting the complex militarisation and political instabilities of East and Central Africa in the 1870s and 1880s, Henry Morton Stanley, Samuel Baker, and Verney Lovett Cameron used the novelistic mode to ‘naturalize a vision of east Africa in which conflict and insecurity are its intrinsic features [...] provid[ing] a case for the stabilising influence of European governance’ (81).

As Jing-Bao Nie et al. point out, the martial metaphor (which is still ubiquitous in medicine today) facilitates the ‘unintended legitimization and glorification of war and violence’, whilst encouraging the uncritical acceptance of sometimes unnecessary intervention and structural violence in medicine.<sup>37</sup> As a narrative strategy, it encodes and supports particular political and social relationships. Such entangled relationships are exemplified by this *Punch* cartoon (Fig. 1) which features British Home Secretary Reginald McKenna appealing to the Greco-Roman god of medicine Aesculapius for help with the microbe ‘militancy’ (probably referring to the political militarism of the Suffragette movement).

The cartoonist suggests that political dissent threatens the health of the nation, a body politic metaphor that highlights medicine as a branch of governmental administration. At the turn of the century, martial metaphors endorsed the structural violence of imperialism through tropical medical discourses that projected racialised understandings of African violence onto ‘African’ diseases, and thus legitimised the wider military responses of imperial Britain in the name of medicine.

In a lecture given by Ross to the Liverpool Chamber of Commerce in 1899, he compared the practices of politics and science:

In politics, the great powers, somewhat tired of self-development, are endeavouring to extend their possessions and civilisation all over the world. In science, somewhat satiated with our conquests over inanimate matter, we

<sup>36</sup> Justin D. Livingstone, ‘Travels in Fiction: Baker, Stanley, Cameron and the Adventure of African Exploration’ *Journal of Victorian Culture* 23.1 (2018) 64–85 (p. 71).

<sup>37</sup> Jing-Bao Nie, Stuart Rennie, Adam L. Gilbertson, and Joseph D. Tucker, ‘No More Militaristic and Violent Language in Medicine: Response to Open Peer Commentaries on “Healing Without Waging War: Beyond Military Metaphors in Medicine and HIV Cure Research”’ *American Journal of Bioethics* 16.12 (2016) 9–11.



**Fig. 1** Punch Cartoon featuring Reginald McKenna as British Home Secretary asking Æsculapius for help with the microbe 'Militancy'. (Reproduced with permission from the Wellcome Collection)

have recently created what is perhaps the most fundamentally important of knowledges—the experimental science of disease.<sup>38</sup>

‘In the very last years of the century’, he asserted, ‘a new link has been forged between them [...] the conquest of the world will depend on our conquest of invisible atoms’. Whilst the Anglo-Boer war rages in South Africa, ‘a much more terrible war has been raging in West Africa for a century’, he insists, producing ‘a percentage of “casualties” exceeding the battle of Waterloo’. This war is fought between Englishmen and ‘king Malaria’, without which Britain’s armies would have pushed forward ‘into the heart of the country without fear of an enemy much more dangerous than any savage tribe to be found in it’. By comparing imperial expansion to dominion over microbes, Ross elides the space between indigenous African communities and pathogenic microbes under the conceptual banner of ‘global Others’. If disease is inimical to civilisation—‘the backwardness of tropical countries as regards civilisation is greatly, or chiefly, due to [malaria]’—the corollary is: so is the existence of indigenous communities.

It is not difficult to see how such rhetoric, espoused as it was during the ascendancy of eugenics, would lead to devastating genocides, as well as lasting institutionalised and socialised racism. The semantic violence of the war on disease made it easier to justify public health campaigns in Uganda in the early twentieth century that imposed compulsory examination, isolation, and ‘atoxylisation’ of those suspected of harbouring the parasite, as well as the forcible depopulation of African landscapes.<sup>39</sup> When Macfie

<sup>38</sup>London, LSHTM. RC. GB 0809 Ross/67/08. ‘The Recent Medical Expedition to West Africa’ [lecture delivered to the Liverpool Chamber of Commerce on 27 November 1899].

<sup>39</sup>These and similar campaigns were enacted by major European colonial powers in the context of a transnational response to sleeping sickness epidemics. The establishment of isolation camps in the Belgian Congo was a result of advice given by British parasitologists under the auspices of the Liverpool School of Tropical Medicine. The British adopted similar models including the segregation of the sick, forcibly relocating Africans from their homes in so-called fly belts and forbidding them from hunting and fishing in these regions. See: Daniel R. Headrick, ‘Sleeping Sickness Epidemics and Colonial Responses in East and Central Africa, 1900–1940’ *PLOS Neglected Tropical Diseases* 8.4 (2014) 1–8; Maryinez Lyons, ‘Public Health in Colonial Africa: The Belgian Congo’ in *The History of Public Health and the Modern State* ed. by Dorothy Porter (Amsterdam: Rodopi, 1994) pp. 365–66; Sara Lowes and Eduardo Montero, ‘The Legacy of Colonial Medicine in Central Africa’ *Cato Institute* 8.209 (8 April 2020) <https://www.jstor.org/stable/resrep26223>.



dubbed the trypanosome a microbe ‘so murderous that it slew in Uganda alone, between 1901 and 1905, no less than 100,000 natives’, he consciously shifted the narrative away from the biopolitical violence of imperial administration to focus on the biopolitical violence of disease.

The fever of war, masked intracellular invaders, and murderous microbes—all these linguistic configurations were responding to the same problem, namely representing what remained for most inaccessibly conceptual: the domain of the microbiological. With the emergence of a more formal immunology, especially following Elias Metchnikoff’s identification of phagocytes in the 1880s, writers sought a vocabulary that could encapsulate the inimical relationship between humans and microorganisms. One lexis that came to dominate was that of violence, a form that structured both professional and popular encounters with the microbial world, and, as Lorenzo Servitje has recently explored at length, elided the political space between medical and imperial threat.<sup>40</sup>

At the end of the century, in the wake of the discovery of the role of insect vectors in the transmission of disease, non-human animals were transformed into what Christos Lynteris terms ‘epidemic villains’—transmitters and reservoirs of illness.<sup>41</sup> Non-human vectors took on a ‘protagonistic role’ in a ‘series of epidemic and public health dramas’, where epidemiology garnered new narrative power (5). When reviewing *Multitude and Solitude*, *The Graphic* explained that the novel’s ‘accurate’ scientific detail was what rendered it a ‘gift to fiction in search of a fresher subject than love, murder, or money’. In his ‘descriptive ability’, Masefield had made the tsetse fly, ‘a more vigorously interesting villain than nine others out of ten’.<sup>42</sup> In this next section, I explore how insect vectors became loci for a plethora of new sanitary concerns related to microbial reproduction and disease transmission. Tensions between the multiplicity of microbic disease and disease as it is individualised in the body of a vector meant that parasites and vectors were often collapsed into one symbolic figure that absorbed and enacted cultural concerns about individual and national breach.

<sup>40</sup> Lorenzo Servitje, *Medicine Is War: The Martial Metaphor in Victorian Literature and Culture* (Albany: SUNY Press, 2021).

<sup>41</sup> See: Christos Lynteris, ‘Introduction: Infectious Animals and Epidemic Blame’ in *Framing Animals as Epidemic Villains. Histories of Non-Human Disease Vectors* ed. by Christos Lynteris (London: Palgrave Macmillan, 2019) pp. 1–25.

<sup>42</sup> ‘Trypanosomiasis’ *The Graphic*, Saturday 18 September 1909, p. 24.

## VAMPIRES AND VECTORS

She had suffered rather severely from the mosquitoes before Christmas—and had been almost frightened at finding a wound upon her arm, which she could only attribute to the venomous sting of one of these torturers [...] “He has caught you on the top of a vein. What a vampire! [...] You must always show me any bite of this nature. It might be dangerous if neglected. These creatures feed on poison and disseminate it.”<sup>43</sup>

In Mary Elizabeth Braddon’s 1896 short story ‘Good Lady Ducayne’, a young girl called Bella travels to Italy as a companion to an aristocratic woman of uncommonly old age and is there subject to a mysterious illness. Her increasing weakness is attributed to the bites of mosquitoes, which Dr Parravicini insists are preying on her at night. In the passage I quoted above, he characterises the mosquito as a ‘vampire’ owing to its extraction of her blood and further suggests that the insect might disseminate poison from one place to another. The story later reveals that it is Dr Parravicini himself who is the culprit, dosing Bella with chloroform before extracting her blood for his scientific experiments to prolong Lady Ducayne’s life. In an attempt to prevent this dénouement, the doctor attributes her illness to what just one year later Ross would confirm as the transmission route for one of the most high-profile diseases of the British Empire: malaria. Indeed, malaria and mosquitoes were of particular significance to Italy where they both abounded, prompting one lady to write to Ross asking him to ‘exterminate the mosquito in Venice! That paradise that is to me an inferno’.<sup>44</sup> Dr Parravicini’s misdirection draws our attention to an implied association between vampires, vectors, disease, and blood transfusion that loomed large in the fin de siècle medico-literary imagination. This figuration is also apparent in a perhaps more familiar vampire story published by a lifelong friend of Braddon the following year: Bram Stoker’s *Dracula*.

Scholars have mapped a dizzying array of social, political, and medical concerns onto *Dracula*, from contagious disease legislation to the ascendancy of the New Woman and its associated feminisms; from critiques of capitalism to anxieties about and celebration of queer sexualities; from cholera maps and public health campaigns to fracturing domestic class politics, anti-Semitism, xenophobia, and imperial guilt. As I have explored

<sup>43</sup>Mary Elizabeth Braddon, *Good Lady Ducayne* (1896; Whitefish: Kessinger, 2004) p. 15.

<sup>44</sup>London, LSHTM. RC. GB 0809 Ross/119/25. Correspondence: Lillian Glenny to Ross, 16 August 1913.

elsewhere, emerging paradigms in tropical medicine in the 1890s provided a framework that endowed the vampire with especial potency as a metaphor for the double threat of parasite and vector.<sup>45</sup> Indeed, it is the multivalence of Stoker's polymorphous antagonist that makes him so critically rich:

He can within limitations appear, at will, when and where and in any of the forms that are to him; he can, within his range, direct the elements: the storm, the fog, the thunder; he can command all the meaner things: the rat, the owl, and the bat—the moth, and the fox, and the wolf; he can grow and become small; and he can at times vanish and become unknown [...] he can transform himself into a wolf [...] he can be as bat [...] He can come in mist which he create [...] he come on moonlight rays as elemental dust. (271)

Able to control the weather, utilise and transform into non-human animals, and change his form in size, shape, and substance, it is easy to see the narratological power of Dracula in the context of competing and indiscrete disease aetiologies. Martin Willis has read this multivalence as an attempt to reconcile modern germ theory with older ideas about disease transmission, whilst Ross G. Forman has argued that the 'temporal cycles, morphological changes, infection and propagation suggested by protozoan disease provide a template' for Stoker's modernist experiments in form.<sup>46</sup> The Count is at once miasma and microbe, disease and vector, and thus might be read as a biomedical metaphor that sometimes edges—as Rohan Deb Roy has noted of malaria itself—into 'diagnostic jargon'.<sup>47</sup>

The conceptual and aesthetic connections between vampirism and malaria are intuitive. Both are 'blood diseases' that cause cyclic fevers and leave their patient-victims feverish and anaemic. They share a biting vector—the vampire's fangs and the mosquito's proboscis even leave similar

<sup>45</sup>See: Emilie Taylor-Brown, "“She has a parasite soul!”: The Pathologization of Gothic Monster as Parasitic Hybrid in Bram Stoker's *Dracula*, Richard Marsh's *The Beetle*, and Arthur Conan Doyle's "The Parasite" in *Monsters and Monstrosity from the Fin de Siècle to the Millennium* ed. by Sharla Hutchinson and Rebecca A. Brown (Jefferson: McFarland and Company, 2015) pp. 12–28.

<sup>46</sup>Martin Willis, "“The Invisible Giant”, *Dracula*, and Disease' *Studies in the Novel* 39.3 (Fall 2007) 301–25; Ross G. Forman, 'A Parasite for Sore Eyes: Rereading Infection Metaphors in Bram Stoker's *Dracula*' *Victorian Literature and Culture* 44 (2016) 925–47 (p. 927).

<sup>47</sup>See: Rohan Deb Roy, 'Mal-Areas of Health: Dispersed Histories of a Diagnostic Category' *Economic and Political Weekly* 42.2 (13 January 2007) 122–29 (p. 122).

puncture wounds. Both are repelled by garlic (a natural antibiotic and mosquito repellent) and both are most active at night. Even before the discovery of its mosquito vector, malaria, like vampirism, had long been associated with the night; Dr John Mitchell, for example, wrote in 1849 ‘whatever may be [the] cause [of malarial fevers], it seems to have activity almost solely at night. Darkness appears to be essential to either its existence or its power’.<sup>48</sup> These basic aetiological overlaps are perhaps a result of the vampire’s historical role as a folkloric explanation for disease in preindustrial societies. As Paul Barber argues, such supernatural theories, although incorrect, are ‘usually coherent, cover all the data, and provide a rationale for some common practices that seem, at first glance, to be inexplicable’.<sup>49</sup> Barber argues, for example, that

the pneumonic form of the plague causes the victim to expel blood from the mouth, and the combination of visible blood with unexpected and quite sudden deaths may have contributed to the belief that vampirism was responsible for this disease. (42)

Vampires can certainly be mapped onto more than one illness; they have been read variously as metaphors for syphilis, HIV, cholera, plague, leprosy, tuberculosis, and rabies, among others. Contemporaneous reviewers of Stoker’s novel highlighted the vampire’s analogy to contagious disease, asserting ‘Count Dracula is a vampire of the most malignant kind [...] he carries contagion with him’ and ‘vampirism is propagated, like cholera, by contagion’.<sup>50</sup> As Willis has pointed out, Stoker’s vampiric aetiology—much like cholera—was enmeshed within competing discourses of contagionism, miasmatism, and sanitary science in the 1890s.

Stoker was certainly no stranger to medical concerns; as a child, he suffered from an undiagnosed illness that left him bedridden. For entertainment, he listened to ‘horror stories’ told by his mother, Charlotte, which—as others have suggested—may have instigated his interest in the folk power of disease, informed as they were by her experiences of the cholera outbreak in Sligo, Ireland, in the 1830s. Her characterisation of cholera as a sulphurous cloud hanging over the town likely influenced

<sup>48</sup>J. K. Mitchell, *On the Cryptogamous Nature of Malarious and Epidemic Fevers* (Philadelphia: Lea and Blanchard, 1849) p. 51.

<sup>49</sup>Paul Barber, *Vampires, Burial, and Death: Folklore and Reality* (New Haven: Yale University Press, 1990) p. 5.

<sup>50</sup>‘Notes on New Books’ *Illustrated London News*, Saturday 17 July 1897, p. 23.

Stoker's earlier short story 'The Invisible Giant' (1882), which sees a vaporous giant besiege a city with illness. Reading this story in conversation with *Dracula*, Willis argues that it was a text that allowed Stoker to experiment with the imaginative power of disease as a monstrous gothic figure before developing it more fully in *Dracula*.<sup>51</sup> In the latter novel, Stoker's continued investment in the aesthetics of miasmaticism can be read through references to 'little specks of dust' and 'white mist', both of which herald the presence of vampires. Dracula's tomb at Carfax even gives off a 'malodorous air [...and] an earthy smell, as of some dry miasma, which came through the fouler air [...] composed of all the ills of mortality', directly connecting vampirism to the vocabulary of environmental theories of disease transmission (284).

Dracula's reliance on miasmatic environments and his importation of boxes of earth from his homeland evoke the quintessential disease of 'bad air'—*mal'aria*, which had long been associated with marshy effluvia. And yet, whilst Dracula's propagation is associated with miasmatic environments, he does not transmit his vampirism through this means, or indeed through contagion. Rather his desire to 'create an ever-widening circle of semi-demons to batten on the helpless in London' is (or would have been) effected, like parasitic disease, through a series of 'blood meals' (his drinking of Lucy and Mina's blood and his forcing of them to drink his). Thus, Stoker's novel might be read in the context of developments in vector biology and tropical medicine, which had highlighted the significance of blood in the diagnosis of infection and the role of non-human blood-sucking intermediates, like mosquitoes, in the propagation of disease.

In 1883, British-born American doctor Albert King had suggested that diseases like malaria might be transmitted by blood-sucking insects, comparing the phenomenon to the practice of inoculation:

viewed in light of our modern "germ theory" of disease, the punctures of proboscidian insects, like those of Pasteur's needles, deserve consideration as a probable means by which bacteria and other germs may be inoculated into human bodies, so far as to infect the blood and give rise to specific fevers.<sup>52</sup>

<sup>51</sup> Martin Willis, "'The Invisible Giant', *Dracula*, and Disease' *Studies in the Novel* 39.3 (Fall 2007) 301–25.

<sup>52</sup> A. F. A King, 'Insects and Disease—Mosquitoes and Malaria' *Popular Science Monthly* 23 (September 1883) 644–58 (p. 644).

King's comparison between proboscis and needle casts a different light on the blood transfusions in the novel, which Jessica Howell argues exist at a 'historical pivot point between the symbolic and biochemical resonances of blood, between anxieties about and hopes regarding the possibilities afforded by the transfer of blood and blood substances'.<sup>53</sup> These hopes and anxieties might be read in Lucy's transfusion of blood from Arthur Holmwood, who we are informed has 'blood so pure that [they] need not defibrinate it' (143). Although critics often read this as an endorsement of Holmwood's superior class pedigree, it could equally refer to the absence of erythrocytic pathogens, a medical preoccupation ascertained earlier in the novel when Dr Seward examines a sample of Lucy's blood microscopically: 'I was actually able to test the quality of her blood [...] I secured a few drops of the blood and analysed them' (130).<sup>54</sup>

Readings of the Count as allied metaphorically with malaria and metonymically with the mosquito are strengthened by the novel's position within a constellation of texts that explicitly make these connections. As I mentioned at the beginning of this section, this was the case with Braddon's *Good Lady Ducayne* published the preceding year. Moreover, *Dracula* has an acknowledged debt to Sheridan Le Fanu's earlier vampire tale *Carmilla* (1872), which also drew on the lexis of disease—'fever', 'plague', 'a strange epidemic'—and explicitly on malaria to conceptualise the vampire.<sup>55</sup> In response to hearing a funereal hymn, Carmilla is herself described as 'trembl[ing] all over with a continued shudder as irrepressible as ague'.<sup>56</sup> Her nightly visitations are conceptualised as 'only a fever passing by, or some other malady, as they often do [...] knock[ing] at the door, and not being able to get in' (155). When Laura is sold a charm to ward off 'oumpires', Carmilla explains that it works because it has been 'fumigated, or immersed in some drug, and is an antidote against the malaria' (156).

<sup>53</sup> Jessica Howell, *Malaria and Victorian Fictions of Empire* (Cambridge: Cambridge University Press) p. 175.

<sup>54</sup> Forman conversely suggests that the lack of a more explicit microscopic analysis of blood in the novel is a sign of Van Helsing's 'unorthodox' medical practices and reflective of his belief that Lucy's ailment is not physical but supernatural.

<sup>55</sup> Joseph Bierman recognises this debt in the original placement of Castle Dracula in Styria. This was later rewritten. See: Joseph Bierman, 'The Genesis and Dating of *Dracula* from Bram Stoker's Working Notes' *Notes and Queries* 24 (1977) 39–41.

<sup>56</sup> J. Sheridan Le Fanu, 'Carmilla' in *In a Glass Darkly*, vol III (London: R. Bentley and Son, 1872) pp. 49–270 (p. 116).

Whilst malaria provided the literary imagination with an aesthetic with which to conceptualise vampirism, the vampire became a cultural referent for communicating the challenges of tropical travel and contextualising imperial sanitation projects. In 1896, for example, an article about mosquitoes in the *Sheffield Weekly Telegraph* characterised tropical travel as dominated by the threat of ‘gnat bites and other insect vampires’.<sup>57</sup> A writer complaining that trade illustrations of mosquito nets encouraged naïve travellers to hang their nets incorrectly, similarly warned against being exposed to the bites of the ‘little vampire[s]’ that cause malaria.<sup>58</sup> A writer reporting on the work of the Liverpool School of Tropical Medicine in West Africa for the *Liverpool Daily Post* also discussed the transmission of disease in relation to ‘insect vampires’.<sup>59</sup>

In a speech given to students at Aberdeen University, British surgeon Frederick Treves drew on the popular detective/doctor dyad explored in my third chapter to erect a direct analogy between the vampire and the malarial mosquito. As reported by the *Pall Mall Gazette* in 1906, he said:

[T]here were few detective stories that could surpass the true tale of the tracking of the miscreant malaria [...] for all time this bringer of disease has been an evil genius, a vampire of the marsh, feeding upon its victim in the dead of the night. Now the ghost was laid, and the mystery was reduced to a few cells which could be kept in a bottle, and grown as tamely as a gardener rears cabbages.<sup>60</sup>

The gothic mode allows Treves to emphasise malaria as a protagonist in a disciplinary drama (miscreant, evil genius), as a supernatural threat to be eliminated by modern medicine (vampire, ghost), and as a microbe to be ‘kept in a bottle’ and ‘grown tamely’. It is a vision of culturing nature that dovetails with what Paul S. Sutter has identified as a discourse of environmental ‘mastery’ in tropical medicine. Employing the concept of ‘unruliness’, Sutter argues that imperial sanitary projects were dominated by a form of ‘tropical triumphalism’ that emphasised environmental management as a central activity of imperial power. Such language, he argues, exposes the extent to which the nature/culture divide has historically ‘been a product of, and crucial strategy for, imperial and high-modernist

<sup>57</sup> ‘The Mosquito Plague’ *Sheffield Weekly Telegraph*, Saturday 11 July 1896, p. 8.

<sup>58</sup> Alan Field, ‘Mosquito Nets’ *Field*, 13 May 1905, p. 779.

<sup>59</sup> ‘News of the Day’ *Liverpool Daily Post*, Tuesday 20 March 1900, p. 4.

<sup>60</sup> ‘Sir Frederick Treves at Aberdeen’ *Pall Mall Gazette*, Thursday 22 February 1906, p. 7.

management'. He reads the triumphalist sentiment surrounding the completion of the Panama Canal as a 'formative expression of the dominant modernist approach to nature'.<sup>61</sup> By combining this triumphalism with the gothic figure of the vampire, writers like Treves were able to strengthen the ideological power of Western medicine as a form of knowledge that banished superstition and reduced 'monstrous threats' to 'a few cells'.

In 1925, then director of the London School of Tropical Medicine, and president of the Royal Society of Tropical Medicine and Hygiene, Andrew Balfour used this formulation to conceptualise the problems posed by tropical illness. In his presidential address given at the Royal Institute of Public Health in Brighton, he used the introduction to Patrick Manson's famous textbook as a prompt to ask which diseases commonly found in the colonies might be truly termed 'tropical'. African sleeping sickness sprung immediately to mind for Balfour, since it was one of only a few diseases truly limited in geographical range. Despite this, its influence extends well beyond the 'Dark continent' he asserts, by affecting imperial trade and commerce. Both it and Chagas' disease—the 'human trypanosomiasis of South America'—are limited by the distribution of 'certain insects [...] which love the darkness rather than the light and, like vampires, feed upon the blood of man'.<sup>62</sup>

Balfour revisited the spirit of this analogy again in a speech given at the Guild Hall in Eccleston Square later that same year. In 'Malaria as an Enemy of the British Empire', he characterised malaria as a disease which 'exercises its powers for evil' by draining the life force out of individual and nation, gripping the empire with 'a strangle-hold'. 'The mouse we know aided the lion', he insisted,

but something infinitely smaller than any mouse worries and perplexes the British lion year in and year out [...] How many young and active men, potential empire builders, seek the tropics for a career and instead, owing to acute malaria, find there a grave!<sup>63</sup>

<sup>61</sup> Paul S. Sutter, 'Triumphalism and Unruliness During the Construction of the Panama Canal' *RCC Perspectives* 3 (2015) 19–24 (p. 21).

<sup>62</sup> Andrew Balfour, 'The Term "Tropical"' *Journal of State Medicine* 33.8 (1925) 360–67 (p. 364).

<sup>63</sup> Andrew Balfour, 'Malaria as an Enemy of the British Empire', p. 5. [MS of address delivered 18 October 1925] London, LSHTM. GB 0809 Balfour/01/07.



Malaria ‘drain[s] our colonies of young lives’ just as it ‘drain[s] the Empire’s resources’; it is a disease

constantly warring against the Empire, now and then sweeping forward and slaying thousands at a time, sapping here, sapping there, picking off [...] our officers, attacking our mercantile marines, crippling our trade and sparing not the women and the children. (14)

Balfour ended his speech by characterising the British empire as one on which ‘the sun never sets without infected Anopheline mosquitoes commencing their nefarious work and transmitting the stealthy plasmodium of malaria from the sick to the sound’ (15). The vision of malaria as an invisible force sapping energy and draining resources tapped into a dual anxiety about the commercial and practical viability of British imperialism. It was an image also mobilised by British parasitologist John William Scott Macfie (1879–1948) in a poem called ‘The Vampire’s Grave’.

Macfie spent his early career as colonial medical officer stationed in West Africa and went on to become director of a medical research institute at Lagos and then Accra. He embarked on eight tours of West Africa between 1910 and 1922 and volunteered with the Royal Army Medical Corps (1917–1919) where he investigated malaria with the Liverpool School of Tropical Medicine under the supervision of Ross. He probably wrote ‘The Vampire’s Grave’ whilst stationed in Nigeria in 1911. The poem begins: ‘Awake! Awake! Night plays the host, and bide you to your bloody feast/Drink and live till dawn dyes the east. Nigeria! Accursed Coast!’ Positioning Nigeria as both personified parasite and host country to parasitic disease, Macfie uses the motif of the vampire to lament the impact of chronic tropical illness on the health of Britons in imperial space. ‘How have you fed your phantom life, how many heroes battered on?’ he asks.

You laugh to see the new men come, rich red blood pulsing through  
their veins,  
You know with what enduring chains to bind them to their lingering doom,  
For fatal fascination draws your victims to you year by year,  
Do you instil the poison where you suck the lifeblood to your jaws?<sup>64</sup>

<sup>64</sup>London, LSHTM. GB 0809 Macfie/03/02/03. John William Scott Macfie, ‘The Vampire’s Grave’ c. 1911.

By pairing the sucking of lifeblood with the instilling of poison, Macfie, like Stoker, imaginatively construes the mosquito and vampire as one. The heroes' 'lingering doom' is chronic malaria.

In the late nineteenth century, conceptions of health—especially the health of modern workers—were dominated by a model of 'supply and demand' borrowed from energy physics. It was a model that drew conceptual parallels between the circulation of blood, energy, and money. The finite supply of bodily energy, depleted by physical and mental toil, limited the commercial value of the worker, and so the health and wealth of the nation. As I noted in the previous chapter, energy was often held to be synonymous with 'nerve force', a vocabulary that helped to communicate the wide-reaching impact of the stresses and strains of modern industrial life conceptualised as forms of nervous illness. Macfie's vampire analogy connects this discourse of the depletion of vital and commercial energy to tropical illness, voicing contemporary preoccupations about the repercussions of tropical travel on returning British bodies.

Beyond epidemiological anxieties about acclimatisation, 'The Vampire's Grave' suggests that the British-African imperial relationship is itself parasitic. Nigeria is like a monstrous vampire sucking away the health and wealth of the British nation. Willis flips this ideological position on its head by analysing *Dracula* as a novel in which the 'middle-class imperialist [is] central to the spread of infection'.<sup>65</sup> He reads the pivotal scene in which Harker slashes at Dracula with his Kukri knife loosing 'a bundle of bank-notes and a stream of gold', as symbolic of 'the true nature of his relationship with the Count'. Whilst others have read this depiction as a critique of domestic capitalism or unabashed anti-Semitism, Willis interprets the scene as 'a violent colonial confrontation where the British male, with "a fierce and sudden cut" expropriates Transylvania's wealth without recourse to the "civilized" veneer of economic exchange' (321).

Many scholars have since recognised the numerous ways that British imperial relations undergird the narrative. Jill Galvan, for example, has placed *Dracula* in the context of the cultural legacy of the Indian Rebellion, which, she argues, exerted visible influence on literary culture in the 1890s via Mutiny fiction and the emergence of 'Mutiny Gothic'. *Dracula's* 'paranoid vision of inverted imperialism', she contends, recalls the event that 'more so than any other in the nineteenth century, brought home to the

<sup>65</sup> Martin Willis, "'The Invisible Giant", *Dracula*, and Disease', p. 321.

British public the vulnerability of empire'.<sup>66</sup> Drawing parallels between the role of the Indian fakir in spreading dissent among the populace and Dracula's vampirism, Galvan highlights a cultural-literary tradition of quasi-fictional Rebellion lore that would have mediated the public reception of Stoker's novel. She further situates Dracula in relation to Indian Occult culture through his hypnotic abilities, which late Victorians associated with India, and which also became associated—through the figure of the fakir—with the practice of suspended animation through self-hypnosis. Such abilities were mapped onto the cultural profile of the vampire in contemporaneous theosophical works, such as Henry Steel Olcott's 1891 essay 'The Vampire', which connects folkloric notions of vampirism with the Indian fakir's ability to be resuscitated after several weeks' inhumation (441).

Anglo-Indian cultural politics might also be identified in depictions of the proliferating rats that accompany Dracula on his sea voyage and announce his presence at Carfax. Read in the context of the third plague pandemic (1894–1959)—which reached Bombay in 1896—Dracula's rats encode anxiety about contact with indigenous Indian and South Asian reservoirs of disease. The Bombay plague outbreak occupied visible space in the British medical and popular press, which debated the disease's connections to rats as well as the sanitary importance of segregating Europeans from the native population. As the *British Medical Journal* reported in 1896, several bacteriological investigators were hard at work to elucidate the cause and mode of transmission and particularly 'whether the rat is the primary infector or no'.<sup>67</sup> As another article noted, Bombay's 'central' position within the empire meant that 'whether seaward or landward the possibilities of spread are enormous'. The author went on to attribute the outbreak to Bombay's 'almost daily communication with the Far East' via steamships:

ships are the chosen home of rats, and their history of being attacked by or enjoying immunity from plague in Bombay may help to clear up the reported part rats play in the life-history of the plague.<sup>68</sup>

<sup>66</sup> Jill Galvan, 'Occult Networks and the Legacy of the Indian Rebellion in Bram Stoker's *Dracula*', *History of Religions* 54.4 (May 2015) 434–58 (p. 436).

<sup>67</sup> 'The Plague in India' *British Medical Journal* 2.1849 (24 October 1896) p. 1254.

<sup>68</sup> 'The Reported Appearance of Plague in Bombay' *British Medical Journal* 2.1866 (3 October 1896) p. 996.

Two of Stoker's brothers were doctors stationed in India during the outbreak, which may well have influenced Stoker's artistic choices. The novel was published at a time when the ontological status of creatures like rats was in flux, still associated with ideas about vermin, but also enjoying new currency as vectors of disease. Thus, Stoker's rats—which Servitje and others have read as part of an anti-Semitic portrayal of Dracula that critiques Eastern European Jewish immigration—embody the combined threat of social and biological mobility. Indeed, the aesthetic of swarming rats was also used to characterise malarial infection; in his treatise on malarial fever, Ross explained that a 'quarter of a billion' malaria parasites must be present to produce fever and that each one inhabits one of the red corpuscles of the blood. They can persist in a patient's blood for years, he asserted, 'just as rats live in a ship'.<sup>69</sup>

For Ross G. Forman, the novel's 'investment in the idea of the bounded nation as a defense against immigration' and its 'reliance on a model requiring an Anglo-American/Northern European alliance to control colonization and to govern geopolitics' dramatises a tension between Greater Britain and Little Englandism (926). The literary cultures of this period produced a range of stories in which writers mobilised the motif of parasitism to link concerns about fracturing gender politics and class conflict with anxieties of reverse-colonisation, from Arthur Conan Doyle's *The Parasite* (1890) to Florence Marryat's *The Blood of the Vampire* (1897) to Richard Marsh's *The Beetle* (1897). In the latter novel, an androgynous foreigner with Occult powers—who literally collapses into an insect vector—is able to gain a foothold in London owing to the precarity of a homeless tramp and the indiscretions of a middle-class politician.<sup>70</sup>

<sup>69</sup> Ronald Ross, *Malarial Fever; Its Cause, Prevention, and Treatment; Containing Full Details for the Use of Travellers, Sportsmen, Soldiers, and Residents in Malarious Places* 9th edn (London and Bombay: Longmans, Green, and Co., 1902) p. 7.

<sup>70</sup> For an extended analysis of the class politics at work in these novels, see: Emilie Taylor-Brown, "'She has a parasite soul!': The Pathologization of Gothic Monster as Parasitic Hybrid in Bram Stoker's *Dracula*, Richard Marsh's *The Beetle*, and Arthur Conan Doyle's "The Parasite"' in *Monsters and Monstrosity from the Fin de Siècle to the Millennium* ed. by Sharla Hutchinson and Rebecca A. Brown (Jefferson: McFarland and Company, 2015) pp. 12–28.

## BITING WITH INTENT: AGENCY AND REVENGE

In 1905, Scottish physician and authority on blood diseases, Dr George Lovell Gulland wrote a letter to Ross enclosing verses he had written to the tune of a popular song called ‘Darling Nelly Gray’.<sup>71</sup> The original song, written by Benjamin Hanby, is the lament of an African-American man whose sweetheart, Nelly, has been sold as a slave and taken away to Georgia. Gulland’s version is renamed ‘The Lament of the Mosquito’ and tells a very different tale. Sung from the perspective of malaria’s arthropod vector, it recounts how the disease used to be spread in secret:

We laid our eggs so gaily in the pools beside the stream,  
And we watched the larvae hatching out with glee,  
We handed out Malaria to everyone that came,  
And not a soul suspected it was we!

Later verses, however, explain that the landscape has changed since Ross’s discovery. Now ‘they’ve drained our pools away’ and covered the larvae in oil. The houses are ‘draped in gauze’ and the men wear gloves and veils so there are no ‘openings’ for ‘hungry insects’—‘I’ve forgotten what the taste of blood may be’ the mosquito opines. Finally, we learn of a revenge plot:

But to make him feel my vengeance I’ve devised a little plan,  
Which will make him often sadly think of me,  
For I’m taking a ship to England, to bite him ere I die,  
With a special new disease I’ve got in store.

The song, written on the way to a country consultation, playfully voices the fear—to use Stephen Arata’s phrase—of reverse-colonisation. The mosquito’s plan to ‘tak[e] a ship to England’ directs our attention to the visibility of illness at port hospitals in the bodies of returning soldiers and sailors, appealing to the fear that Britain’s geopolitical relationships were immersing the nation in a global market place of pathogens. Moreover, the poem depicts the mosquito ‘biting with intent’, transforming the vector from a passive vessel into a willing agent in the transmission of disease.

<sup>71</sup>Although he calls it by its first line: ‘There’s a low, green valley, on the old Kentucky shore’. London, LSHTM. RC. GB 0809 Ross/145/04/01–13. George Lovell Gulland, ‘The Lament of the Mosquito’, 15 February 1905.

As Maurits Bastiaan Meerwijk argues, from the 1880s, vectorism became ‘a focal point around which popular and long-standing representations of [the mosquito] as a malevolent tropical “predator” were rearticulated’.<sup>72</sup> Writers reconceptualised mosquitoes as inimical foe rather than environmental annoyances using ‘predatory’ and ‘military’ metaphors that attempted to reconcile inherent tensions between the symbolic power of the individual insect, and the collective action that in reality underpinned the transmission of disease. As Ross argued in *The Prevention of Malaria* (1910): ‘it is scarcely true to say that malaria is caused by a parasite and propagated by a mosquito; it can be caused only by many parasites and widely propagated only by many mosquitoes’.<sup>73</sup> We can see these tensions at work in reports of Ross’s sanitation work in Freetown, Sierra Leone. In 1901, country gentlemen’s newspaper *Field* published an article on Ross’s ‘mosquito crusade’ in which they recalled that upon finding *anopheline* mosquitoes Ross had sent a telegram to the Colonial Office, which read simply: ‘send men’. They ‘smile[d] at the phraseology’ because it ‘seemed to suggest a larger mosquito than had ever been heard of!’<sup>74</sup> Ross was requesting helpers to carry out the work of sanitation—draining swamps, and dousing stagnant water and mosquito larvae with petroleum—nevertheless his choice of words suggested, as the rest of the article makes clear, that he was requesting reinforcements for a military engagement with a single monstrous enemy.<sup>75</sup>

Dracula embodies a similar conceptual tension as both an environmental problem to be sanitised (recall his boxes of soil and alternate forms as mist and dust), and as a specific larger-than-life antagonist. Identifying Dracula as ‘an archaic military antagonist [...] who infiltrates England as a pathogenic threat’, Lorenzo Servitje uses the Ordnance Survey map as a form with which to explore how the novel holds in suspension tensions between imperial threat and domestic sanitation. As a ‘topographical form

<sup>72</sup> Maurits Bastiaan Meerwijk, ‘Tiger Mosquitoes from Ross to Gates’ in *Framing Animals as Epidemic Villains. Histories of Non-human Disease Vectors* ed. by Christos Lynteris (London: Palgrave Macmillan, 2019) pp. 119–46 (p. 123).

<sup>73</sup> Ronald Ross, *The Prevention of Malaria* (London: 1910) p. xi.

<sup>74</sup> ‘The Mosquito Crusade’ *Field*, Saturday 21 September 1901, p. 25.

<sup>75</sup> The military overtones of sanitation work are imported wholesale into *Dracula* where the Crew of Light carry out their work with a medicalised violence that is supported by the crusading leitmotifs popularised in relation to tropical medicine. Servitje compares the lancet to the sword and the breaking of Lucy’s skin for the transfusion of blood to her later impalement by the ‘the magnified lance—the stake’ (See: *Medicine Is War*, p. 121).

for military intelligence’, the Ordnance Survey, Servitje argues, had been historically active in the ‘physical and imaginative construction of empire’, from its origins in helping to quell the Jacobite rebellion in the eighteenth century to its utilisation in the mid-nineteenth century by sanitary reformers to map London’s drainage and sewerage infrastructure.<sup>76</sup> At the beginning of the novel, Jonathan Harker visits the British Museum with the intention of finding out more about Transylvania. Alas, he laments ‘there are no maps of this country as yet to compare with our own Ordnance Survey maps’ (10), a comment that implies superior national self-knowledge and at the same time gestures to an anxious lack of imperial intelligence.

The Count, conversely, has access to a plethora of maps and atlases which he mobilises to garner more intimate knowledge of England and so affect his social and biological invasions. Dracula’s use of maps resonates with the role of governmental knowledge in managing and making legible the public health of Britain and her colonies in this period. As Pamela K. Gilbert argues, ‘London became the clearest spatial representation of Englishness, and medical mapping of London became a proportionately important mode for representing the health of the social body more generally’.<sup>77</sup> Cartography was not just a means of visualising space, but rather of presenting ‘a statistical argument [...] visually’, and understanding social problems spatially (14). Maps created by sanitary reformers like Edwin Chadwick, John Snow, and Charles Booth helped to connect the dots between socioeconomic conditions, unhygienic infrastructures, and epidemic disease.

In 1890, founder of the Salvation Army, William Booth, published *In Darkest England and the Way Out*, a text inspired by Henry Morton Stanley’s *In Darkest Africa*, published the same year. Whilst Stanley had brought the Congo to life for his readership by imaginatively remapping Britain with an impenetrable and decaying ‘Scottish copse’ extending ‘the entire distance from Plymouth to Peterhead’, Booth sought to draw parallels between the jungle and the slum. ‘As there is a darkest Africa is there not also a darkest England?’ he asks.

Darkest England, like Darkest Africa, reeks with malaria. The foul and fetid breath of our slums is almost as poisonous as that of the African swamp.

<sup>76</sup> Lorenzo Servitje, *Medicine Is War*, pp. 115–16.

<sup>77</sup> Pamela K. Gilbert, *Mapping the Victorian Social Body* (Albany: SUNY Press, 2004) p. 13.

Fever is almost as chronic there as on the Equator. Every year thousands of children are killed off by what is called defects of our sanitary system.<sup>78</sup>

Booth thus disrupts biomedical boundaries by suggesting that miasmatic colonial geographies figured as natural to the tropics could be reproduced artificially at home by urban poverty. The adverb ‘almost’—intended to maintain some semblance of geopolitical difference—crumbles under the weight of the accusation as Booth brings the ‘civilising mission’ home to bear on what he calls the ‘outcast’ and ‘sinking’ underclasses of the Imperial capital. As Alan Bewell, Mark Harrison, and Pamela Gilbert have explored at length, similarities were being drawn in this period between ‘othered’ colonial landscapes and metropolitan spaces, undermining ideologies like ‘primitive’ and ‘civilised’. The ‘tropical’ in tropical medicine—which Manson maintained was ‘more convenient than accurate’—was similarly being destabilised by the concept of vectorism.<sup>79</sup> Regardless of climate or perceived civilisation, if an environment could support the vector, it could support the disease. In 1920, the *Western Daily Press* would pronounce the possibility of a ‘serious outbreak of virulent malaria’ in London owing to infected cases coming from abroad and being propagated by local mosquitoes. Referring again to the mosquito as a ‘vampire insect’, they pointed out that the creatures ‘are bred in Hackney and adjoining marshes [and] in the ponds of Wimbledon and Clapham Commons’.<sup>80</sup>

As a model for vector-borne illnesses, *Dracula* draws attention then to the contingent mobility of tropical disease—able to move beyond the boundaries of empire in the bodies of immigrants and returnees, but only able to persist and multiply if supported by particular ecological conditions. As Martin Willis argues, Stoker situates Britain’s own infective potential at the ‘ancestral’ Carfax Abbey and, in doing so, demonstrates that ‘predisposing causes of disease are to be found at home as well as abroad’.<sup>81</sup> This identifies the miasmatic environment as a precondition that already exists within England for the propagation of a ‘special new disease’, like the one imagined by Gulland’s poem. Both ‘The Lament of

<sup>78</sup> William Booth, *In Darkest England and the Way Out* (London: Funk & Wagnalls, 1890).

<sup>79</sup> Patrick Manson, *Tropical Diseases: A Manual of the Diseases of Warm Climates* (London: Cassell and Company 1898), p. xi.

<sup>80</sup> ‘Mosquito Menace’ *Western Daily Press*, Thursday 19 August 1920, p. 8.

<sup>81</sup> Willis, “‘The Invisible Giant’”, *Dracula*, and Disease’, p. 320.



the Mosquito' and *Dracula* sit within a 'history of disease representations that persistently racialize populations and environments associated with disease via the gothic figures of the alien, the rogue, the vampire, the zombie, the monster, [and] the terrorist'.<sup>82</sup> Whilst Stoker overtly medicalises racial alterity in his characterisation and plot, the form of Gulland's poem implicitly does the same. Gulland likely chose 'Darling Nelly Grey' as a base simply for its popularity; nevertheless, the original lyrics provide an uncomfortable undertone, drawing perhaps unintended connections between imperial sanitary administration and the slave trade. By positioning African-Americans and mosquitoes in the same lyrical space, Gulland implicitly performs a common rhetorical technique that collapsed parasites, vectors, and indigenous populations into one.

As Emily Alder has argued, from the late century onwards changing depictions of human-animal encounters helped to shape the development of science fiction, especially in relation to non-human subjectivities. This is particularly clear in the Weird Fiction subgenre closely identified with the American fantasy and horror fiction magazine *Weird Tales*, and the work of H. P. Lovecraft. These tales, Alder argues, 'unsettle a colonialist centrism structuring relationships between humans and the more-than-human world'.<sup>83</sup> This unsettling of colonialist centrism is evident in a short story called 'Wingéd Death', which uses sleeping sickness and its tsetse fly vector to disrupt ideas about human and non-human agency, and to undermine imperialist hierarchies of knowledge. Published in *Weird Tales* in 1934, 'Wingéd Death' was ostensibly ghost written by H. P. Lovecraft in collaboration with American pulp fiction writer Hazel Heald, who supplied the original idea and plot.

The narrative opens with four men: the hotel proprietor, a policeman, a coroner and his physician, standing in a hotel room in Bloemfontein, South Africa (incidentally where Arthur Conan Doyle was a doctor during the Anglo-Boer war). Their 'horror' is 'equally divided' between the dead body in front of them, a journal in the physician's hand, a dead fly in a pot of ammonia, and some handwriting scrawled on the ceiling. The remaining narrative is taken directly from the journal, which belonged to the dead man, who is both the victim and perpetrator of a murder. Like 'The

<sup>82</sup> Neel Ahuja, *Bioinsecurities: Disease Interventions, Empire, and the Government of Species* (Durham: Duke University Press, 2016) p. 15.

<sup>83</sup> Emily Alder, '(Re)Encountering Monsters: Animals in Early Twentieth Century Weird Fiction' *Textual Practice* 31.6 (2017) 1083–100.

Vampire's Grave', 'Winged Death' cultivates a relationship between Africa, disease, and revenge, and like *With Edged Tools*, it plays on a popular association between sleeping sickness and superstition. The story follows Dr Thomas Slauenwite, an American pathologist specialising in African fevers, who enacts a complicated scheme of revenge on a scientific rival, Professor of Invertebrate Biology at Columbia University, Dr Henry Moore, PhD. Slauenwite had developed a theory about the transmission and development of remittent fever, aided 'only slightly' by some papers belonging to a late government official named Sir Norman Sloane. Following his work, Slauenwite was in line for a cushy position in the South African health service and even a knighthood. However, Moore had undermined his claim to precedence by publishing correspondence he had with Sloane before his death that revealed that Sloane had come to the same conclusion, and before Slauenwite. Slauenwite is 'ruined' by the accusation of plagiarism and although the British government ignored the aspersions, they 'withheld the half-promised appointment and knighthood'. He subsequently moves to a cotton and ivory trading-post at M'Gongo,

a beastly hole [...] full of every sort of fever known to mankind. Poisonous snakes and insects everywhere, and niggers with diseases nobody ever heard of outside medical college.<sup>84</sup>

There he comes across a man called Mevana who is suffering from 'a queer illness' after being bitten by an insect. The locals believe that he has been bitten by a 'devil-fly' which

makes its victim waste away gradually and die, and then takes hold of his soul and personality if it is still alive itself—flying around with all his likes, dislikes, and consciousness. (36)

Slauenwite gives him quinine and takes a sample of his blood. He is initially mystified by the 'strange germ' he sees beneath the microscope, but after reading an old volume of local health records, he realises that it is sleeping sickness from which Mevana is suffering and that he must have been bitten by a tsetse fly. Slauenwite is suddenly stuck with the means by

<sup>84</sup>H. P. Lovecraft and Hazel Heald, 'Winged Death' in *Black Seas of Infinity: The Best of H. P. Lovecraft*, selected by Andrew Wheeler (Garden City, NY: SFBC Science Fiction, 2001) pp. 33–54 (pp. 35–36).

which he might exact revenge upon Moore (who is an authority on African entomology): send him a never-before-seen species of fly infected with the trypanosome parasite. He sets about creating his ‘envoy of death’ by cross-breeding different species of tsetse fly and spraying their wings blue in the hope of luring Moore to try to classify it. After several experiments on his indigenous servants, Slauenwite is satisfied that the cross-bred flies are infective (his house-boy, Batta, dies after being bitten) and so he mails a batch to Moore.

However, after reading of Moore’s death several months later in the *Mombasa Gazette*, the idea that the fly ‘steals’ its victim’s consciousness, which he initially dismissed as native superstition, briefly takes hold of Slauenwite:

One thing at the very end of the report—undoubtedly, the cheap romancing of a yellow journalist—gives me a curious shudder in view of the legends of the blacks and the way the fly happened to go wild when Batta died. It seems that an odd incident occurred on the night of Moore’s death; Dyson having been aroused by the buzzing of a blue-winged fly—which immediately flew out the window—just before the nurse telephoned the death news from Moore’s home, miles away in Brooklyn. (44)

After Batta died the fly that bit him appeared to commit suicide and after Moore died the fly ‘escaped’ out of the window with perceived intent. With mounting suspicion cast in his direction, Slauenwite flees to Johannesburg under an assumed identity.

A few months after Moore’s death, and three years after the first journal entry, Slauenwite takes to writing in it again, this time ‘solely to relieve [his] mind’. He is being tormented by a blue-winged tsetse fly, which he begins to believe might contain his dead rival’s consciousness. The diary entries become increasing frantic as Slauenwite begins to question his own sanity:

Jan. 16—Am I going insane? [...] I must keep a tight hold of my consciousness.

Jan. 17—Either I am mad or the world is in the grip of some sudden suspension of the laws of probability, as we know them [...]

Jan. 18—Into what strange hell of living nightmare am I plunged? [...]

Jan. 19—I am utterly engulfed in horror. (46–49)

The fly hovers around a copy of Henry Moore's book *Diptera of Central and Southern Africa*, knocks on windows and doors, and begins a haunting count down by dipping itself in ink and scrawling numbers on the ceiling: 'Five, four, three, two—what can this be save some monstrous and unthinkable *counting-off of days?*' When the countdown reaches two, Slauenwite flees to Bloemfontein, but, to his horror, the fly follows him. As the diary entries recede and we are returned to the frame narrative, the reader is faced with an interpretive dilemma. Slauenwite's distrust of his own senses, the references to his 'shaken' mind, and even his handwriting—which, we are informed, becomes 'irregular, nervous and very difficult to decipher'—undermine the veracity of his perspective. Thus, the ending, with its dead body and accompanying paraphernalia, can be interpreted in two ways: that the narrator has contracted sleeping sickness and the diary recounts his gradual mental deterioration as a result of the illness, or that he really was being hounded by a supernatural arthropod. The cause of death is noted by the coroner as 'heart-failure induced by sheer fright', but he admits the presence of a tsetse fly bite on the back of Slauenwite's neck, along with trypanosomes in his blood, keeping both possibilities in play. The writing on the ceiling, supposedly written by Slauenwite in fly-form, appears to corroborate his story. It reads:

SEE MY JOURNAL—*IT* GOT ME FIRST—I DIED—THEN I SAW I WAS IN *IT*—THE BLACKS ARE RIGHT—STRANGE POWERS IN NATURE—NOW I WILL DROWN WHAT IS LEFT. (54)

The drowned fly in a pot of ammonia is alleged to be Slauenwite's suicide after he realised that his consciousness had been transferred into the fly's body. The coroner asserts that the position of the writing is in a place 'no human hand could reach', which again appears to confirm the authenticity of the supernatural. In a narrative that refuses to fully confirm or negate the teller's perspective, the 'mysteries of Africa', articulated by native superstition, are pitted against, and ultimately supersede, the scientific authority of Western biomedicine. As Slauenwite writes: 'Too often a grain of incredible truth lurks behind the wildest and most fantastic of legends' (52).

In a letter to fellow weird fiction author Clarke Ashton Smith in 1934, Lovecraft explained the genealogy of 'Winged Death' as follows:

All Mrs. Heald had to start with was a cloudy idea about somebody killing somebody with bugs. Then she got a medical friend to shed some light on poisonous African insects, & decided to give the tale an African cast. That was all I had to go on.<sup>85</sup>

Like Arthur Conan Doyle's earlier story 'The Adventure of the Dying Detective', 'Wingéd Death' makes use of the obscurity and lethality of tropical disease as a bioweapon for enacting revenge. Unlike 'Dying Detective' however, 'Wingéd Death' does not find a comforting resolution in the authority of Western medical knowledge. In revising Heald's idea—itself already full of ghoulish potential—Lovecraft could not resist dropping in cross-references to his Cthulhu mythos, a shared fictional universe created by Lovecraft in the early twentieth century and expanded by his contemporaries. When Slauenwite ventures into the jungle to look for sleeping sickness-infested tsetse flies he comes across some Cyclopean ruins, which the locals give a wide berth:

They say these megaliths are older than man, and that they used to be a haunt or outpost of 'The Fishers from Outside'—whatever that means—and of the evil gods Tsadogwa and Clulu. To this day they are said to have a malign influence, and to be connected somehow with the devil-flies. (38)

The Fishers from Outside appear in a poem by Lovecraft written five years earlier called 'The Outpost' (1929) in which ancient ruins in Zimbabwe are attributed, not to past human civilisation, but to alien colonisation. By making Tsadogwa and Clulu—degenerations of the names 'Tsathoggua' and 'Cthulhu' (cosmic alien deities from the Cthulhu mythos)—responsible for malign influence (sleeping sickness) and devil-flies (tsetses), Lovecraft rescripts tropical epidemiology as otherworldly. Thus, whilst Will Tattersdill has argued that science fiction often brought colonialism to outer space, Lovecraft's weird fiction quietly does the opposite.<sup>86</sup> Like so many imperial cartographers, Lovecraft erases African history, replacing it with an alien alterity that enacts the ultimate colonial Othering. As

<sup>85</sup>[H. P. Lovecraft to Clark Ashton Smith, dated 9 March 1934] in *Dawnwood Spire, Lonely Hill: The Letters of H. P. Lovecraft and Clark Ashton Smith: 1932–1937*, ed. by David E. Schultz and S. T. Joshi (New York: Hippocampus Press, 2020) p. 544.

<sup>86</sup>See: Will Tattersdill, *Science Fiction and the Fin-de-Siècle Periodical Press* (Cambridge: Cambridge University Press, 2016).

David Simmons has argued, Lovecraft and Stoker ultimately ‘use the non-Western as a signifier of horror’.<sup>87</sup>

From cautionary tales of Martian invasion to imperialising vampires, fin de siècle engagements with parasite-vector-host relationships provide forms that both question and reinforce a ‘geography of blame for epidemic diseases transmitted by non-human animals’.<sup>88</sup> This deeply problematic conceptual language continues to inform popular narratives about global disease transmission and immigration, which equate epidemics with threats to national security. Mosquitoes were depicted in public health communications well into the twentieth century as ‘wild beasts and monsters, vamps, vampires [...] killer[s], criminal[s], [and] terrorist[s]’.<sup>89</sup> Such predatory metaphors collapse parasite and vector into one monstrous figure that, in turn, does political work as a shorthand for racial and cultural difference. From depictions of plague-carrying rats with Chinese faces, to characterisations of mosquitoes as international terrorists, to caricatures of Soviet politicians as rabid dogs, ‘the image of animals as enemies of humanity assumed anthropomorphic aspects, which under a colonist gaze involved racist inflections’.<sup>90</sup> At the same time, analogies of military violence and of medical crusading have guided western biomedicine towards a colonialist approach to the body that is increasingly at odds with the emerging importance of microbial ‘multiculturalism’.<sup>91</sup> By excavating the rhetorical and formal entanglements between the ecologies of illness and our relationships with global, racial, and social others, we gain critical insight into how medical narratives have been weaponised to delimit the human and to inscribe difference.

<sup>87</sup> David Simmons, ‘“A Certain Resemblance”: Abject Hybridity in H. P. Lovecraft’s Short Fiction’ in *New Critical Essays on H. P. Lovecraft* ed. by David Simmons (New York: Palgrave Macmillan, 2013) pp. 13–30 (p. 14).

<sup>88</sup> Frédéric Keck, ‘Postscript: Epidemic Villains and the Ecologies of Nuisance’ in *Framing Animals as Epidemic Villains: Histories of Non-human Disease Vectors* ed. by Christos Lynteris (London: Palgrave Macmillan, 2019) p. 229.

<sup>89</sup> Maurits Bastiaan Meerwijk, ‘Tiger Mosquitoes from Ross to Gates’, pp. 139–40.

<sup>90</sup> Christos Lynteris, ‘Introduction: Infectious Animals and Epidemic Blame’, pp. 16–17.

<sup>91</sup> Microbiome studies in particular has ushered in a suite of ecologically inflected metaphors for understanding intra-organismal relationships that provide an alternative to the lexicon of militant self/other immunology.

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## Epilogue: *Pan Narrans*

Now twenty years ago,  
This day we found the thing;  
With science and with skill  
We found; then came the sting—  
What we with endless labour won  
The thick world scorned;  
Not worth a word to-day—  
Not worth remembering.<sup>1</sup>  
—From ‘The Anniversary (20th August 1917)’

As I opened with a poem, it seems appropriate that I close with one. Written in 1917, 20 years after his discovery, ‘The Anniversary’ voices Ross’s dismay at the lukewarm response to his work. Whilst many congratulated him on his ‘ground-breaking’ intellectual discovery, the practical implementations of sanitary measures for mosquito control were subject to unilateral and intermittent adoption by local governments. As Christian Strother has noted, the ‘inherent localism in health policy in the late nineteenth and early twentieth century allowed for a variety of responses to contemporary scientific research on malaria’.<sup>2</sup> Ross advised

<sup>1</sup> Quoted in Malcolm Watson, ‘Ronald Ross, 1857–1932’ *Science Progress in the Twentieth Century (1919–1933)* 27.107 (January 1933) 377–92 (p. 386).

<sup>2</sup> Christian Strother, ‘Waging War on Mosquitoes: Scientific Research and the Formation of Mosquito Brigades in French West Africa, 1899–1920’ *Journal of the History of Medicine*



setting up ‘mosquito brigades’ to exterminate mosquito larvae and eliminate breeding grounds; however, the system was rejected wholesale or after only a short trial in many places. The brigades introduced by Ross to Freetown, Sierra Leone, in 1899, for example, were quickly abandoned once the Liverpool School of Tropical Medicine ceased directly supervising them.<sup>3</sup> Conversely, the Government of French West Africa was inspired by the Freetown system to adopt their own brigades, which had lasting success in reducing rates of malaria in the region. Whilst mosquito brigades were implemented at Khartoum, Zanzibar, and the Federated Malay States, they were rejected by 12 district boards and 39 municipal councils in the Madras Presidency in India owing to resistance from local health officials and concerns about cost. Despite success in the Federated Malay States, at Panama, in the Gambia, French West Africa, and in Sumatra, Ross insisted that the world did not listen and his ‘endless labour’ was in vain.

In 1933, parasitologist Malcolm Watson (1873–1955) wrote an obituary of Ross in which he also lamented the unilateral adoption of anti-malaria sanitation measures and reprinted several of Ross’s poems. In 1900, having studied medicine and arts at the University of Glasgow, and with a diploma in Public Health from Cambridge, Watson joined the Malayan Medical Service. He received his MD in 1903 with a thesis entitled ‘The Effect of Drainage on Malaria’ and became a pioneer of malaria prevention. Whilst in British Malaya he carried out his own research into ‘species sanitation’—the idea that vector control measures must be adapted to the individual species of mosquito and their terrain. A lifelong friend of Ross, he went on to join the Ross Institute as Principal of the Department of Malaria Control in 1928. Ross later argued that Watson’s work in British Malaya was ‘the greatest sanitary achievement ever accomplished in the British Empire’.

Watson’s obituary brings Ross’s professional self-fashioning full circle. Commenting on Ross’s visit to Singapore in 1926, he writes,

His sojourn in Malaya was balm to the bruises and wounds of this old fighter [...] How he felt about it may be learned from his inscription in a copy of *Poems*, which he gave me [...] “Sir Malcolm Watson, who proved the piece on page 77 was a damned lie. Ronald Ross, 10th August 1928.” On turning

*and Allied Sciences* 71.4 (October 2016) 447–68 (p. 447).

<sup>3</sup>Strother, ‘Waging War on Mosquitoes’, p. 450.

to page 77 I found “The Anniversary, 20th August 1917” [...] the sting had been drawn. At long last he felt he could put off his armour.<sup>4</sup>

His comments offer the narrative resolution that Ross so craved during his lifetime, cementing the story of Ross’s discovery as a legendary labour using the mode of heroic biography. Whilst historiographies of medicine no longer subscribe to the idea that science is a ‘quest’ undertaken by great men (and occasionally great women), the mode has exerted a lasting influence on popular understandings of the role of medicine in society. Many scientists at the fin de siècle were also historians of their discipline, producing amalgams of fact and fiction that have demonstrated incredible endurance. Doctors and scientists still routinely cite books like Paul de Kruif’s sensational popular history *Microbe Hunters* (1926) as inspiration for their decisions to enter the medical profession. In 2014, for instance, Anthony Cerami, clinical pathologist and chief executive officer at Araim Pharmaceuticals, recalled: ‘as a child, I, like many scientists of my age, had read *Microbe Hunters* by Paul de Kruif’.<sup>5</sup> Cerami was clearly influenced by the narrative style of books like *Microbe Hunters* as well as their content, describing his own work on diabetes and cachexia—uncritically and on more than one occasion—as a 40-year ‘Odyssey’ (400; 407). In 2012, biochemist and then editor of *Current Science*, Padmanabhan Balam also singled out de Kruif’s book, noting that ‘generations of researchers grew up reading Paul de Kruif’s 1926 classic, *Microbe Hunters*, which remains a compellingly romantic account of the golden age of bacteriology and microbiology’.<sup>6</sup> Balam asks: ‘should a book on science written in 1926 be recommended nearly ninety years later?’ Yes is the short answer. De Kruif’s narrative style is ‘part of the magic’ which has drawn student readers to the practice of science, he argues.

Lilian R. Furst argues that the emotional power of popular histories of science is often attributable to the ‘adoption of narrative strategies characteristic of creative writing rather than the chronicle mode of history’.<sup>7</sup> These not-quite novelised histories contain fictive and non-fictive knowledge, ‘exuberant rhetoric’, a ‘pictorial technique’, ‘reader-oriented’ prose,

<sup>4</sup>Watson, p. 390.

<sup>5</sup>Anthony Cerami, ‘A Forty-Year Odyssey in the Sea of Translational Medicine’ *Proceedings of the American Philosophical Society* 158.4 (December 2014) 400–10 (p. 404).

<sup>6</sup>P. Balam, ‘Men and Microbes: War and Peace’ *Current Science* 103.2 (25 July 2012) 123–24 (p. 123).

<sup>7</sup>Lilian R. Furst, ‘Fictionalizing Fact’ *The Comparatist*, 21 (May 1997) 4–9 (p. 5).

and a biographical method that evokes the ‘excitement, triumphs, and tensions of medical research’ (7). She contrasts both *Microbe Hunters* and Sherwin B. Nuland’s *Doctors: The Biography of Medicine* (1988), both written by doctors, with Edwin H. Ackerknecht’s dry and ‘deadly to read’ *A Short History of Medicine* (1955, rev. 1982). She dubs Ackerknecht’s ‘encyclopaedic’ text an ‘undifferentiated catalogue of names, dates, and discoveries’ (6), which offers no historical context and lacks awareness of his readers.

Clearly Ackerknecht’s text is not a good model for popular history, but what of de Kruijf’s? Or, indeed, Ross’s? In striving to offer something more than a ‘record of results’, Ross’s *Memoirs* encapsulates the difficulty in not only communicating science to a lay audience but of making it meaningful in relation to existing knowledge. It highlights the fraught imaginative processes and literary-linguistic practices that are intrinsic to the production and reporting of science. After all, fiction is not the opposite of truth. As Furst asserts ‘all historical images partake of the fictional insofar as narrative history, far from being a dispassionate chronicle of stable occurrences in the past, is a reconstructive and interpretative act filtered through the historian’s perspective’.<sup>8</sup> This makes fact and fiction ‘not only coextensive, but porous’ (4).

And so our understandings of science in the past—and in the present—are necessarily hybrids of fact and fiction that tell us something interesting about the moments that produced them. As George Lakoff and Mark Johnson famously explored in *Metaphors We Live By* (1980), linguistic and conceptual structures like metaphor and narrative give coherence to our everyday thoughts, feelings, and actions.<sup>9</sup> For James Geary, metaphorical thinking—understanding one thing in terms of another (like parasitology research in terms of Arthurian quest)—‘shapes our view of the world, and is essential to how we communicate, learn, discover, and invent’.<sup>10</sup> In his *Discworld* franchise, Terry Pratchett goes as far as to conceptualise the narrative imperative that directs our lives as a physical substance, an element called *narrativium* that literally forms his fictional universe. He argues that rather than *Homo sapiens*, we might more appropriately be named

<sup>8</sup> Lilian R. Furst, ‘Fictionalizing Fact’ *The Comparatist*, 21 (May 1997) pp. 4–9.

<sup>9</sup> See: George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago: University of Chicago Press, 1980).

<sup>10</sup> James Geary, *I Is an Other: The Secret Life of Metaphor and How It Shapes the Way We See the World* (New York: HarperCollins, 2011) p. 3.

*Pan narrans*: the story-telling ape.<sup>11</sup> It is crucial, then, that we reflect critically on the stories we tell.

*Empire Under the Microscope* has examined how poetic, literary, historical, and scientific knowledge united to shape a fledging discipline as it attempted to locate itself in relation to British imperial identity. It demonstrates how an interdisciplinary approach to the history of parasitology deepens our understanding of the cultural investments of scientific practice and reveals the multiform entanglements between science and empire at the turn of the century. Contextual histories that take into account the diverse influences of people, institutions, objects, ideas, material conditions, and textual productions encourage us to reflect critically on how knowledge is produced and valued. Such histories also enable us to identify and interrogate legacies that have become naturalised in ways that are harmful. Ross's professional self-fashioning might originally have been part of an attempt to garner funding and support but those same narratological manoeuvres now often obscure the realities and hardships of medical work.

In 2020, a global pandemic—still ongoing at the time of writing—radically changed the daily lives of millions. In the United Kingdom, political and media narratives focused our attention on the pivotal role of healthcare workers in times of national emergency using a lexis of heroism and self-sacrifice. Annemarie Plas, a Dutch national living in London, started a weekly 'Clap for Our Carers' (later rebranded 'Clap for Our Heroes') as a show of national solidarity. The impressive grassroots campaign became a national movement championed by politicians, celebrities, and chief executives of the National Health Service (NHS). It reached new visibility after Prime Minister Boris Johnson contracted, was hospitalised, and then recovered from Covid-19. He subsequently capitalised on the national weekly tradition of applauding the NHS and doubled down on the heroism rhetoric. Although the original campaign was well intentioned and echoed public applause for healthcare workers world-wide, it soon became clear that the endless clapping and praise for our 'healthcare heroes' by politicians were not acts of genuine appreciation, but tedious performative gestures. As palliative care doctor Rachel Clarke wrote:

<sup>11</sup>Terry Pratchett, Ian Stewart, and Jack Cohen, *The Science of Discworld II: The Globe* (London: Ebury Press, 2002) p. 325.

[A]ll those public declarations of praise—so fervently tweeted, televised, promoted and shared—have the advantage of being entirely free. They cost the politician, and the Treasury, nothing at all.<sup>12</sup>

By mobilising a narrative of NHS heroism, politicians sought to divert attention from the announcement of an insulting 1% pay raise for nurses (a mere £3.50 a week for experienced nurses, and less for those earlier in their career). Heroes, after all, are *supposed* to perform self-sacrificing deeds. As Rachel Davies points out ‘it’s vital we remember that our front-line workers [...] are real people struggling just as much as the rest of us’. Videos of burnt-out healthcare staff, exhausted, demoralised, and struggling with inadequate personal protective equipment (PPE) subsequently flooded social media. They appealed not for applause, but for decent wages, adequate PPE, and employee protections. The heroism discourse deflects accountability and ‘by clapping and cheering on Thursdays, we are complicit’, Davies argues.<sup>13</sup>

The medico-military metaphor does kindred political work and its legacy is overt in coronavirus briefings in which Johnson dubbed Covid-19 ‘the biggest threat this country has faced for decades’, an ‘invisible killer’ that we must ‘fight’ together. Supermarket staff, transport workers, carers, nurses, and doctors are all ‘on the frontline. But in this fight, we can be in no doubt that each and every one of us is directly enlisted’, he asserted.<sup>14</sup> Throughout the pandemic, he has consistently employed these semantics to instil a sense of national responsibility using the ‘Blitz spirit’ narrative that ‘we are all in this together’, a mentality that occludes the fact that healthcare outcomes for Black, Asian, and minority ethnic communities are considerably poorer than for Caucasians. ‘We must carry on waging this long, hard fight against Coronavirus’, Johnson insisted, using recurring phrases like ‘holding our nerve’ and ‘fighting the enemy’. The ‘great

<sup>12</sup>Rachel Clarke, ‘Now We Healthcare Workers Know Exactly How Empty Boris Johnson’s “Clap for Heroes” Really Was’ *The Guardian* Friday 5 March 2021 <https://www.theguardian.com/commentisfree/2021/mar/05/boris-johnson-clap-patients-pay-offer> [accessed 5 April 2021].

<sup>13</sup>Rachel Davies, ‘Don’t Clap for Our Carers—Give Them a Pay Rise’ *Huffpost*, 7 January 2021 [https://www.huffingtonpost.co.uk/entry/clap-for-our-heroes\\_uk\\_5ff71f2ac5b61a92a8c06c1e](https://www.huffingtonpost.co.uk/entry/clap-for-our-heroes_uk_5ff71f2ac5b61a92a8c06c1e) [accessed 5 April 2021].

<sup>14</sup>Boris Johnson, ‘Prime Minister’s Statement on Coronavirus (COVID-19): 23 March 2020’ <https://www.gov.uk/government/speeches/pm-address-to-the-nation-on-coronavirus-23-march-2020> [accessed 5 April 2021].

British people' will 'carry us through and see us to victory over this virus'.<sup>15</sup> Here the military metaphors deflect accountability from government response, placing emphasis instead on a public who must 'play their part' (another recurring phrase) to defeat the enemy.

Speaking of the rush to develop a vaccine Johnson waxed lyrical:

We have talked for a long time, or I have, about the distant bugle of the scientific cavalry coming over the brow of the hill. And tonight that toot of the bugle is louder.<sup>16</sup>

And on another occasion: 'we can hear the drumming hooves of the cavalry coming over the brow of the hill'.<sup>17</sup> Like Ross, he employs an imperi-  
alistic and romanticised version of military encounter, more invocative of Tennyson's poetic narrative in 'The Charge of the Light Brigade' (1854) than the realities of modern military warfare (notwithstanding the fact that the charge failed). He subsequently highlighted the material intersections that prop up such analogies by announcing:

I will now hand over to Brigadier Fossey to talk about the unrivalled logistical expertise of the British army that's helping to deliver mass testing to Liverpool.<sup>18</sup>

Health secretary, Matt Hancock, similarly reminded listeners of these intersections, declaring,

[T]he army is working hand in glove with the NHS and local councils to set up our vaccine network using battle preparation techniques to help us keep up the pace.

<sup>15</sup> Boris Johnson, 'Prime Minister's Statement on Coronavirus (COVID-19): 23 June 2020' <https://www.gov.uk/government/speeches/prime-ministers-statement-to-the-house-on-covid-19-23-june-2020> [accessed 5 April 2021].

<sup>16</sup> Boris Johnson, 'Prime Minister's Statement on Coronavirus (COVID-19): 9 November 2020' <https://www.gov.uk/government/speeches/prime-ministers-statement-on-coronavirus-covid-19-9-november-2020> [accessed 5 April 2021].

<sup>17</sup> Boris Johnson, 'Prime Minister's Statement on Coronavirus (COVID-19): 23 November 2020' <https://www.gov.uk/government/speeches/prime-ministers-statement-on-coronavirus-covid-19-23-november-2020> [accessed 5 April 2021].

<sup>18</sup> Johnson, 'Prime Minister's Statement on Coronavirus (COVID-19): 9 November 2020'.

As the vaccination programme was rolled out, Hancock insisted that it was ‘one of the biggest logistical exercises since the war’.<sup>19</sup> Hancock’s vague reference to ‘the war’ (rather than the Second World War or any of the upwards of 30 wars that the United Kingdom has engaged in since then) plays on a national aesthetic of Blitz tearooms, ration books, union jacks, and solidarity. Such images risk encouraging vaccine nationalism, exemplified by a coronavirus briefing in which a *Times Radio* journalist asked director of the Oxford vaccine group Professor Andrew Pollard:

Without wanting you to blow your own trumpet because you’re British and Oxford is British—although if you’d like to I think everyone would like that as well—can you say how much better is your vaccine [than] Pfizer’s [...] is it just a better vaccine?<sup>20</sup>

Pollard’s answer—that it was ‘not a competition’, but a global problem with a global solution—was admirably balanced; nevertheless, the conversation points to a fusing of British science and British nationhood that has a long history, as this book attests, and one which was shaped by the imperial imagination.

*Empire Under the Microscope* brings into focus some of the ways in which imperial fervour, literary forms, and knowledge about tropical illness collided at the turn of the century to provide a toolkit for speaking about medicine and nationhood that remains with us. Archetypes like the chivalrous knight, the intrepid explorer, the soldier hero, and the discerning detective became political short-hands for conceptualising the professional identities, social value, and scientific methodologies of parasitologists. Proponents of this new science of empire made use of forms like maps and biographies, and modes like adventure and romance to help narrate and formulate their work. Another prominent and recurring narratological strategy was that of medicine as war, a trope that infiltrated fiction and nonfiction alike and that has left a heavy legacy in discourses of public health. In *Voices Propheying War*, I. F. Clarke outlines the primacy of war

<sup>19</sup>Matt Hancock, ‘Health and Social Care Secretary’s statement on coronavirus (COVID-19): 17 March 2021’ <https://www.gov.uk/government/speeches/health-and-social-care-secretarys-statement-on-coronavirus-covid-19-17-march-2021> [accessed 5 April 2021].

<sup>20</sup>‘Coronavirus press conference (23 November 2020)’ *YouTube* [https://www.youtube.com/watch?v=zT\\_VQEp3I\\_8](https://www.youtube.com/watch?v=zT_VQEp3I_8) [accessed 5 April 2021].

in the literary imagination in the period 1871–1914.<sup>21</sup> He argues that advances in science and technology provided the kindling for myriad stories of imagined warfare, maintained by political anxieties regarding the security of Britain as a European power. It is thus unsurprising that parasitologists employed the popular motif of war to understand the relationship between man and nature in the context of imperial precarity. Clarke argues that imaginary wars in the 1890s were ‘burdened by a long tradition, which presented war as an affair of brief battles and heroic deeds by individuals’, a tradition to which it is clear that parasitologists also subscribed.<sup>22</sup> This is evident in Ross’s formulation of vector control and sanitation measures in his 1901 book *Mosquito Brigades*, which was advertised as ‘an authoritative work by a World Famous Scientist Indispensable to All Engaged in the Warfare Against the Deadly Mosquito’.<sup>23</sup> ‘Brigade’ here suggests an alignment with Clarke’s notion of war as predicated on heroic battles and military sub-units.

As I explored in my first chapter, the parasitology narrative put forth by its proponents often favoured an even older kind of warfare: that of the chivalric knight, in a fervent adherence to myths of historical nationhood. In reimagining British imperial identity as part of their professional self-fashioning, proponents combined the iconography of stories like St George and the dragon with the epic poetics of Greco-Roman mythology, providing a bridge for imagining themselves as part of a historic tradition of heroism that was specific to Britain but global in nature. Their narrative strategies were influenced by the medieval revival, Carlylean heroism, and the rise of the adventure genre, which they in turn inspired. As Norman Vance has argued, the literary cultures from which individuals would draw models for imperial masculine citizenship were dominated by the concept of ‘Christian manliness’. A book of the same name published in 1867 by Revd S. S. Pugh—which drew on material from the Bible alongside military heroes associated with the Indian Rebellion and abolition of the slave trade—illustrates a collision of religious dogma, physical prowess, and moral virtue that would come to characterise the ‘muscular Christianity’

<sup>21</sup> Although the book addresses the wider time period of 1763–1984, Clarke identifies this specific time period in chapter one as a significant epoch of thought marked by the publication of George Chesney’s *The Battle of Dorking* at the one end and the beginning of the First World War at the other.

<sup>22</sup> I. F. Clarke, *Voices Prophesying War, 1763–1984* (London: Oxford University Press, 1966) p. 69.

<sup>23</sup> London, LSHTM. RC. Ross/64/02. Pamphlet to advertise ‘Mosquito Brigades’.



of imperialism—and, I argue, of parasitology.<sup>24</sup> In many ways, Vance asserts, the Victorian period was characterised by Elizabeth Barrett Browning's moralistic comment in *Aurora Leigh* (1856) that 'all men [are] possible heroes':

And all men possible heroes: every age,  
Heroic in proportions, double-faced,  
Looks backward and before, expects a morn  
And claims an epos. (5.139–54)

The tensions inherent in expecting a morn and claiming an epos are writ large in histories of parasitology at the turn of the century wherein figures like Ross reach back to the imagined heroism of the past to construct heroism in the present—insisting on their fitness for Homeric record but also lamenting the unglamorous and small-minded realities of imperial administration.

Proponents located parasitology within this tradition by emphasising, not the full complexities of modern clinical and laboratory research, but a polarising stand-off between 'anti-imperial malaria' and the scientific discoverer, whose work would secure 'the prosperous and progressive future of the British Empire'.<sup>25</sup> Ross's work, for example, was often heralded as a form of imperial expansion:

Mr. Ure, when Lord Advocate, was fond of saying up and down the country that nobody could add an acre to the land originally given to us by the Creator. As a saleable and inhabitable commodity, I wonder how many acres Sir Ronald's discoveries have added to the map of the empire?<sup>26</sup>

The work of parasitologists varied widely and included collecting specimens as part of fieldwork; dissecting and analysing samples in the laboratory; diagnosing, and in some cases experimenting on, patients; looking through microscopes, taking down temperatures, drawing up graphs, or writing papers for the medical press, and—later—carrying out sanitation work. Practitioners might be based in India, Africa, America, Asia, Italy,

<sup>24</sup>Norman Vance, *The Sinews of the Spirit: The Ideal of Christian Manliness in Victorian Literature and Religious Thought* (Cambridge: Cambridge University Press, 1985) p. 1.

<sup>25</sup>'Empire Leading Article—Imperial Bacteriology' *Financial Times*, 23 January 1913, n.p.

<sup>26</sup>Henry Faulds, 'The Reward of Research' *British Medical Journal*, 1.2781 (18 April 1914) p. 888.

China, the Philippines, or even at the Albert Dock Seamen's Hospital in London. However, the overwhelmingly prevalent representation of the parasitologist was out in the 'wilds' of Africa and up against a personal and deadly threat. At a reception held to celebrate Ross's Nobel Prize, for instance, Mr C. W. Jones announced that they were 'there that night to do honours and justice to a hero from Africa who had been occupied in a war, not against his fellow men, but against a most insidious enemy to mankind in general'.<sup>27</sup>

This war was a war of sanitation, Ross having lately been in West Africa with the Liverpool School of Tropical Medicine studying mosquito species and their breeding grounds in Freetown, Sierra Leone. Ross went out to Africa with Dr Henry E. Annett (demonstrator at the Liverpool School) and Ernest E. Austen (curator of entomology at the British Museum). And upon finding a species of *Anopheles* mosquito that transmits malaria, they were joined by Dr Robert Fielding-Ould of the Royal Army Medical Corps. Nevertheless, press coverage exaggerated the dangerousness of the trip and made little mention of Ross's companions, as in this newspaper report from 1912, which asserted:

[Ross's] research took him into the deadliest districts of West Africa, where for months he risked his life, every hour, night and day, for the cause of medical science and humanity.<sup>28</sup>

It is just such narratives of self-sacrifice and altruism that blind us to racism inherent in empire; in reality, as benefactor Alfred Lewis Jones asserted, they were not just forwarding medical science and defending humanity but 'fighting the battle of commerce'—'if the men of the future [are] to have a chance of fighting the battle of commerce, they must be better trained in science'.<sup>29</sup>

Whilst parasitologists were framed as imperial heroes in legendary battles, their subjects of study were reconceptualised as enemies, criminals, and monsters to be cleansed from imperial space. The anthropocentric semantics of war, violence, and criminality characterised tropical illness as another form of colonial insurrection with medical and sanitary intervention as an extension of the disciplinary law-and-order state. This, in turn,

<sup>27</sup> 'Liverpool' *British Medical Journal* 1.2192 (3 January 1903) p. 48.

<sup>28</sup> 'Martyrs to Science. Medical Men's Toll of Life' *Cape Argus*, 14 December 1912, n.p.

<sup>29</sup> 'Liverpool' *British Medical Journal* 1.2196 (31 January 1903) pp. 285–86 (p. 285).

worried the boundaries between microbial and imperial ‘colonies’, which were frequently analogised. Such examinations add important context to the power and reach of imperial fantasies, as well as illuminating the analogies that we use to navigate healthcare and global politics. Whilst the language of medicine as war has become naturalised, so has the idea of doctors as detectives and of health workers as heroes. In this book, I seek to demonstrate how stories of science and stories of empire shaped each other in ways that are contingent on this historical moment but that continue to inflect and occlude our self-knowledge. By placing empire under the microscope, we bring into focus complex medical, political, material, and imaginative contexts that continue to inform our attitudes to science, our conceptualisations of disease, and our relationships to global others.

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