

Chapter One:

The History and Culture of Tropical Medicine

Medicine that concerned itself with the tropics became, after the period of earliest travel, inseparable from expansion and empire. It was European exploration and early settlement from the 15th and 16th centuries that prompted the growth of a tradition of the discussion of what were called the diseases of warm or hot climates. On one level tropical medicine was deeply involved in the political and social aspects of empire. Europeans, especially soldiers, public servants and officials, had to move to the tropics, where the contraction of a life threatening disease was a real danger. At the same time indigenous people were subject to the same diseases, so that the main source of labour used in European agriculture, such as sugar cane in the West Indies, was threatened.¹ Thus the reason for the existence of tropical medicine as a discipline was the protection of European colonial officials and the exploitation of indigenous

¹ There is a substantial literature about the role of tropical medicine in the political and social aspects of imperial government. See for example, on British and American medicine and imperialism, John Farley, *Bilharzia: A History of Imperial Tropical Medicine*, Cambridge University Press, Cambridge, 1991; See also, Michael Worboys, "The Colonial World as Mission and Mandate: Leprosy and Empire, 1900-1940", *Osiris*, 15, 2001, pp. 207-18; Michael Worboys, "Manson, Ross and colonial medical policy: tropical medicine in London and Liverpool, 1899-1914", in Roy MacLeod and Milton Lewis (eds), *Disease, Medicine, and Empire: Perspectives on Western Medicine and the Experience of European Experience*, Routledge, London, 1988, pp. 21-37; Michael Worboys, "The Emergence of Tropical Medicine: a Study in the Establishment of a Scientific Speciality", in Gerard Lemaine, Roy MacLeod, Michael Mulkay and Peter Weingart (eds) *Perspectives on the Emergence of Scientific Disciplines*, Mouton and Co., The Hague, 1976, pp. 75-98; David Arnold, "Cholera and Colonialism in British India", *Past and Present*, 113, November, 1986, pp. 119-51; Heather Bell has examined the role of Andrew Balfour and the privately established and funded Wellcome Tropical Research Laboratories, based in Khartoum, in the political and commercial world of Anglo-Egyptian Sudan in, *Frontiers of Medicine in the Anglo-Egyptian Sudan 1899-1940*, Clarendon Press, Oxford, 1999; There is also some work on French imperial medicine, see, William A. Cohen, "Malaria and French Imperialism", *Journal of African History*, 24, 1983, pp. 23-36; Maryinez Lyons, *The Colonial Disease: A Social History of Sleeping Sickness in Northern Zaire, 1900-1940*, Cambridge University Press, Cambridge, 1992.

labour.

On another level, one can view tropical medicine from a cultural perspective, as a discourse that constructed the space of the tropics as Other and thus as racially pathological. Linked necessarily to these ideas about climate was the construction of European and native bodies. Mark Harrison has warned against reading late 19th and early 20th century racial science into the medicine of the second half of the 18th century, as earlier periods largely eschewed a belief in innate biological characteristics in favour of a more fluid notion of body and climate.² Yet at the same time one has to keep in mind the essentially continuous concern with the influence of climate on the character of peoples and the centrality of specifically hot and humid climates in European notions of disease across these periods.

This view of the importance of environment in health and national and racial characteristics was intimately bound up with theories of disease in the 18th and 19th centuries. As well as miasmatic theory, where disease-causing airs emanated from swamps and rotting vegetable matter, the idea that health was closely linked to the balance of fluids in the body, which were in turn easily affected by temperature, was common in medical thought. In this view the characteristics of the bodies and minds of various peoples around the world were shaped by the climates in which they developed, with the result that movement between these climates disturbed the balance of fluids in the body, causing illness. Thus the world of the tropics was constructed in the literature of the late 18th and 19th centuries as alien to Europeans. The tropics made Europeans sick and made its natives lethargic and mentally less

² Mark Harrison, *Climates and Constitutions: Health, Race, Environment and British Imperialism in India 1600-1850*, Oxford University Press, Oxford, 1999, pp. 60-1.

vigorous than Europeans born of cold and bracing climates.³ Theoretically, the bacteriological and parasitological germ theories that developed in the later decades of the 19th century and led to the discovery of the micro-organisms that caused malaria, cholera, yellow fever and a raft of other diseases linked to the tropics could have de-emphasised this sense of radical difference. However, as most cultural historians of tropical medicine have noted, experts continued well into the 20th century to discuss the tropics as an essentially alien climate, within which a strict attention to daily bodily conduct was essential to the maintenance of white racial health under the pressure of the sun and humidity.⁴

This chapter will seek, through a broad reading of texts on the health and diseases of Europeans in the tropics from the late 18th to the first half of the 20th century, to show the importance of climate and the body in this historical field of medicine and assert the validity of the arguments made in recent cultural histories. It will show that there is a broad similarity in the stress on ethnic/racial difference between texts from periods that were dominated by environmental theories of disease and texts from periods in which bacteriology and parasitology had come to the fore. The first section will examine the works of physicians from the late 18th and most of the 19th century. The second section will then demonstrate a continuing interest in racial difference in the early 20th century texts, which this thesis will examine more closely in later chapters. Though this thesis is aimed at qualifying the usual picture of

³ Mark Harrison, *Climates and Constitutions*, pp. 92-3; See also Ivan Hannaford, *Race: the History of an Idea in the West*, Woodrow Wilson Centre Press, Washington D.C., 1996, pp. 202-33.

⁴ See Warwick Anderson, "Geography, Race and Nation: Remapping 'Tropical' Australia, 1890-1930", *Historical Records of Australian Science*, 11(4), December 1997, pp. 457-68; Warwick Anderson, *The Cultivation of Whiteness: Science, Health and Racial Destiny in Australia*, Melbourne University Press, Melbourne, 2002, p. 75; Alison Bashford, "'Is White Australia Possible?' Race, colonialism and tropical medicine", *Ethnic and Racial Studies*, 23(2), March 2000, pp. 248-71.

tropical medicine as a discourse of Otherness, this chapter shows that racial bodily difference was never dismissed.

Diseases of Warm/Hot Climates

There has been a concern about the health threat posed by the tropics since the early period of European expansion. James Lind, a naval physician and leading expert in scurvy, wrote an essay on tropical diseases in the 1760s. In it he pointed to the experience of the 15th and 16th century Portuguese explorers in Africa, who lost more men to disease than fighting or shipwreck, in order to stress the importance of his subject.⁵ David Arnold notes that a substantial literature on colonial disease only begins emerging after 1750, as the broader image of the tropics in Europe was shifting from that of utopia to those of hell and “malevolence”.⁶ Writers like Lind, Benjamin Moseley, Richard Shannon, Richard Towne, William Hillary, R. Jackson and the Dutchman W. Bosman, wrote books about the causes of the diseases of hot climates and treatments for them, including their own medicinal and other therapeutic successes, and in some cases produced well-known texts that went through several editions, including James Lind’s essay, originally published in 1768 and translated into French.⁷

⁵ James Lind, *An Essay on Diseases Incidental to Europeans in Hot Climates*, 5th edition, J. Murray, London, 1792, pp. 3-5; Harrison, *Climates and Constitutions*, p. 71, note 49.

⁶ David Arnold, “Introduction: Tropical Medicine Before Manson”, in David Arnold (ed.) *Warm Climates and Western Medicine: the Emergence of Tropical Medicine 1500-1900*, Rodopi, Amsterdam, 1996, p. 7.

⁷ Benjamin Moseley, *A Treatise on Tropical Disease*, 3rd edition, G. C. and J. Robinson, London, 1795; Benjamin Moseley, *Medical Tracts*, 2nd edition, T. Cadell and W. Davies, London, 1800; Richard Shannon, *Practical Observations on the Operations and Effects of Certain Medicines in the Prevention and Cure of Diseases to Which Europeans are Subject in Hot Climates and in these Kingdoms*, Vernor and Hood, London, 1794; Harrison, *Climates and Constitutions*, p. 71; Arnold, “Introduction: Tropical

One can identify several aspects of this kind of medicine that are important to keep in mind when comparing it to the distinct academic discipline called “tropical medicine” that emerged in the 1890s with parasitology, bacteriology and the work of Patrick Manson, Ronald Ross and many others and which has received so much scholarly attention.⁸ One is the central adherence to environmental theories of the causation of disease and the centrality of the body in relation to the environment. There was much discussion and variation in these ideas about how fevers and “flux”, or dysentery, were caused, but in all cases disease was supposed to be caused by some environmental factor, most often a poisonous miasma or a chill that arose from perspiration and the sudden drop in temperature in the tropics after sunset. Thus a *space* could be seen as naturally unhealthy. Connected with this theoretical view of disease was a tendency to see these environmental factors as giving rise to national or racial characteristics, such that the severity of tropical disease was seen to result from Europeans being in an alien environment. The tropical space was Other to the European body, especially to the northern European body, which was widely believed, by the 1830s, to have been made superior by the cold and bracing climate of its origin. It is in this combination of the experience of great mortality, an environmental aetiology and the discussion of human type and origins that tropical medicine as a discourse of Otherness arose.

The doctors of the late 18th century saw disease in humoral and geographical terms. Lind thought that foreign countries were simply unhealthy. Bencoolen, one of

Medicine Before Manson”, pp. 7-8, 13.

⁸ Manson has been commonly regarded as the “father” of tropical medicine and Ross is usually discussed as the discoverer of the *Anopheles* mosquito vector of malaria. See Worboys, “Manson, Ross and colonial medical policy: tropical medicine in London and Liverpool, 1899-1914”, pp. 21-37.

the four “Presidentships” of India, had the “most sickly” climate. He writes,

Malignant fever of the remitting or intermitting kind, most frequently double tertian, is the genuine produce of heat and moisture, is the autumnal fever of all hot countries, and is the epidemic disease between the tropics. To which I may add, that it is also the disease most fatal to Europeans in all the hot unhealthy climates.⁹

Egypt, Lind tells us, is unhealthy because of the “noisome vapour, which during the summer months, arises from sultry hot sand”. The naval physician lists the “most certain signs, or proofs, of an unhealthy country”, citing sudden changes in temperature after sunset, “unhealthy, swampy soil”, “thick noisome fogs”, sandy soil and “stagnated air”.¹⁰ Richard Shannon wrote that, “The air we breath has a great influence on our bodies” and that, “the salubrious quality of this element tends greatly to the well-being of the human frame”, invoking the ancient quartet of hot and cold, moist and dry elements, along with actual particles, as the characteristics of air most significant in medicine. He writes further that the atmosphere, “in those climates particularly where bad air is rendered still worse by heat, will usually bring on a cholera-morbus, or violent dysentery”, just as scurvy is brought on by the “noxious exhalations” of bilge water and the sick.¹¹ Benjamin Moseley, a physician who spent 12 years in the West Indies, gave advice on where to build houses for European residence, writing, “Stagnant waters, and swamps, load the air with pernicious vapours, that are productive of obstinate intermittent fevers, diseases of the liver, and putrid diseases”. The swamps and marshes to the west of Kingston, the reader learns,

⁹ Lind, *An Essay on Diseases Incidental to Europeans in Hot Climates*, p. 9.

¹⁰ *Ibid*, pp. 133-5.

¹¹ Shannon, *Observations*, Introduction, pp. xxii.

seasonally gave off an air that spread its “baleful influence” over the whole area.¹²

This notion that “bad air”, or miasma, originating from heat, swamps and wet soil caused diseases persisted for a long time. Miasmatic ideas continued in popular works for household health and travel writing in the late 19th century. In 1875, the Queenslander Angus Mackay wrote in his *Semi-tropical Agriculturist and Colonists Guide* that fevers were, “brought on by some irregularity of the system- the result of exposure, unwholesome food or air”. He wrote that ague was, “frequently the result of exposure to the exhalation arising from marsh lands, stagnant waters, or decayed vegetable matters”.¹³ He also uses the specific term “miasm”, writing that, despite the discovery via microscope of living particles in bad air, “the mode of production, or the causes of the generation of this miasm, remain unchanged”. A disease-causing miasma was thought to derive from an interaction between heat, moisture and rotting vegetable matter.¹⁴

However, miasmatic theory was just one conception of tropical disease and perhaps the less significant in tropical medicine, since miasmata were also the cause of diseases in Europe. In 1818, James Johnson, who worked in India for four years, published the second edition of his *The Influence of Tropical Climates on European Constitutions*. Johnson also points to miasma as a cause of disease. He wrote, “Marsh effluvia has been traced as the cause of some of the most destructive endemics that occur both within and without the tropics”, noting, like Moseley, that miasmata were

¹² Moseley, *A Treatise on Tropical Disease*, p. 51; Harrison, *Climates and Constitutions*, p. 67, note 27.

¹³ Angus Mackay, *The Semi-tropical Agriculturist and Colonists' Guide*, Watson and Co., Brisbane, 1875, p. 192.

¹⁴ *Ibid*, p. 195.

common in Europe as well the jungles of the tropics.¹⁵ However, Johnson places much more stress on miasma as one among many causes of the disruption of the secretion of bile, one of the bodily humors of ancient theory, which he and the late 18th century writers saw as a major cause of disease. In fever, Johnson wrote, glandular secretions “are never perfectly natural. They are in general scanty-sometimes preternaturally copious; but always depraved”. This in turn could be caused by effluvia from sick patients, debauchery, “losses and misfortune”, miasma from fens, a march under a hot sun or, importantly, sudden changes in temperature.¹⁶

Johnson saw the main cause of disease as the disturbance, by various factors, of perspiration, which would then affect the secretion of bile or digestion, because of a supposed connection, or “sympathy”, between the skin and the liver and stomach. Dysentery, he thought, was caused by a disturbance of perspiration and bile, and was thus a major risk in tropical climates because the tropics increased perspiration in order to cool the body. This led to an “exhaustion” of perspiration and a dangerous disturbance of bile.¹⁷ The earlier 18th century writers discussed the significance of chills. Moseley argued that the real injurious effect of constant heat and humidity is that “they dispose the body to the slightest impressions from cold; and however paradoxical it may appear, cold is the cause of almost all of the diseases in hot climates, to which climate alone is necessary”.¹⁸ Like Johnson, Moseley thought that the real cause of dysentery, a “fever of the intestines”, was “some secret influence of

¹⁵ James Johnson, *The Influence of Tropical Climates on European Constitutions*, 2nd ed., Motley and Harrison, Portsmouth, 1818, p. 23; Moseley, *A Treatise on Tropical Disease*, pp. 51-2.

¹⁶ Johnson, *The Influence of Tropical Climates on European Constitutions*, p. 25.

¹⁷ *Ibid*, pp. 8, 202-3.

¹⁸ Moseley, *A Treatise on Tropical Disease*, p. 66.

the atmosphere, or on sudden transitions of the air, and such other causes as expose people to have perspiration hastily stopped”.¹⁹ Thus it was the nature of the tropical climate and the effects of its temperature on sweating that produced disease both in Europeans and natives.

At the same time, and linked to these ideas, spaces and climates were being seen as productive of national or racial characteristics.²⁰ Lind characterised tropical diseases as “diseases of strangers” and thought that they were similar all over the world.²¹ The air of Bencoolen was fatal to Chinese as well as English migrants.²² Lind drew on a botanical metaphor, writing, “Men who thus exchange their native for a different climate, may be considered as affected in a manner somewhat analogous to plants removed into a foreign soil”.²³ Shannon also used the plant analogy, writing that people raised in Europe, in going to the tropics, will be affected “like exotic plants removed from their native soil and temperature”.²⁴ Shannon was also direct, writing that,

The source of sensibility [bile], that fundamental part of the animal machine, is liable to very different conditions. It is influenced by heat and by cold; and this alteration, which receives it from climate, seems to be founded, in a great measure on the diversity of temperature and character which we discover in different nations...The national character may certainly be

¹⁹ Ibid, p. 215.

²⁰ This was a typical view arising in the mid-18th century in the writings of physicians and philosophers like John Arbuthnot, Baron de Montesquieu and others. See Harrison, *Climates and Constitutions*, pp. 92-4, 101-2; Hanaford, *Race*, pp. 202-33.

²¹ Lind, *An Essay on Diseases Incidental to Europeans in Hot Climates*, p. 154.

²² Ibid, p. 80.

²³ Ibid, p. 2.

²⁴ Shannon, *Observations*, Introduction, pp. xvii-xviii.

altered extremely by moral causes, but the original strong lines will always remain.²⁵

Natives of hot climates, he thought, were in a “constant fever”.²⁶ Moseley felt that it was the *transitions* between climates that were injurious to Europeans, because their “fibres and fluids are not qualified to suffer the diurnal revolutions in the frame, from the various impressions of the atmosphere”.²⁷ Johnson wrote, “The tender frame of man is incapable of sustaining that degree of exposure to the whole range of causes and effects incident to, or arising from, vicissitudes of climates”, again drawing on plant metaphors by noting that Europeans will often “droop” in tropical climates and need to return to their “native air”.²⁸ Here the actual theories of disease causation meant that doctors could imagine European health as being uniquely threatened by the tropics, since both aetiology and European notions about the origins of the characteristics of peoples and races were linked to climate.

Disease and the wider construction of colonial barbarism were often linked, at least in the context of the West Indies. In Benjamin Moseley’s *Medical Tracts*, one can see an instance of tropical medicine and broader images of dirty and bestial Otherness meeting in an image of an African slave working in the West Indian sugar plantations. When slaves contracted yaws they were isolated until they could recover and be reintroduced into the workforce. Yet this rarely occurred, and it was when the slave slipped away from white society, control and surveillance that the disease became monstrous. A slave would live on, with “A cold, damp, smoky hut, for his habitation; snakes and lizards his companions; crude, viscid food, and bad water, his

²⁵ Ibid, pp. 5-6.

²⁶ Ibid, p. 7.

²⁷ Moseley, *A Treatise on Tropical Disease*, pp. 62-3.

²⁸ Johnson, *The Influence of Tropical Climates on European Constitutions*, p. 2.

only support; and shunned as a leper;- he usually sunk from the land of the living”.

The survivors turned into grotesque monsters, with noses “like the beaks of old eagles” and bodies like “stumps of trees; or old Ægyptian figures”, and in their remote lives, like “ugly, loathsome...oracles of woods”, became embroiled in Obi, Moseley’s vision of African magic. Here, in the European imagination, the most horrifying of diseases cohabited with the darkest of savage practices. The tropical world and its diseases were dark and alien for the European, a view that developed and hardened as the 19th century progress.²⁹

The desire for empire however overcame concerns about the threat of disease. One can see in the literature of the late 18th century the commercial and military significance of the tropics made the idea of their abandonment unthinkable to some, as Moseley made explicit when he wrote,

Great as the mortality has been to accomplish the present flourishing of the sugar colonies, and great as the expense of human lives must be to maintain them, their commerce has contributed to raise the nations, to which they belong, to a condition of riches and grandeur that European industry, without them, could never have attained.³⁰

Most writers noted the importance of the subject for the imperial nations. James Lind wrote, “The recent examples of the great mortality in hot climates, ought to draw the attention of all the commercial nations of Europe towards the important object of preserving the health of their countrymen, whose business carries them beyond seas”.³¹ Richard Shannon also stressed that disease should be of great

²⁹ Moseley, *Medical Tracts*, pp. 187-8.

³⁰ Moseley, *A Treatise on Tropical Disease*, p. 16.

³¹ Lind, *An Essay on Diseases Incidental to Europeans in Hot Climates*, pp. 7-8.

importance to European governments, especially those countries “most extensive in their commerce and foreign possessions”.³² In Bengal, in 1762, 30000 “blacks” and 800 Europeans supposedly died of the “flux”, or dysentery, while in the 1760s English sailors died in substantial numbers in the waters around Batavia.³³

Because of this there was an understanding in many of these medical texts that it was possible to maintain health or make the colonial environment itself more suitable for European habitation, even permanent settlement. Mark Harrison has argued that a broad optimism about the possibility of acclimatisation and settlement common in the second half of the 18th century gave way to pessimism, especially after 1800, driven by a growing belief in European racial superiority and thus bodily difference.³⁴ There was certainly debate. Annemarie Knecht- van Eekelen has looked at the discussions over the possibility of acclimatisation within the medical community in the Dutch East Indies in the mid-19th century. Franz Wilhelm Junghuhn for instance asserted that the chief cause of the diseases that Europeans inevitable suffered in the tropics was heat. This was significant, in that it required cool mountain retreats and meant that acclimatisation was impossible.³⁵ Cornelis Swaving on the other hand argued that alcohol abuse, laziness, opium and bad food, among other things, reduced Europeans’ ability to cope with the tropical environment, drawing on an existing moralising tradition that held out the home of acclimatisation.³⁶

³² Shannon, *Observations*, Preface, p. x.

³³ Lind, *An Essay on Diseases Incidental to Europeans in Hot Climates*, pp. 82-90.

³⁴ Harrison, *Climates and Constitutions*, p. 87.

³⁵ Annemarie de Knecht-van Eekelen, “Opinions on the Tropical Climate as Cause of Disease in the Dutch East Indies 1840-1860”, in Suzanne Parry (ed) *From Migration to Mining: Medicine and Health in Australian History*, Historical Society of the Northern Territory, Darwin, 1998, p. 22.

³⁶ *Ibid*, p. 23.

James Lind felt that since much disease originated in marsh air and the lack of ventilation in wooded areas, much could be done to alleviate disease by filling marshes and clearing land. Speaking of Guinea on the West African coast, he pointed to the experience of the English in Barbados, writing that if works were undertaken, “the air would be rendered equally healthful there, as in that pleasant West Indian Island”.³⁷ Moseley argued that Europeans needed to prepare before leaving home and, when in the colonies, to adopt local forms of dress and avoid all excess.³⁸

Harrison notes that many of these late 19th century authors believed in the ability of the body to adapt to other climates, arguing that the European body would, after a few generations, take on the physical characteristics of the natives that were begotten by the tropics.³⁹ This view faded, argues Harrison, after 1800, and one can clearly see this when, in 1818, James Johnson criticised “philosophers” for thinking that human beings were uniquely adapted to travel between climes, saying that the European ability to survive in the tropical colonies had more to do with ingenuity, writing that man can “raise up a thousand barriers round him, to obviate the deleterious effects of climate on his constitution”.⁴⁰ This is quite a different view of the relationship of the European body to hot climates as Harrison argues was present in the late 18th century. One needs to keep in mind, however, the continuities in the way writers from both periods saw the tropics as producing change in the European constitution, such that it needed an array of barriers, physical and behavioural, between it and the unhealthy climate.

³⁷ Lind, *An Essay on Diseases Incidental to Europeans in Hot Climates*, p. 50.

³⁸ Moseley, *A Treatise on Tropical Disease*, p. 19

³⁹ Harrison, *Climates and Constitutions*, pp. 88-9.

⁴⁰ Johnson, *The Influence of Tropical Climates on European Constitutions*, p. 1.

Thus the roots of the construction of the Other inherent in tropical medicine and its involvement in European colonialism are evident in the beginning of European expansion and medical writing on hot climates. The environment of the tropics was seen as threatening to the European constitution, such that the settler, official or visitor needed to prepare his or her body “for the unavoidable changes it must undergo” upon arrival.⁴¹ Some effects of the tropical climate, whether inconveniences or death from disease, were inevitable, but empires made it necessary to be in the tropics and to erect barriers between the body and the world.

Tropical Medicine

As Arnold and Worboys have noted, there were real changes in late 19th century medicine connected with germ theory and discoveries around parasitology and bacteriology.⁴² Margaret Pelling has pointed to the difficulties in looking at the change from medical geography and humoral ideas to germ theory as a sharp break, noting that this sort of view was a retrospective search for progressive and visionary pioneers, when in reality ideas about “germs” from the mid-19th century were various and competing.⁴³ Likewise, Alison Bashford has noted that “Medical knowledge is always socially constructed and always culture-bound: it is never simply ‘true’”.⁴⁴ One should acknowledge, however, that, while there may not have been an germ theory

⁴¹ Moseley, *A Treatise on Tropical Disease*, p. 18.

⁴² David Arnold, “Introduction: Tropical Medicine Before Manson”, p. 4.

⁴³ Margaret Pelling, “The Meaning of Contagion: Reproduction, medicine and metaphor”, in Alison Bashford and Claire Hooker (eds), *Contagion: Epidemics, History and Culture from Smallpox to Anthrax*, Pluto Press, Sydney, 2002, p. 16. See also David Arnold, “Introduction: Tropical Medicine Before Manson”, p. 2.

⁴⁴ Alison Bashford, *Purity and Pollution: Gender, Embodiment and Victorian Medicine*, MacMillan Press Ltd., London, 1998, p. xvii.

revolution, there were significant changes in the last decades of the 19th century in ideas about diseases and truths, however politically and culturally complicated, discovered by the likes of Robert Koch, Patrick Manson, Ronald Ross, Laveran, Grossi and others.⁴⁵

Theoretically germs could have made tropical environments seem less like an alien environment, and to some doctors and researchers this was true. Bashford notes the observation of one doctor in 1897 that, if colonial governments and settlers were to get rid of, or avoid, the germs of malaria, cholera and yellow fever, then there would be no barrier to European settlement or danger to colonial officials and troops.⁴⁶ In 1898, Dr. Luigi Westenra Sambon, having worked in Central Africa, contrasted the overcrowded and degrading influence of British cities with the healthy and wide-open spaces of the tropics.⁴⁷ Yet there is clearly a continued belief, despite the discovery of many parasitic and bacterial causes of disease, in the fundamental unhealthiness of tropical climates. This is seen quite clearly in the many books and articles, for popular and academic audiences, which emerged in the late 19th century and continued to be seen throughout the first half of the 20th century.

One can see the continuation of this sense of Otherness in several ways. One is in the continued interest in the alien and debilitating influence of the tropical environment, noted by Anderson as one of a number of ways doctors “retained a notional geography of disease” where the susceptibility to disease was “still racially

⁴⁵ Michael Worboys, “Germs, Malaria and the Invention of Mansonian Tropical Medicine: from ‘Diseases in the Tropics’ to ‘Tropical Disease’”, in David Arnold (ed.), *Warm Climates and Western Medicine: the Emergence of Tropical Medicine 1500-1900*, Rodopi, Amsterdam, 1996, pp. 188-93.

⁴⁶ Bashford, “‘Is White Australia Possible?’ Race, Colonialism and Tropical Medicine”, p. 251.

⁴⁷ David N. Livingstone, “Tropical Climate and Moral Hygiene: the Anatomy of a Victorian Debate”, *British Journal of the History of Science*, 32, 1999, p. 94.

determined and distributed”.⁴⁸ In 1893, Edward A Birch and J. Lane Notter contributed articles on the effects of the tropical environment to *Hygiene and Diseases of Warm Climates*, a work that contained many articles on parasitology. Birch presented data on mortality that showed that while soldiers from 20 to 25 years of age in Britain died from disease at a rate of 5.4 per 1000, soldiers of the same age in Bengal died at a rate of 14.75 per 1000. Children and women were seen as particularly vulnerable. The death rate of soldiers’ children in India in 1870 was more than double the 29-year average in England. Birch noted that these death rates among Europeans were much better than in earlier years, claiming that the improvements had much to do with shorter tours and hill stations where temperatures were lower. Thus Birch writes, “A tropical climate (of which India is a type) is inimical to the European constitution”.⁴⁹ Birch cited the work of another doctor who claimed that after 5 or 6 years in the tropics children would experience physical and moral degeneracy, which would need removal to the bracing environment of Europe to arrest.⁵⁰ Birch even continued the plant analogy of Lind, writing “A tropical plant may be reared and even thrive in England in a hothouse, but it will die if placed under the ordinary conditions of plant life in that country”. Like the earlier forms of tropical medicine, Birch pointed to “excessive cutaneous action, alternating with internal congestions” as something Europeans faced as a risk to health.⁵¹

Notter said that his chief purpose was to consider the kinds of clothing, food,

⁴⁸ Anderson, *The Cultivation of Whiteness*, p. 75.

⁴⁹ Edward A. Birch, “The Influence of Warm Climates on the Constitution”, in Andrew Davidson (ed.) *Hygiene and Diseases of Warm Climates*, Young J. Pentland, Edinburgh and London, 1893, pp. 2-4.

⁵⁰ *Ibid*, pp. 4-5.

⁵¹ *Ibid*, pp. 6-7.

exercise and housing needed for Europeans to stay healthy.⁵² This is significant, as these were intended not simply as ways to avoid sunburn or heatstroke, but as ways to stave off racial degeneration, physical and moral. The right kind of clothes and when to drink alcohol were conceived of as barriers to an environment that was uniquely dangerous to European men, women and children. In other words discussions about personal hygiene and daily routine were framed by the language and culture of racial science, and these discussions continued well into the 20th century.

W. J. R. Simpson wrote in the second edition of his 1905 popular handbook, “A European entering the tropics has to be careful in many things, if he is to preserve his health”. Drawing on ideas about the origins of races and their characteristics, Simpson wrote, “Full of the energy begotten of a birthplace in a temperate or cold climate, he is not sensible at first of the great power of the sun, and of the great difference of temperature of air to which he is subjected”.⁵³ Simpson also discussed the influence of chills after sunset or exercise, calling it an “exciting cause of disease in warm climates”.⁵⁴ Like James Johnson in 1818, Simpson stressed the importance of the right kind of clothing and the need to avoid over-indulgence in European food. Simpson believed that over-eating put great strain on the liver, though he did not see the problem in terms of bile.⁵⁵ J. Charles Ryan, in the preface to his 1914 book *Health Preservation in West Africa*, noting the increase in the number of Europeans finding employment in the colonies, wrote, “West Africa is and from the nature of things

⁵² J. Lane Notter, “The Hygiene of the Tropics”, in Andrew Davidson (ed.) *Hygiene and Diseases of Warm Climates*, Young J. Pentland, Edinburgh and London, 1893, p. 25.

⁵³ W. J. R Simpson, *The Maintenance of Health in the Tropics*, 2nd edition, John Bale, Sons and Danielsson, London, 1916, pp. 3-4.

⁵⁴ *Ibid*, p. 10.

⁵⁵ *Ibid*, p, 20; See Harrison, *Climates and Constitutions*, pp. 81-2.

always must be an unhealthy country for the white race”.⁵⁶ R. J. Blackham, in 1912, argued that, “The present-day distribution of civilization supports the view that tropical or subtropical regions are unsuited to the more civilized races”.⁵⁷ He went on to say, “The tonic effect of a cold winter is lacking, and after prolonged residence, energetic physical and mental action is often difficult, and not infrequently distasteful”.⁵⁸ Children thus become a central concern. J. Balfour Kirk claimed in 1931 that, “Growing children, as a rule, do not do very well in tropical climates; they become weedy and excitable”, so that it was necessary to send them home for education.⁵⁹

Thus the effect of tropical heat on the “white” race was a continued concern, yet there are other features of tropical medicine, informed by germ theory and broader imaginings of the dirtiness and superstition of indigenous people, that also contributed to the construction of tropical Otherness in the age of germs. A sense of the danger of the tropics could be shifted from the danger of the space to the danger of the germ arising from the inveterate practices of indigenous people as a whole. In *The Wretched of the Earth*, Frantz Fanon pointed to the way in which the colonial world is divided simply into newcomers and natives, where the later is portrayed “as a sort of quintessence of evil”. Medicine was part of the social division of the colony. Fanon notes that broad images of native moral and cultural “depravity” contained and paralleled medical discourses, writing, “The recession of yellow fever and the advance

⁵⁶ J. Charles Ryan, *Health Preservation in West Africa*, John Bale, Sons and Danielsson, London, 1914, p. v-vi.

⁵⁷ R. J. Blackham, *Aids to Tropical Hygiene*, Bailliere, Tindall and Cox, London, 1912, p. 1.

⁵⁸ *Ibid*, p. 8.

⁵⁹ J. Balfour Kirk, *Hints on Equipment and Health for Intending Residents in the Tropics*, 2nd edition, Bailliere, Tindall and Cox, London, 1931, p. 1.

of evangelization form part of the same balance sheet”.⁶⁰

Looking at the literature of tropical medicine, sanitation and hygiene, one sees the perceptiveness of these observations quite clearly. In British literature in particular, authors advised on the managing of native servants. R. J Blackham stressed to his popular readership that the European had to regularly inspect and regulate the behaviour of his Indian servants, writing that natives had a “special predilection for storing jam-tins, sardine-tins, bottle, and other rubbish, behind the kitchen and out-offices”, and for leaving water around in tubs or on the ground where flies and mosquitos could breed. Malaria in Europeans, he said, generally came from mosquitos that had bitten natives.⁶¹ Andrew Balfour, the director of the Wellcome Tropical Research Laboratories in Khartoum, wrote, “Native servants soon learn that it pays to be cleanly, but it must be confessed that it requires a great deal of energy and force of character to keep them up to the mark”.⁶² Kate Platt and J. Charles Ryan both discussed the “compounds” that European and indigenous people lived in and stressed that native servants and their quarters had to be inspected and managed assiduously.⁶³ Ryan, in writing about West Africa, wrote that, “Promiscuous deposition of faeces is the rule with natives”, creating the danger of germ transmission by humans, flies and other insects.⁶⁴ Thus it is clear that many writers in the field of tropical hygiene and sanitation justified European control of indigenous people by imagining and

⁶⁰ Frantz Fanon, *The Wretched of the Earth*, Grove Press, London, 1968, p. 42.

⁶¹ Blackham, *Aids to Tropical Hygiene*, p. 169.

⁶² Andrew Balfour, “Personal Hygiene in the Tropics and Minor Tropical Sanitation”, in W. Byam and R. G. Archibald (eds) *The Practice of Medicine in the Tropics*, vol I, Henry Frowde and Hodder and Stoughton, London, 1923, p. 35.

⁶³ Kate Platt, *The Home and Health in India and the Tropical Colonies*, Bailliere, Tindall and Cox, London, 1923, p. 48.

⁶⁴ Ryan, *Health Preservation in West Africa*, p. 66.

constructing them as fundamentally dirty and unhealthy in their sanitary practices and behaviour.

Edward Said has argued that in European writing about the Orient, the Arab was constructed as an essential and collective entity, where any possibility of individual identity or intellect was wiped out by the imagining of universal “Arabic” characteristics.⁶⁵ Similarly, in the literature of tropical medicine and sanitation, the “Native” appears as a fundamentally dirty figure, whose practices are inimical to the health of white people in tropical colonies. Indeed the literature of tropical medicine, at times, like Moseley in the 18th century, drew on a more general discourse of the primitive and barbaric Other, such as when in 1932, D. B. Blacklock discussed superstitious natives in his book *An Empire Problem*. Magic and superstition were barriers to the efforts of Europeans to keep indigenous people healthy: “The magicians’ mumbojumbo can reduce this poor ignorant villager, courageous in the face of known dangers, to a paralysis of superstitious fear”.⁶⁶ Thus one can see that both in terms of dominant aetiology and in the linking of disease with broader notions of the primitive, a significant continuity existed in the imagining of tropical Otherness across the centuries of European expansion and conquest.

Conclusion

Despite the substantial development and spread of germ theories of disease and knowledge of parasitology, bacteriology and virology, tropical medicine

⁶⁵ Edward Said, *Orientalism*, Penguin Books, London, 2003, pp. 229-30.

⁶⁶ D. B. Blacklock, *An Empire Problem: The House and Village in the Tropics*, Hodder and Stoughton, London, 1932.

continued to be in part, and part of, a Western discourse of racial Otherness that justified imperialism and guided the proper social relationship between and roles of white rulers and indigenous subjects in the colonial world. Throughout its history, tropical medicine has drawn on and in part founded ideas about the origins and characteristics of racial types. These ideas about the link between medicine, imperialism and the culture of scientific racism have formed the major strand of historical research. Historians focusing on the culture of tropical medicine have focused in particular on the idea and construction of race, including the notion of whiteness as well as African, Indian and Asian. Bashford, Anderson and E. M. Collingham in particular have focused on the ways in which tropical medicine and the culture of the body in Australia and British India was concerned with inventing what it meant to be “white” in the colonies in the first half of the 20th century.⁶⁷ These scholars, in the context of north Queensland, the Philippines and India, have pointed to medicine as a discourse that constructed “white” and “tropical”, newcomer and native, as the central opposition in the colonial world. As this brief survey of texts shows, this broad characterisation of the discourses of tropical medicine is true. Medicine played a major part in the making of races and the imagining of the colonial Other.

⁶⁷ Bashford, “‘Is White Australia Possible?’ Race, Colonialism and Tropical Medicine”, pp. 259-66; E. M. Collingham, *Imperial Bodies: The Physical Experience of the Raj, c. 1800-1947*, Polity Press, Cambridge, 2001, pp. 80-92.