

Borderlands of Research:
Medicine, Empire, and Sleeping Sickness in East Africa, 1902-1914

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ABSTRACT

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This dissertation is a history of sleeping sickness research work and prevention programs during the German colonial period in East Africa, focusing on the regions around Lake Victoria and Lake Tanganyika. It examines efforts to study and prevent sleeping sickness, analyzing how both fit into the social, political, and economic dynamics of African life. It covers two phases of German colonial attention to epidemic sleeping sickness between 1902 and 1914: an initial phase of research and scientific expeditions from 1902 to 1906, then a period dominated by the introduction of disease prevention measures in affected areas from 1907 to 1914.

Highlighting the local complexity and far-reaching impact of sleeping sickness, I show that sleeping sickness research and prevention emerged from the intersection of tropical medicine expertise, African mobility, and German colonial and African politics. Sleeping sickness, and subsequent efforts toward its treatment and prevention, redefined the boundaries of political power and social influence within African communities during a crucial period of change in the region. By creating new arenas of engagement between African communities and European scientists, specifically in newly-built sleeping sickness camps and among the African medical auxiliaries employed in them, sleeping sickness work created economic relationships, reshaped social and political hierarchies, and set new ground rules for African agriculture and trade. Kings, chiefs, and colonial scientists contended with African communities' demands for treatment, their resistance to examination, and their claims on the use of land and waterways. Further, inter-colonial sleeping sickness research and subsequent prevention programs played a pivotal role in the development of tropical medicine, strengthening disciplinary boundaries and defining the trajectory of future research. My work weaves together narratives of research and

disease prevention from metropolitan Europe and East Africa, in contrast to strictly colonial and national histories of health and medicine that have preceded it.

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Chapter One

Introduction

Sleeping sickness is no longer a daily threat to the well-being of people in western Tanzania, but it remains a part of the landscape. At Kigarama, a town in the Kagera Region that lies close by the border with Uganda, the disease is a part of local memory dwarfed by more recent experiences of sickness and mortality from the AIDS epidemic.¹ But traces persist. In August 2008, my research assistant and I followed Kigarama's Lutheran parish pastor on a visit to meet a former schoolteacher, a man respected for his knowledge of the town and district history. Leaving our car and the pastor's motorcycle behind to walk a well-packed path past scattered houses and banana plots, after a few minutes the pastor gestured offhandedly toward Lake Victoria, saying "the sleeping sickness hospital was over there." "Over there" was at first glance a rectangular open space with banana trees along two sides, tall trees along another, and piles of bricks in two lumpy mounds. On the fourth side led a path heading straight down the hill toward the massive lake; Kigarama town was a short drive along winding roads behind us. Still following, we left the pastor's gesture to the side and turned to walk up a broad drive lined with coffee trees, where the person we sought to talk with, Heslon Lutimba, lived with his granddaughter and wife in a solid concrete-block house. Mr. Lutimba later told us of his father's work as a laundryman at the "hospital," the former German colonial sleeping sickness camp, of good doctors and other doctors, of the king of Kiziba, and of the Germans and the British at Kigarama. The *kambi* (Swahili, camp) at Kigarama was one piece of his own heritage and his father's life story – a sliver of Kigarama's history and the history of the Haya people.

Quite different was my initial entry into the history of sleeping sickness at Lake Victoria some three years before, when happenstance prevailed. I had been looking for a report on malaria research in a fragile book of Robert Koch's posthumously published collected works in Columbia University's Butler Library. I instead found a photograph that stopped me short.

¹ Frederick J. Kaijage, "AIDS Control and the Burden of History in Northwestern Tanzania," *Population and Environment* 14, no. 3 (1993), pp. 279-300.

Here was the elder scientist in white suit and pith helmet, crouched on one knee over a crocodile far larger than him, the younger European man who also knelt by the crocodile, or a younger African man standing in the background. Long incisions on the animal's back indicated a dissection in progress, and a breathless caption reported that blood had spurting from the animal's heart, so fresh was the examination. Filing it away as an oddity, I could not help but wonder what exactly had brought Koch to Lake Victoria and to field dissections of massive reptiles, just a few years before his death. Who were the other men in the picture? And so this project began, as an effort to learn about those other men.

This dissertation covers the distance between these two research experiences, driven by several intertwined questions. How did sleeping sickness fit into the history of communities around Lake Victoria? How did Robert Koch fit into the history of sleeping sickness and tropical medicine? And, what could sleeping sickness tell us about health and politics in colonial East Africa? I have followed these questions through historical and current narratives created by German and British colonial officers, Catholic and Protestant missionaries, and Tanzanians in Kagera region and in Dar es Salaam. The resulting study is a history of sleeping sickness research work and prevention programs during the German colonial period, focusing on places around Lake Victoria and Lake Tanganyika. It examines efforts to research and prevent sleeping sickness, analyzing how each fit into social, political, and economic dynamics of African life. It is a work in two main parts, which follow the two phases of German colonial attention to epidemic sleeping sickness between 1902 and 1914: an initial phase of research and scientific expeditions from 1902 to 1906, and then a period dominated by the introduction of disease prevention measures in affected areas from 1907 to 1914.

I first argue the relevance of an international group of colleagues to German scientists as some marshaled support for a German research expedition in Berlin and as others responded to the new epidemic in East Africa. International momentum directed at investigating the cause and spread of sleeping sickness served a rhetorical purpose for advocates of a sleeping sickness expedition in Berlin: it shored up scientists' claims about the urgency of the disease, as they

argued that it posed a new and unpredictable threat to the health of the colonies, and, further, a danger to the survival of German interests in sub-Saharan Africa. A growing consensus among an international group of colleagues in tropical medicine gave German scientists traction in arguing in favor of government funding and support of an expedition targeted at sleeping sickness research. These colleagues also proved to be of practical relevance for colonial medical officers facing a growing epidemic in East Africa. Inter-colonial mobility and the exchange of ideas, information, and research methods proved useful to British and German scientists alike at work around Lake Victoria, as they worked to understand how the local environment and patterns of African mobility related to the cause and spread of sleeping sickness. When a German sleeping sickness expedition arrived in East Africa in 1906, led by Robert Koch, the international and inter-colonial network of scientists interested in sleeping sickness facilitated and influenced Koch's research, conducted in territories claimed by the British and German empires. The course of that research was further shaped by the engagement and withdrawal of people sick with and suspected of having sleeping sickness on Kome Island and on the Sesse Islands, where early German research took place.

Following on this period of research was the German sleeping sickness campaign, from 1907 through the outbreak of the First World War. The campaign took shape according to guidelines set out by Koch upon his departure from East Africa in 1907, emphasizing containment of the epidemic, continued surveying for new cases of disease, and ongoing testing of drug treatments. Colonial medical doctors and sanitation officers focused their work on African populations struck by the disease first from established military and civilian stations on Lake Victoria and Lake Tanganyika, and then from dedicated sleeping sickness camps situated in areas with a high proportion of the sick. I argue that these sleeping sickness camps constituted new hubs of economic and political activity, providing an arena where local populations engaged with and avoided colonial authority as well as royal power. The camps also led to the creation and training of a cohort of African medical auxiliaries aimed at finding the sick in homes and farms, and at crossroads and ferries, and delivering them to the nearest

camp for diagnosis and, ultimately, treatment with a variety of drugs. In some areas, such as the kingdom of Kiziba, the camps and auxiliaries working from them fit into shifts in the direction of traditional leaders' energies and contributed to a strengthening of ties between the colonial administration and Haya kings – all aimed at broader interventions into everyday life. In others, such as the Rundi chiefdoms of the Imbo, sleeping sickness camp doctors, their prevention programs, and the auxiliaries they employed constituted the primary assertion of colonial power with which people in surrounding villages had to contend, manifested in local and non-local auxiliaries, camp doctors, chiefs, and German administrators.

In the following sections, I first address the current relevance of a study of a century-old epidemic that is largely confined to sub-Saharan Africa. I then discuss my framing of the history of sleeping sickness as a regional history of the Lake Victoria and Lake Tanganyika littorals. I then briefly discuss several historical literatures with which my work engages, specifically the histories of sleeping sickness, of tropical medicine in Africa, of African auxiliary labor and colonial intermediaries, and of political change and colonialism in East Africa. I conclude with a plan of the dissertation's chapters.

Why Sleeping Sickness?

Sleeping sickness is a complex and challenging disease caused by an infection with a trypanosome parasite (*Trypanosoma brucei rhodesiense* or *Trypanosoma brucei gambiense*) and spread by the bite of the tsetse fly (*Glossina palpalis*). Scientifically termed Human African Trypanosomiasis, sleeping sickness is fatal if left untreated and draws its name from the constant sleepiness and inability to be woken that precedes death in advanced cases. Illness can last anywhere from a few months to several years; this variability continues to engage scientists in understanding how the parasite affects the human body and the central nervous system. Sleeping sickness is the human form of an infection that also strikes livestock, and the pathological form of an apparently symbiotic relationship between similar parasites and a wide

variety of non-domesticated animals in sub-Saharan Africa.² The parasite causing sleeping sickness likely has a relatively recent history in the human body, given the virulence of the disease in modern epidemics. Sleeping sickness, also called “Negro lethargy” in the late nineteenth century, had been known in pre-colonial Africa, and was likely the “sleepy distemper” identified by naval doctors and slave traders as an illness that occasionally struck slaves in the eighteenth century on the west coast of Africa.³ Scattered instances of sleeping sickness in West and Central Africa accelerated in the late nineteenth century into full-fledged epidemics, exacerbated by successive waves of famine and epidemic disease in the late nineteenth century – as well as epizootics affecting livestock – that preceded them.⁴

The epidemics that European missionaries and colonizers recognized at the turn of the twentieth century were new in scope and scale.⁵ These outbreaks of disease struck populations ranging from Senegambia in West Africa to the Zambezi watershed in southern Africa, and into the Great Lakes region and Nile valley in East Africa. In the Congo River basin, some 500,000 people are estimated to have died from the late 1890s into the 1920s; at Lake Victoria, the epidemic killed between 250,000 and 300,000 people between 1901 and 1920.⁶ The dead were

² C. Burri and R. Brun, “Human African Trypanosomiasis,” in Gordon C. Cook and Alimuddin I. Zumla, eds., *Manson’s Tropical Diseases* (Saunders: London, 2003); E.M. Fèvre, P.G. Coleman, S.C. Welburn, and I. Maudlin, “Reanalyzing the 1900–1920 Sleeping Sickness Epidemic in Uganda,” *Emerging Infectious Diseases* 10, No. 4 (2004), pp. 567-593.

³ John Atkins, *The Navy-Surgeon: or, a practical system of surgery*, (London, 1734), *Eighteenth Century Collections Online* (Gale), Columbia University, 15 Mar. 2011, pp. 18-19 of Appendix; Cuthbert Christy, “Sleeping Sickness,” *Journal of the Royal African Society*, Vol. 3, No. 9 (Oct., 1903), p. 3; Dietmar Steverding, “The history of African trypanosomiasis,” *Parasites & Vectors* 2008, 1, 3, <http://www.parasitesandvectors.com/content/1/1/3>.

⁴ John Ford, *The Role of Trypanosomiasis in African Ecology: A Study of the Tsetse-fly Problem*, (Oxford: Clarendon Press, 1971); John McKenzie, “Experts and Amateurs: Tsetse, Nagana and Sleeping Sickness in East and Central Africa,” in John MacKenzie, ed. *Imperialism and the Natural World* (New York: 1990); Shane Doyle, “Population change, environmental change, and “diseases of the wilderness” in Uganda,” unpublished paper (1999).

⁵ Steverding, “The history of African trypanosomiasis,” *ibid*.

⁶ Maryinez Lyons, “African Trypanosomiasis,” in Kenneth Kiple et al., *Cambridge World History of Human Disease* (Cambridge: Cambridge University Press, 1993), p. 556; Kirk Hoppe, *Lords of the Fly: Sleeping Sickness Control in British East Africa, 1900-1960* (Westport, CT: 2003), p. 27; Maureen Malowany, “Unfinished Agendas: Writing the History of Medicine of Sub-Saharan Africa,” *African Affairs* 99 (2000), pp. 331. Figures for the Congo River basin are more difficult to pin down, but 500,000 people dead is the number typically cited.

overwhelmingly Africans, with a few cases in the early twentieth century among European researchers and Arab or Indian traders.⁷

After 1901, when European missionary doctors working in Uganda recognized it as a new and fatal epidemic disease, sleeping sickness quickly became a top priority for colonial administrations and tropical medicine doctors. Sleeping sickness grabbed the headlines in Europe, as well as the attention of colonial administrations and scientists alike, due to its novelty, the potential for a prestigious scientific discovery, the disease's danger and apparent incurability, and the possibility of a major challenge to the success of Central and East African colonial ventures. The medical and popular press in Europe soon posted items about the disease, calling it "the sleep of death" and painting its ravages in vivid, sensational detail.⁸ Entire villages along the Lake Victoria littoral were stricken with the disease, and both British and German doctors forecasted that some communities would die in their entirety. This greater mortality was precisely what colonial officials sought to avoid, particularly because it threatened potential pools of African labor and the larger project of colonial development and extraction of resources.⁹ Epidemic sleeping sickness broke out in African societies amid – and in some cases aggravated by – the expansion of European colonial power and increasing

⁷ Europeans by and large believed that Africans initially had a racially-based susceptibility to the disease, with Europeans enjoying a comparable level of immunity, because of the greater numbers of the sick among African populations. This was quickly understood as erroneous, as infection proved to be a matter of proximity to tsetse flies and greater probability of being bitten by an infected fly, rather than of innate susceptibility or resistance. The case of British Lt. Forbes Tulloch, infected during research in Uganda in 1906, drove home the potential for infections with sleeping sickness, regardless of race, within the British medical community. See correspondence from R.M. Moffat to David Bruce, 3/13/1906, A.C.H. Gray to David Bruce, 3/13/1906 and 3/20/1906; David Bruce to Robert Koch and Paul Ehrlich, 3/23/1906, Wellcome Trust Institute [hereafter WTI] RST/G27 26.

⁸ A typical example of this writing is "The Sleep of Death: a mysterious disease which puzzles medical men," *The Daily Mail*, undated clipping in correspondence dated 5/2/1902, BAB R 1001 5886.

⁹ Maryinez Lyons, "Sleeping sickness, colonial medicine and imperialism: some connections in the Belgian Congo," in Roy Macleod and Milton Lewis, *Disease, Medicine, and Empire: Perspectives on Western Medicine and the Experience of European Expansion*, (Routledge: London, 1988), p. 245; Juhani Koponen, *Development for Exploitation: German colonial policies in Mainland Tanzania, 1884-1914*, (Lit Verlag: Hamburg, 1994), p. 245.

colonial incursions into African political and economic systems.¹⁰ Colonial responses to sleeping sickness constituted the first instance where African health came to the forefront of public health measures in sub-Saharan African colonies, representing a turning point in colonial medicine.¹¹

Sleeping sickness had a profound impact on societies stricken by the disease and became entangled with the processes of social and political change already underway in Africa. Tens of thousands of people died from the epidemic, largely concentrated in particular ecological zones – such as the northern shore of Lake Victoria – and within a relatively brief 10-year period following the turn of the century. The disease could only spread in areas where both flies and people infected with the trypanosome parasite lived. Because exposure to the tsetse fly's bite correlated with particular activities, such as fishing or rubber collecting, the disease had a disproportionate impact on men initially. As these men returned to their homes in areas where tsetse flies also lived, sleeping sickness ultimately spread throughout families and entire villages. Elsewhere, when people moved in and out of areas with the disease and fly, returning to homes in fly-free areas, mortality remained limited to migrants and travelers alone. As the epidemic spread in other areas, shrinking populations led to shifts in patterns of cultivation and management of land, and fly habitats encroached further on arable land – a cycle of continuing infection and illness.¹² Sleeping sickness, and particularly colonial interventions aimed at

¹⁰ Maryinez Lyons, *The Colonial Disease: a Social History of Sleeping Sickness in Northern Zaire, 1900-1940*, (Cambridge University Press: Cambridge, 1992); Rita Headrick and Daniel R. Headrick, *Colonialism, Health and Illness in French Equatorial Africa, 1885-1935*, (Atlanta: African Studies Association Press, 1994); Kirk Arden Hoppe, *Lords of the Fly: Sleeping Sickness Control in British Uganda, 1900-1960*, (Westport, CT: Praeger, 2003); Helge Kjekshus, *Ecology Control and Economic Development in East African History: The Case of Tanganyika, 1850-1950*, (Athens: Ohio University Press, 1996).

¹¹ Maryinez Lyons, "The Power to Heal: African auxiliaries in colonial Belgian Congo and Uganda," in Dagmar Engels and Shula Marks, eds., *Contesting Colonial Hegemony: State and Society in Africa and India*, (London: German Historical Institute, 1994); Deborah Neill, *Networks in Tropical Medicine: Internationalism, Colonialism, and the Rise of a Medical Specialty, 1890-1930*, (Stanford University Press, forthcoming). See also Ann Beck, *Medicine and Society in Tanganyika 1890-1930: a historical inquiry* (Philadelphia: American Philosophical Society, 1977).

¹² See Kim Picozzi, Eric M. Fèvre, Martin Odiit, Mark Carrington, Mark C. Eisler, Ian Maudlin, Susan C. Welburn, "Sleeping Sickness In Uganda: A Thin Line Between Two Fatal Diseases," *British Medical Journal* 331, No. 7527 (Nov. 26, 2005), pp. 1238-1241; John Ford, *The Role of the Trypanosomiases in African Ecology: A Study of the Tsetse-fly Problem*, (Oxford: Clarendon Press, 1971); James Giblin, "Trypanosomiasis

preventing it, extended elites' reach into realms of healing, farming, and traveling within the broader population, but also provided a means and a language to reject or otherwise engage with both African and colonial authority. Sleeping sickness, captured in colonial records and African memoirs, makes these negotiations more visible for the historian, providing a lens through which altered political and economic relationships can be more clearly viewed.

Examining the early years of attention to the disease also provides a view into both colonial politics and scientific ideas in transition. The moment in which sleeping sickness captured the attention of colonial governments and European scientists occurred within a foundational period in modern tropical medicine, epidemiology, and public health. Modern paradigms of disease prevention, particularly those focusing on environmental interventions, vector control, and chemotherapeutic treatments and prophylaxis, developed in part out of this same period.

Despite its capacity to illuminate changing historical relationships between kings, administrators, and villagers and their shared environment, sleeping sickness is not relevant to modern-day readers simply because it so captivated the attention of people in Europe and in Africa a century ago. At the beginning of our century, sleeping sickness continues to affect the health and livelihood of people in a wide swath of sub-Saharan Africa. In its complex epidemiology and public health implications, it remains a representative vector-borne disease, prevention of which is largely approached through environmental measures in the absence of widely available, effective therapies.¹³ It is predominantly a disease of the rural African poor

Control in African History: an Evaded Issue?" *Journal of African History* 31 (1990); James Giblin, *The Politics of Environmental Control in Northeastern Tanzania, 1840-1940* (Philadelphia, PA: University of Pennsylvania Press, 1992), especially chapters 2 and 8.

¹³ Maureen Malowany, "Unfinished Agendas: Writing the History of Medicine of Sub-Saharan Africa," *African Affairs* 99 (2000), pp. 330-35; Pere Simarro et al, "Eliminating Human African Trypanosomiasis: where to we stand and what comes next?" *PLoS Medicine* 5(2) (February 2008), pp. 0174-0180; Dominique Legros, Gaëlle Ollivier, Marc Gastellu-Etchegorry, Christophe Paquet, Christian Burri, Jean Jannin, and Philippe Büscher, "Treatment of human African trypanosomiasis—present situation and needs for research and development," *Lancet Infectious Diseases* 2 (2002), pp. 437-40; Stephen J. Torr et al, "Towards a rational policy for dealing with tsetse," *Trends in Parasitology* 21, 11 (November 2005), pp. 537-41. Eflornithine, a compound effective in treating human trypanosomiasis in its second stage, came to prominence as a controversial "orphan drug" in the 1990s, due in part to agitation by its developer,

and rarely appears as a priority in global health initiatives championed by governmental and non-governmental organizations. Its status as a “neglected tropical disease” to international medical, development, and political organizations alike contrasts starkly with its high priority for the public health administrations in many of the affected countries, casting a harsh light on gaps in resources available to people currently working toward its management and elimination.¹⁴ The trypanosome parasite threatens both the health of cattle herds and communities in areas with tsetse flies, presenting a serious challenge to economic development and to the stability of public health in affected areas.¹⁵

Lake Victoria and Lake Tanganyika as Zones of Analysis

This dissertation approaches the history of sleeping sickness from a transnational and regional perspective. The territory covered by this dissertation encompasses what were once the colonial possessions of Germany, Britain, and Belgium in East Africa -- the Uganda Protectorate, British East Africa, Belgian Congo, and German East Africa. Now, this same expanse of territory is made up of the sovereign nations of Tanzania, Burundi, Kenya, Uganda, and the Democratic Republic of Congo. Lake Victoria and Lake Tanganyika lie between these nations, drawing commerce to hubs around the lakeshores and connecting people living across their waters. In the early twentieth century, when pre-colonial patterns of mobility and trade

Albert Sjoerdsma; it is now part of a drug delivery partnership between the WHO, Sanofi-Aventis, and Bayer. See Albert Sjoerdsma and Paul J. Schechter, “Eflornithine for African sleeping sickness,” *The Lancet* 354, Issue 9174, (17 July 1999); Tobias Luppe, “Pharmaceutical Research and Development for Neglected Diseases: Market Failures and the Case of Sleeping Sickness,” in Ernst Ulrich von Wietzäcker et al, *Limits to Privatization: How to Avoid Too Much of a Good Thing* (London: Earthscan, 2005), pp. 141-44; Peter J. Hotez, *Forgotten People, Forgotten Diseases: The Neglected Tropical Diseases and their Impact on Global Health and Development*, (Washington: ASM Press, 2008), pp. 87-88.

¹⁴ Peter J. Hotez, *Forgotten People, Forgotten Diseases: The Neglected Tropical Diseases and their Impact on Global Health and Development*, (Washington: ASM Press, 2008), pp. 1-12, pp. 82-90.

¹⁵ James Giblin, “Trypanosomiasis Control in African History: an Evaded Issue?,” *Journal of African History* 31, no. 1 1990, pp. 59-80; Max Murray and J.C.M. Trail, “Comparative Epidemiology and Control of Trypanosomes,” *International Journal for Parasitology* 17, 2 (February 1987), pp. 621-27; Reg Allsopp, “Options for vector control against trypanosomiasis in Africa,” *Trends in Parasitology* 17, 1 (January 2001), pp. 15-19.

continued to connect people, and ecological zones were contiguous around the lake, scientists advocating for intensive sleeping sickness research understood that the epidemic would not respect newly-established colonial borders. Treating the lakes as units of analysis, rather than addressing them as features cut into pieces by European empires and modern nation-states, allows us to consider the continuities of these pre-colonial and colonial histories.¹⁶ My work recasts the two great lakes – bodies of water and paths of movement – as crucial to understanding the impact of sleeping sickness on the history of East and Central Africa.¹⁷

Historical and anthropological studies of the Great Lakes region have traced the past and present lives of people in the interlacustrine kingdoms of modern-day Uganda, Tanzania, Kenya, Rwanda, Burundi, and Democratic Republic of Congo. These studies focus point to the variety of social, political, and economic ties and allegiances linking people in the pre-colonial and colonial periods, highlighting migration, commerce, and conflict as forces that connected people in the interlacustrine kingdoms and shaped the kingdoms' political development.¹⁸

¹⁶ In African history, limited selection of examples of regional or transnational histories relevant to East and Central Africa are: David Schoenbrun, *A Green Place, a Good Place: Agrarian Change, Gender, and Social Identity in the Great Lakes Region to the 15th Century*, (Portsmouth, NH: Heinemann, 1998); Jean-Pierre Chrétien, *The Great Lakes of Africa: Two Thousand Years of History*, translated by Scott Strauss (New York: Zone Books, 2003); Steven Feierman, "A Century of Ironies (ca. 1780-1890)" in Philip Curtin, Steven Feierman, Leonard Thompson, and Jan Vansina, eds., *African History from Earliest Times to Independence*, (New York: Longman, 1995), pp. 352-76.

¹⁷ My thinking on the Great Lakes is also influenced by Johannes Fabian's framing of central Africa during nineteenth-century European exploration, where he argues that the Congo River basin was not simply a "geomorphological feature," but a space that collected and distilled the cognitive tensions inherent in European exploration. Johannes Fabian, *Out of Our Minds: Reason and Madness in the Exploration of Central Africa* (Berkeley: University of California Press, 2000), p. 10, pp. 14-17.

¹⁸ On the histories of Rwanda and Burundi, see David S. Newbury, "Precolonial Burundi and Rwanda: Local Loyalties, Regional Royalties," *International Journal of African Historical Studies*, 34, no. 2 (2001), pp. 255-313; Newbury, *Kings and clans: Ijwi Island and the Lake Kivu Rift, 1780-1840* (Madison: University of Wisconsin Press, 1991); Newbury, "Irredentist Rwanda: Ethnic and Territorial Frontiers in Central Africa," *Africa Today* 44, No. 2 (1997), pp. 211-221; Catharine Newbury, *The Cohesion of Oppression: clientship and ethnicity in Rwanda, 1860-1960*, (New York: Columbia University Press, 1988); Jan Vansina, *Le Rwanda ancien: le royaume Nyiginya*, (Paris: Karthala, 2001); Michele Wagner, "Trade and Commercial Attitudes in Burundi Before the Nineteenth Century," *IJAH* 26, no. 1 (1993), pp. 149-166; Wagner, "Whose history is history? A history of the Baragane people of Buragane, southern Burundi, 1850-1932," Unpublished PhD Dissertation, University of Wisconsin, Madison, 1991; Alison L. Des Forges, edited by David Newbury, *Defeat is the only bad news: Rwanda under Musinga, 1896 -1931*, (Madison: University of Wisconsin Press, 2011); Des Forges, "'The Drum is Greater than the Shout': the 1912 rebellion in northern Rwanda," in Donald Crummey, ed., *Banditry, Rebellion and Social Protest in Africa*, (London: James Currey, 1986), pp. 311-31. On Buganda, see M.S.M. Semakula Kiwanuka, *A History of Buganda: from the Foundation of the Kingdom to 1900*, (New York: Africana Publishing Corp., 1972); Christopher Wrigley, *Kingship and*

Here, however, the focus has been on the most populous, dominant, and politically sophisticated states that dominated the region, such Rwanda, Buganda, and Burundi. In my work, smaller polities at the margins of these states' spheres of influence come to the fore: the Sesse Islands, the Haya kingdom of Kiziba, and the Imbo chiefdoms on Lake Tanganyika.

Buhaya is a cultural region in northwestern Tanzania, comprised of territories ruled historically by six Haya kingdoms. It is bordered by Uganda to the north and Lake Victoria to the east, and on the west by Karagwe; its southern border is generally considered the administrative boundary with Biharamulo district.¹⁹ It now lies in the northernmost corner of the Kagera region of Tanzania, where Haya people form "the largest single cultural unit" in the region.²⁰ Buhaya has been the subject of extensive anthropological, historical, and archaeology studies, beginning with colonial ethnographies of the 1920s-40s.²¹ Here, I examine the history of

state: the Buganda dynasty, (Cambridge: Cambridge University Press, 1996); Holly Hanson, *Landed Obligation: the practice of power in Buganda*, (Portsmouth, NH: Heinemann, 2003); Neil Kodesh, *Beyond the Royal Gaze: Clanship and Public Healing in Buganda*, (Charlottesville: University of Virginia Press, 2010); Richard J. Reid, *Political power in pre-colonial Buganda: economy, society & warfare in the nineteenth century*, (Oxford: James Currey, 2002); Michael Twaddle, *Kakungulu & the creation of Uganda, 1868-1928*, (London: James Curry, 1993).

¹⁹ Schmidt, *Historical Archaeology: a Structural Approach in an African Culture* (Westport, CT: Greenwood Press, 1978), p. 12-13 and map p. 11.

²⁰ "Haya" identifies a cultural unit, of which Buhaya is the land and in which Kihaya is the language spoken. I follow Michele Wagner's treatment of Buha in "Environment, Community, and History: Nature in the Mind in nineteenth and early twentieth-century Buha, Tanzania," in Maddox et al, eds., *Custodians of the Land: Ecology and Culture in the History of Tanzania* (London: James Currey, 1996), p. 176; Kaijage, *AIDS Control*, p. 279.

²¹ Hans Cory's work as a British colonial ethnographer provides the textual basis for ongoing research to the present day. See Cory and M.M. Hartnoll, *Customary Law of the Haya Tribe, Tanganyika Territory*, (London: Published for the International African Institute by P. Lund, Humphries & Co., Ltd., 1945); Cory, *Historia ya Wilaya Bukoba* (History of the Bukoba District), (Mwanza: Lake Printing Works, 1956). Anthropological studies include Brad Weiss, *Sacred Trees, Bitter Harvests: Globalizing Coffee in Northwest Tanzania*, (Portsmouth, NH: Heinemann, 2003); Weiss, *The Making and Unmaking of the Haya Lived World: Consumption, Commoditization, and Everyday Practice*, (Durham, NC: Duke University Press, 1996); Peter R. Schmidt, *Historical archaeology in Africa: representation, social memory, and oral traditions*, (Lanham, MD: AltaMira Press, 2006); Schmidt, *Iron technology in East Africa symbolism, science, and archaeology*, (Bloomington, IN: Indiana University Press, 1997); Schmidt, *Historical Archaeology: a Structural Approach in an African Culture* (Westport, CT: Greenwood Press, 1978). Historical and archaeological studies of Buhaya include Kenneth Curtis, "Capitalism fettered: state, merchant, and peasant in Northwestern Tanzania," Unpublished PhD Dissertation, University of Wisconsin, Madison, 1989; Patricia Reining, "The Haya: the agrarian system of a sedentary people," Unpublished PhD Dissertation, University of Chicago, 1967; Lesley Stevens, "Religious Change in a Haya Village, Tanzania," *Journal of Religion in Africa* 21, 1 (1991); Method M.P. Kilaini, *The Catholic Evangelization of Kagera in North-West Tanzania: the*

a particular Haya kingdom, Kiziba, as well as the histories of groups who, by the very nature of their mobility between colonial regimes, or by virtue of the focus of their economic life on a lake's littoral towns, have at times slipped through the cracks of nationally-focused historiographies. Two such areas important to this study, the Sesse Islands of Uganda or the Imbo region of Burundi, by virtue of their subordination to dominant regional kingdoms (Buganda in the first case, Urundi in the latter) appear in historical scholarship chiefly as they relate to those kingdoms.²² Tributary relationships are reified in the historical narrative, at the expense of our awareness of persistent (if contentious or unsuccessful) assertions of local autonomy as well as a recognition of ongoing efforts to integrate and subordinate outlying areas into royal political hierarchies. This emphasis on connections between subordinate polities and dominant royal houses, or between outlying areas and major trading hubs, also has as a consequence de-emphasized the importance of these peripheral areas as paths of travel and zones of migration and cultural mingling in their own right.

Historiographic Contexts for the Dissertation

This dissertation engages with several different historiographies, discussed here in turn. Specifically, my research draws upon and extends literatures on the history of sleeping sickness,

Pioneer Period, 1892-1912, (Rome, 1990). Ralph Austen deals with Haya history alongside Sukuma history in *Northwest Tanzania Under German and British Rule: Colonial Policy and Tribal Politics, 1889-1939*, (New Haven: Yale University Press, 1968).

²² The history of the Sesse Islands has thus far been written with respect to their historical relationship with Buganda, see M.S.M. Semakula Kiwanuka, *A History of Buganda: from the Foundation of the Kingdom to 1900*, (New York: Africana Publishing Corp., 1972); Richard Reid, "The Ganda on Lake Victoria: a Nineteenth-Century East African Imperialism," *Journal of African History* 29 (1998), p. 353, 358-60; Kirk A. Hoppe, *Lords of the Fly: Sleeping Sickness Control in British East Africa, 1900-1960* (Westport, CT: Praeger, 2003), p. 44-46, p. 64-65. Similarly, the Imbo region's history is cast within the wider history of the Rundi monarchy. See Wagner, "Trade and Commercial Attitudes," p. 150; Jean-Pierre Chrétien, *Burundi: l'histoire retrouvée, 25 ans de métier d'historien en Afrique* (Karthala: Paris, 1993), specifically "La crise écologique de la plain du lac Tanganyika entre 1890 et 1916." See also David L. Schoenbrun, "A Past Whose Time Has Come: Historical Context and History in Eastern Africa's Great Lakes," *History and Theory*, Vol. 32, No. 4, Beiheft 32: History Making in Africa (Dec., 1993), pp. 32-56.

the foundation and development of tropical medicine, the work and social roles of African auxiliaries and intermediaries, and colonial rule in East Africa.

Histories of Sleeping Sickness

Sleeping sickness has attracted ever-greater attention from historians in the past 20 years, but the field nonetheless remains open to further evaluation. Histories of sleeping sickness have generally conformed to colonial – and later national – territorial boundaries, which offer both a rich local specificity and fruitful potential for comparison.

Michael Worboys' article "The Comparative History of Sleeping Sickness in East and Central Africa" effectively began a new historiographical conversation about the relevance of particular imperial approaches to colonial sleeping sickness prevention strategies. Worboys sets British, Belgian, and German responses to sleeping sickness in comparative perspective, characterizing prevention measures in each nation's colonies according to dominant approaches: the British focused on the fly vector, the Belgians on human movement and space, and the Germans on drug therapies and infections with the trypanosome.²³ While very effective in making sense of the significant divergence in sleeping sickness policies across Europe's Great Powers, underlying Worboys' argument is a concept of national scientific schools or styles as equally dominant in Africa and Europe. While African experiences of sleeping sickness were not Worboys' brief, his comparative study also has the consequence of de-emphasizing African mobility and agency.

Path breaking work in the history of sleeping sickness located the disease's expansion as the result of colonial incursion, also highlighting how responses to new epidemics helped to accelerate the reach of European empires into sub-Saharan Africa. Lyons' study of sleeping sickness and social medicine in the Belgian Congo set a standard for historical analyses of

²³ Michael Worboys, "The comparative history of sleeping sickness in East and Central Africa," *History of Science* 23 (1990): 89-102; Worboys, "Tropical Diseases," in *Companion Encyclopedia to the History of Medicine*, Roy Porter and W.F. Bynum, eds., 512-36, (Routledge: London, 1993).

sleeping sickness, situating the disease in the context of coercive labor and rubber extraction and of brutal colonial violence.²⁴ Work on the Anglo-Egyptian Sudan has demonstrated the importance of local geographical, political, and epidemiological circumstances in determining the colonial state's response to epidemic sleeping sickness.²⁵ Studies of British Uganda and French Equatorial Africa focused not solely on the dynamics of colonial power, but on the ways that particular national ideologies in the metropole gave rise to systems of sleeping sickness control or had distinctive impacts on health in the colonies. Here, the issue is not how colonialism was coercive, but how colonialism (and sleeping sickness control) was particularly English, or French.²⁶ As part of shifting imperial goals and colonial reforms of the interwar period, sleeping sickness research fostered a growing awareness of the ecological factors in human health and environmental stability, leading to a corresponding attention to these factors in colonial management and planning.²⁷

Environmental history remains a crucial point of intersection between histories of medicine and epidemics, such as those of sleeping sickness, and histories of social and political

²⁴ Maryinez Lyons, *The Colonial Disease: a Social History of Sleeping Sickness in Northern Zaire, 1900-1940*, (Cambridge University Press: Cambridge, 1992); Maryinez Lyons, "Sleeping sickness, colonial medicine and imperialism: some connections in the Belgian Congo," in Roy Macleod and Milton Lewis, *Disease, Medicine, and Empire: Perspectives on Western Medicine and the Experience of European Expansion*, (Routledge: London, 1988); Maryinez Lyons, "The Power to Heal: African auxiliaries in colonial Belgian Congo and Uganda," in Dagmar Engels and Shula Marks, eds., *Contesting Colonial Hegemony: State and Society in Africa and India*, (London: German Historical Institute, 1994). On the entangled histories of sleeping sickness and Belgian colonial rule in the Congo, see also Nancy Rose Hunt, *A Colonial Lexicon of Birth Ritual, Medicalization, and Mobility in the Congo* (Durham: Duke University Press, 1999), pp. 92-96; John Janzen, *The Quest for Therapy: Medical Pluralism in Lower Zaire*, (Berkeley: University of California Press, 1978), pp. 13-15; Jan Vansina, *Being Colonized: the Kuba experience in rural Congo, 1880-1960* (Madison: University of Wisconsin Press, 2010), chapter 5. On the Zambia-DR Congo borderlands, see Mwelwa C. Musambachime, "The Social and Economic Effects of Sleeping Sickness in Mweru-Luapula 1906-1922," *African Economic History* 10 (1981), pp. 151-173.

²⁵ Heather Bell, *Frontiers of Medicine in the Anglo-Egyptian Sudan, 1899-1940* (Oxford University Press: Oxford, 1999).

²⁶ Kirk Arden Hoppe, *Lords of the Fly: Sleeping Sickness Control in British Uganda, 1900-1960*, (Westport, CT: Praeger, 2003); Rita Headrick, and Daniel R. Headrick, ed., *Colonialism, Health and Illness in French Equatorial Africa, 1885-1935*, (Atlanta: African Studies Association Press, 1994).

²⁷ Helen Tilley, *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge*, (University of Chicago Press, 2011); Tilley, "Ecologies of Complexity: Tropical Environments, African Trypanosomiasis, and the Science of Disease Control in British Colonial Africa, 1900-1940." *Osiris* 19 (2004), pp. 21-38.

change in pre-colonial and colonial Africa. Though this dissertation focuses neither on the environmental aspects of sleeping sickness, nor on its specific impact on agricultural and pastoral life in Africa, these aspects of sleeping sickness also provide connections to pre-colonial history and imperial policy beyond matters of health and disease. The role of animal reservoirs and domestic livestock in sustaining or touching off epidemics of sleeping sickness brings pastoralism, particularly cattle herding, to prominence. Paralleling work on human trypanosomiasis is work on bovine trypanosomiasis, which addresses both the economic and social impact of domestic animal mortality as well as the campaigns designed to alleviate it.²⁸ Related literature addressing links between the spread of sleeping sickness and colonial disruption of African agricultural and environmental management – with which Lyons, Hoppe and Bell engage – puts historical and more recent changes to African environments in the context of both indigenous practices and colonial interventions.²⁹

Histories of Tropical Medicine

Framing sleeping sickness within the transnational zone of the Great Lakes casts into sharper relief the importance of international and inter-colonial networks to tropical medicine, the relevance (or irrelevance) of national scientific schools in medical research and disease prevention, and the primacy of local dynamics in determining disease prevention practices. My emphasis on a transnational framing for sleeping sickness research and prevention extends two robust historiographies: the first on the history of tropical medicine, and the second on the history of science and medicine in Germany.

²⁸ John McKenzie, "Experts and Amateurs: Tsetse, Nagana and Sleeping Sickness in East and Central Africa," in John MacKenzie, ed. *Imperialism and the Natural World* (New York: 1990); Shane Doyle, "Population change, environmental change, and "diseases of the wilderness" in Uganda," unpublished paper (1999). John Ford, *The Role of Trypanosomiasis in African Ecology: A Study of the Tsetse-fly Problem*, (Oxford: 1971); Richard Waller, "Tsetse fly in Western Narok, Kenya," *Journal of African History* 31, 1 (1990), pp. 81-101.

²⁹ Ford, *The Role of Trypanosomiasis in African Ecology*; Helge Kjekhus, *Ecology Control and Economic Development in East African History: The Case of Tanganyika, 1850-1950*, (London: 1977); James Giblin, "Trypanosomiasis Control in African History: an Evaded Issue," *Journal of African History* 31 (1990).

Interest in sleeping sickness was intimately linked with the continued rise of the young discipline of tropical medicine. By 1902, the discipline styled itself – and was understood by many imperial officials – as being indispensable to colonial survival and success in Africa, and sleeping sickness was an exclusively African epidemic. Tropical medicine emerged from a long period of colonial expansion and informal development in the nineteenth century as a new scientific discipline in 1898.³⁰ It overlapped with many existing fields, such as bacteriology, entomology, and parasitology, but was effectively designed to cover diseases “facing medical practitioners in tropical colonies which were not well covered in the European medical curriculum.”³¹ Its disciplinary boundaries evolved from the combination of existing and new scientific fields for teaching and research that focused on diseases considered limited to “the tropics,” especially those that had posed the greatest challenge to permanent European settlement in locales exotic to western Europe. Tropical medicine practitioners pursued transnational research agendas, building on a tradition of scientific activity as discussed by Philip Curtin, David Arnold, and others, reporting their results in generalist and field-specific journals with international circulation, while also participating in national and international conferences.³²

³⁰ The foundation of tropical medicine is generally dated to Sir Patrick Manson’s publication of *Tropical Diseases* in 1898 and the establishment of the London and Liverpool Schools of Tropical Medicine in 1899. The same period saw the foundation of schools of tropical medicine/hygiene in Hamburg (1901), Lisbon (1902), Paris (1902) and Brussels (1906). See Michael Worboys, “Tropical Diseases.” In Porter, Roy and W.F. Bynum (eds). *Companion Encyclopedia to the History of Medicine*, (Routledge: London, 1993), pp. 512-36; Worboys, “The Emergence of Tropical Medicine: A Study in the Establishment of a Scientific Discipline,” in *Perspectives on the Emergence of Scientific Disciplines*, G. LeMaine et al., (Aldine: Chicago, 1976), pp. 75-98; Worboys, “Germs, Malaria and the Invention of Mansonian Tropical Medicine: From ‘Diseases in the Tropics’ to ‘Tropical Diseases’” in David Arnold, ed., *Warm Climates and Western Medicine: the Emergence of Tropical Medicine, 1500-1900*, (Rodopi: Amsterdam, 1996), pp. 181-207; David Arnold, “Introduction: disease, medicine, and empire,” from *Imperial Medicine and Indigenous Societies* (New York: St. Martin’s Press, 1988), pp. 1-21.

³¹ Worboys, “Tropical Diseases,” p. 512.

³² Philip Curtin, *Death by Migration: Europe’s Encounter with the Tropical World in the Nineteenth Century*, (Cambridge: Cambridge University Press, 1989); Curtin, *Disease and Empire: the Health of European Troops in the Conquest of Africa*, (Cambridge: Cambridge University Press, 1998); David Arnold, *Imperial Medicine and Indigenous Societies*, (New York: St. Martin’s Press, 1988); Arnold, ed. *Warm climates and Western medicine: the emergence of tropical medicine, 1500-1900*, (Atlanta, GA: Rodopi, 1996); Arnold, *The Problem of Nature: Environment, Culture, and European Expansion*, (Oxford: Oxford University Press, 1996); Nancy Leys Stepan, *Picturing Tropical Nature* (Ithaca: Cornell University Press, 2001).

Attention to sleeping sickness fits into a longer trajectory of tropical medicine interest and expertise in vector-borne diseases. Indeed, the paradigmatic tropical disease – for its serious historical challenges to European settlement in West Africa, in particular – was malaria. Studying malaria required pieces of the various fields that constituted tropical medicine: researching the mosquito vector needed the entomologist; understanding the mosquito’s habitat in urban and rural environments needed the public health or “sanitary” expert; diagnosing the disease required the skilled use of a microscope and laboratory apparatus by a bacteriologist or parasitologist; treatment required administration of the long-used chemotherapy quinine by a clinician.³³ But while tropical medicine came into being as malaria became a known medical quantity, the discipline’s first real challenge came with sleeping sickness at the turn of the century.³⁴ The history of early sleeping sickness research and initial prevention campaigns, then, provides a view into the elaboration and development of tropical medicine as a discipline.

Studies of sleeping sickness within the history of medicine and health have, as discussed above, generally conformed to colonial and national boundaries. Analogous to histories of sleeping sickness focusing on Belgian Congo or British Uganda are histories of tropical medicine that focus on the development of particular national institutions and on the work of specific practitioners in a specific national or imperial context. Monographs discussing the advent and development of the London School of Hygiene and Tropical Medicine, the Liverpool School of Tropical Medicine, or the Bernard Nocht Institute for Maritime and Tropical Diseases (Hamburg) ground these institutions in state politics, local business interests, and specific imperial priorities.³⁵ In telling the story of institutional development, while covering an

³³ I here use “chemotherapy” in the general, literal sense, to describe the administration of chemicals to treat a disease. Some of the substances used to treat sleeping sickness were originally developed as synthetic dyes; atoxyl, frequently administered before World War I, was a derivative of arsenic.

³⁴ The East and Central Africa epidemics were a “test case for the new specialism,” per Worboys, “Tropical Medicine,” p. 527.

³⁵ Helen J. Power, *Tropical Medicine in the Twentieth Century: the Liverpool School of Tropical Medicine, 1898-1990*, (Kegan Paul International: London, 1999); Lise Wilkinson and Anne Hardy, *Prevention and Cure: the London School of Hygiene & Tropical Medicine, a 20th Century Quest for Global Public Health*, (Kegan Paul

impressive swath of empirical ground in government and scientific archives, such histories also privilege the work of key individuals and, often, lionize the men involved in advancing tropical medicine's agendas.³⁶ Studies of tropical medicine also rely on a narrow conception of how it functioned as an "international" discipline, focusing on its connections with European governments and its role in mediating international conferences, diplomatic agreements, or its prominence in global print media in the early twentieth century. I argue that tropical medicine should be considered in an inter-colonial frame as well; not simply because of its intimate links with imperial priorities and colonial medical administrations, but also because colonial medical officers operating in the colonies, as outliers to prestigious institutions in metropolitan Europe, were vital to its growth as a discipline. A focus on inter-colonial networks retains the relevance and vibrancy of smaller actors, practitioners operating remotely from these metropolitan centers of political and economic power who stayed connected with their peers without the assistance of diplomats and administrators.³⁷

Histories of German Tropical Medicine

German sleeping sickness work, largely forgotten in studies of either medicine or empire, shaped practices in tropical medicine and epidemiology and invigorated an inter-colonial scientific network. The particular impact that tropical medicine, with or without Robert Koch, had on connected disciplines at the time, and vice versa, remains an avenue of

International: London, 2000); Erich Mannweiler, *Geschichte des Instituts für Schiffs- und Tropenkrankheiten in Hamburg, 1900-1945*, (Kelttern-Weiler: Goecke & Evers, 1998).

³⁶ Patrick Manson, the "father" of tropical medicine, has been the subject of extensive research, exemplifying the trend in the history of tropical medicine to focus on its founding members and institutions. More recent work focuses on Manson's personal and professional history in political and cultural context, offering a more nuanced appraisal of his motivations and actions in the early years of the discipline. See Michael Worboys, "Germs, Malaria and the Invention of Mansonian Tropical Medicine: From 'Diseases in the Tropics' to 'Tropical Diseases'" in David Arnold, ed., *Warm Climates and Western Medicine: the Emergence of Tropical Medicine, 1500-1900*, (Rodopi: Amsterdam, 1996), pp. 181-207; Douglas Haynes, *Imperial Medicine: Patrick Manson and the Conquest of Tropical Disease*. (Philadelphia: University of Pennsylvania Press, 2001). See also W.F. Bynum and Caroline Overy's introduction to *The Beast in the Mosquito: the Correspondence of Ronald Ross and Patrick Manson* (Rodopi: Amsterdam, 1998), pp. v-xxiv.

³⁷ Deborah Neill, "Transnationalism in the Colonies: Cooperation, Rivalry, and Race in German and French Tropical Medicine, 1880-1930." PhD dissertation, University of Toronto 2005, p. 16.

further study. Attention to the role that other scientific disciplines played in shaping tropical medicine in Britain suggests productive comparisons with the German field; comparative studies of the development of bacteriology in France and Germany also speak to the benefits of similar approaches to tropical medicine.³⁸ I incorporate German tropical medicine into the discipline's historical narrative with a focus on German actors in motion within, and connected by, a dense international and inter-colonial network. This offers a counterpoint to Wolfgang Eckart's seminal history of German tropical medicine in the colonies.³⁹ Because of his focus on medical officers of the military colonial public health administration, Eckart privileges the development of the administrative system over acute responses to events like the sleeping sickness outbreak, or expeditions like those led by Koch. Eckart elsewhere argues that African colonies functioned as a laboratory to test new science in an environment unconstrained by European ethical standards, allowing scientists to circumvent guidelines aimed at protecting patients – or simply experimental subjects – from harmful experiments. In Africa, scientists did not have to first ensure the safety and reliability of experiments by using animals in tests, but rather could work directly with diseases and drugs in human – and specifically, he argues, African – bodies.⁴⁰ Eckart's ethical critique identifies a crucial element in colonial research, keeping contemporary, racialized understandings of the relative worth of African lives at the center of his analysis.

More specific to the history of Robert Koch, Christoph Gradmann's recent body of work enriches the history of medicine and science with the texture of personal decisions and

³⁸ Warwick Anderson, "Natural Histories of Infectious Disease: Ecological Vision in Twentieth-Century science," *Osiris* 19 (2004), pp. 39-61; J. Andrew Mendelsohn, "Cultures of Bacteriology: formation and transformation of a science in France and Germany, 1870-1914," Unpublished PhD Dissertation, Princeton University, 1996.

³⁹ Wolfgang U. Eckart, *Medizin und Kolonialimperialismus, Deutschland 1884-1945*, (Schöningh: Paderborn, 1997).

⁴⁰ Wolfgang U. Eckart, "The Colony as Laboratory: German Sleeping Sickness campaign in German East Africa and in Togo, 1900-1914," *History and Philosophy of Life Sciences*, vol. 24 (2002), pp. 69-89.

motivations and imperial politics.⁴¹ Gradmann's *Laboratory Disease: Robert Koch's Medical Bacteriology* took up the interaction between Koch's biography and the development of medical bacteriology between 1840 and 1910.⁴² By examining Koch's major discoveries and most prominent work in the long view, Gradmann focuses on the genealogy of ideas and practices, focusing less on what was path-breaking than on the path that was broken, in fits and starts, over many years. Of particular relevance for this dissertation is Gradmann's analysis of Koch's experimental work on sleeping sickness in 1906-07, which documents the allure of Africa and of sleeping sickness for Koch in the latter years of his career. But the social lives of Koch's African research subjects, and the wider implications of his work with experimental drugs and his effort to design a public health campaign targeting sleeping sickness, remain in the background.⁴³

Histories of African Auxiliaries and Intermediaries

Sleeping sickness research occurred in an era when the laboratory emerged as the sole site where legitimate and reliable scientific knowledge about pathogens, epidemiologies, and vectors was produced.⁴⁴ But this research in and out of the laboratory— in metropolitan Europe and rural East Africa – functioned only with the concerted efforts of doctors, sanitation officers,

⁴¹ Christoph Gradmann, "Invisible Enemies: Bacteriology and the Language of Politics in Imperial Germany," *Science in Context*, Vol. 13, no. 1 (2000), pp. 8-30.

⁴² Gradmann, *Krankheit im Labor: Robert Koch und die medizinische Bakteriologie*, (Göttingen: Wallstein Verlag, 2005), translated into English by Elborg Forster as *Laboratory Disease: Robert Koch's Medical Bacteriology*, (Baltimore: Johns Hopkins University Press, 2009).

⁴³ Biographies of Koch in German and English number in the dozens; the most recent is Thomas Brock's *Robert Koch: a Life in Medicine and Bacteriology*. Brock's comprehensive, if traditional, biography offers a solid English-language appraisal of Koch's foundational work in bacteriology. His two chapters on Koch's tropical medicine research treat it solely as an escape from Berlin, however, and give only a cursory account of Koch's enthusiastic and extensive research in what was then a "hot" new field. Thomas D. Brock, *Robert Koch: a Life in Medicine and Bacteriology* (Washington, DC: ASM Press, 1999).

⁴⁴ Andrew Cunningham and Perry Williams, eds., *The Laboratory Revolution in Medicine*, (New York: Cambridge University Press, 1992); Bruno Latour, "Give Me a Laboratory and I Will Raise the World," in *Science Observed*, K. Knorr and M. Mulkay, eds., (Beverly Hills: Sage, 1983), pp. 141-70; Latour, *The Pasteurization of France*, translated by Alan Sheridan and John Law (Cambridge, MA: Harvard University Press, 1993).

and a wide range of assistants and auxiliary labor. In the field, African *askaris* (soldiers), porters, assistants, cooks, fly-catchers, and local chiefs were indispensable to expedition work, in the initial years of research, and continued as crucial participants in the work of the sleeping sickness campaign. While sleeping sickness epidemics and efforts to prevent them were instrumental in the expansion of colonial administration and to the alteration of African agricultural and commercial practices, few studies examine the impact that Africans had as participants in sleeping sickness research, and the nature of their relations with European participants.

The history of African medical auxiliaries builds upon excellent theoretical and empirical work with a broad temporal and geographical reach in sub-Saharan Africa. Three strands of the history of auxiliaries and intermediaries connect with my own work. The first characterizes African employees as intermediaries between overlapping authorities and African communities; these overlapping and sometimes competitive authorities included missionaries and healers, missionaries and chiefs, and chiefs and colonial administrators. Intermediaries at work as nurses, clerks, and interpreters were crucial to the functioning of colonial governance and missionizing, but could also be problematic figures with agendas of their own.⁴⁵ The second locates African auxiliaries and assistants within colonial research projects, focusing on the social production and construction of knowledge in – and about – Africa, the importance of research relationships, and the consequences of research expeditions for local communities in East Africa.⁴⁶ Hired as translators or guides, desired for their knowledge of the local

⁴⁵ Nancy Rose Hunt, *A Colonial Lexicon of Birth Ritual, Medicalization, and Mobility in the Congo* (Durham: Duke University Press, 1999); Emily Lynn Osborne, “‘Circle of Iron’: African Colonial Employees and the Interpretation of Colonial Rule in French West Africa” *Journal of African History* 44,1 (2003), pp. 29-50; Benjamin N. Lawrance, Emily Lynn Osborn, and Richard L. Roberts, “Introduction,” to *Intermediaries, Interpreters, and Clerks: African Employees in the Making of Colonial Africa* (Madison: University of Wisconsin Press, 2006); Markku Hokkanen, “Towards a Cultural History of Medicine(s) in Colonial Central Africa,” in Anne Digby et al, *Crossing Colonial Historiographies: Histories of Colonial and Indigenous Medicines in Transnational Perspective* (Newcastle upon Tyne: Cambridge Scholars, 2010), pp. 143-164.

⁴⁶ Nancy Jacobs, “The Intimate Politics of Ornithology in Colonial Africa,” *Comparative Studies in Society and History* 48, no. 3 (2006), pp. 564-603; Lyn Schumaker, *Africanizing Anthropology: Fieldwork, Networks, and the Making of Cultural Knowledge in Central Africa*, (Durham: Duke University Press, 2001); Helen Tilley

environment or population, African research assistants came to influence research agendas and shape research outcomes. Lastly, the history of African auxiliaries in the pre-World War I period that I explore below provides further context for ongoing processes of professionalization, mirrored by continuing marginalization, of Africans working within the colonial administration.⁴⁷ African auxiliaries and intermediaries took advantage of opportunities for social and economic mobility, education, and the enlargement of their own circles of influence in the course of their work for missionaries, researchers, and administrators.

Histories of Political Change and Colonialism in East Africa

Perhaps due to its relative brevity, the German colonial period has received correspondingly less attention in historical scholarship on East and Central African in comparison to histories of the British colonial period, with the notable exception of John Iliffe's fundamental work.⁴⁸ This is particularly true for the Great Lakes region, due in part to the late arrival of German civilian rule to the lakes, which lasted for less than a decade before the outbreak of the First World War.⁴⁹ Histories of German rule elsewhere in mainland Tanzania focus primarily on the central and southeastern hinterlands of the Indian Ocean coast and the Usambara mountains region, where colonial activity concentrated. Rich and nuanced histories of the Swahili coast take up conflicts between Arab, African, and German actors during the late nineteenth century, particularly those centered on politics, class, and labor.⁵⁰ Commensurate

with Robert J. Gordon, *Ordering Africa: Anthropology, European Imperialism and the Politics of Knowledge* (New York: Palgrave, 2007).

⁴⁷ John Iliffe traces this process with regard to medical training in East Africa in *East African Doctors: a History of the Modern Profession*, (Cambridge: Cambridge University Press, 1998); Benjamin N. Lawrance, Emily Lynn Osborn, and Richard L. Roberts, eds., *Intermediaries, Interpreters, and Clerks: African Employees in the Making of Colonial Africa* (Madison: University of Wisconsin Press, 2006).

⁴⁸ John Iliffe, *Tanganyika under German rule, 1905-1912*, (Cambridge: Cambridge University Press, 1969); Iliffe, *A Modern History of Tanganyika*, (Cambridge: Cambridge University Press, 1979).

⁴⁹ Ralph Austen's *Northwest Tanzania* and the works of Brad Weiss, René Lemarchand, Jean-Pierre Chrétien, and William Roger Louis that touch on the German period are, again, notable exceptions.

⁵⁰ Jonathon Glassman, *Feasts and Riot: Revelry, Rebellion, and Popular Consciousness on the Swahili Coast, 1856-1888* (Portsmouth, NH: Heinemann, 1995); Jan-Georg Deutsch, *Emancipation without Abolition in*

with its pivotal role in shaping the nature of German colonial rule and as an impetus to imperial reforms, the Maji Maji rebellion holds a central place in histories of the German period as well as in studies of political consciousness.⁵¹ Land use and agriculture feature more prominently in studies of the region where settler colonialism concentrated, the northeastern highlands of the Usambara Mountains and the Pangani valley.⁵² Other work draws together and extends strands of the historiography that address land, labor, health, and politics, though further studies that bridge the German, British, and post-colonial eras of East African history would be a great addition to the literature.⁵³

Pulling together the histories of the regions and people I discuss below requires a patchwork historiography. Kiziba and the Imbo chiefdoms, for example, are rarely treated in a single historical analysis because they are today a part of Tanzania and Burundi, and were, after World War I, subject to the colonial rule of two different nations (Great Britain and Belgium) under the Mandates system. During the German colonial period, however, these two areas were governed along very similar lines, all the more significant because of their distinctiveness from the remainder of the German East African colony. Rwanda, Burundi, and the Kagera region of Tanzania roughly correspond to the administrative entities of the Ruanda, Urundi,

German East Africa c. 1884-1914 (Oxford: James Currey, 2006); Frederick Cooper, *Plantation Slavery on the East Coast of Africa*, (New Haven: Yale University Press, 1977).

⁵¹ The history of the Maji Maji rebellion in 1905-07 has provided fodder for dynamic and contentious historical debates focusing on its genesis, transmission, causes, and meanings. Giblin and Monson's recent contribution to the debate provides a useful introduction to central issues. James Giblin and Jamie Monson, eds., *Maji Maji: Lifting the Fog of War*, (Boston: Brill, 2010). See also Marcia Wright, "Maji-Maji: Prophecy & Historiography," in David M. Anderson & Douglas H. Johnson, eds., *Revealing prophets: Prophecy in Eastern African History* (London: James Currey, 1995); Iliffe, *Modern Tanganyika*, chapter 6.

⁵² James L. Giblin, *The Politics of Environmental Control in Northeastern Tanzania, 1840-1940*, (Philadelphia, PA: University of Pennsylvania Press, 1992); Steven Feierman, *The Shambaa Kingdom: a history* (Madison: University of Wisconsin Press, 1974); Steven Feierman, *Peasant Intellectuals: Anthropology and History in Tanzania*, (Madison: University of Wisconsin Press, 1990); Christopher Conte, *Highland sanctuary: environmental history in Tanzania's Usambara Mountains*, (Athens: Ohio University Press, 2004). Histories of environment and ecology in northeastern Tanzania specifically, but also ranging further afield, are collected in Gregory Maddox, James L. Giblin, and I.N. Kimambo, eds. *Custodians of the Land: Ecology and Culture in the History of Tanzania*, (London: James Currey, 1996).

⁵³ Steven Feierman, *Peasant Intellectuals: Anthropology and History in Tanzania*, (Madison: University of Wisconsin Press, 1990) is a very notable exception, exemplary as a history of non-elite political discourse and its cyclical, generative engagements with broader change.

and Bukoba residencies during the German period. The Residencies were predicated on an early articulation of indirect rule, built around German belief that strong, well-articulated, monarchic political structures, when subjugated after military conquest, could be used to rule the densely populated territories they covered.⁵⁴ The Residents themselves, typically former military men, had significant leeway in shaping local policy and managing the administrative budget, and African rulers maintained their traditional political authority while also serving administrative functions for the colonial state.⁵⁵ Austen's evaluation of German attempts at indirect rule proves durable: though policy-makers expressed a willingness to influence and reform African political systems through indirect rule, they at once strengthened the "bureaucratic apparatus which denie[d] the possibility of autonomous local development."⁵⁶ How German colonial policies ultimately played out in the Lakes region is not a central concern of my dissertation; rather, I seek to demonstrate how matters of health – not considered in the extant literature about German colonialism in the region – constituted a key arena wherein changing political relationships were negotiated.

Lastly, writing about encounters of research, matters of health, and disease prevention practices during the colonial period has meant an ongoing engagement with the provocative and compelling work of Luise White; rarely does one talk about sleeping sickness with historians or anthropologists of African topics without eventually coming around to White's work (and that of Nancy Rose Hunt).⁵⁷ White's work on rumor in Africa – taking up conversations about bloodsucking, wild game and hunting, cultivation, automobiles – pushes against modes of interpreting and using oral histories in the writing of African history that use

⁵⁴ Chrétien, *Great Lakes of Africa*, pp. 251-60.

⁵⁵ Austen, *Northwest Tanzania*, p. 88.

⁵⁶ Austen, *Northwest Tanzania*, p. 254.

⁵⁷ Luise White, *Speaking with Vampires: Rumor and History in Colonial Africa*, (University of California Press: Berkeley, 2000); "Tsetse Visions: Narratives of Blood and Bugs in Colonial Northern Zambia," *Journal of African History* 36, 2 (1995), pp. 219-45; Nancy Rose Hunt, *A Colonial Lexicon of Birth Ritual, Medicalization, and Mobility in the Congo* (Durham: Duke University Press, 1999), specifically chapter 2, "Doctors and Airplanes."

African “voices” as texts equivalent to those found in the colonial archive.⁵⁸ Ultimately, this dissertation only touches on the broad literature addressing debates on rumor and genre that *Speaking with Vampires* engages with, and rather is concerned with the circumstances – particularly the social or political interactions – leading up to the kinds of examinations and extractions that vampire rumors may talk about.⁵⁹ How the “procedures and technologies” came about, about which both Europeans and Africans spoke and wrote, is central to my work rather than “reconstructing...the vocabulary in which medical care was both negotiated and undermined.”⁶⁰

Sources in the History of Sleeping Sickness at Lake Victoria and Lake Tanganyika

My research draws upon colonial medical and political reports, letters, diaries, maps, photographs, research publications, and patient records found in the archives of scientific institutions, metropolitan and colonial governments, and international missionary organizations in Germany, Italy, Tanzania, and the United Kingdom, as well as interviews I conducted in western Tanzania. I read these sources for Ziba and Rundi experiences of colonial rule, using material on sleeping sickness to understand spaces for negotiation and resistance in colonial interventions into agriculture, politics, and trade. Here, I also bring together archival material on German colonial administrative and public health practices with researchers’ notes and extensive medical reports to build a history of the detailed encounters of tropical medicine research as they may have been lived – in the contentious practices, unintended consequences,

⁵⁸ See White, David William Cohen, and Stephen F. Miescher’s introduction to *African Words, African Voices* (Bloomington, IN: Indiana University Press, 2001); Gregory Mann, “An Africanist’s Apostasy: On Luise White’s *Speaking with Vampires*,” *International Journal of African Historical Studies* 41, no. 1 (2008), pp. 117-121.

⁵⁹ Jennifer Tappan’s recent dissertation on kwashiorkor engages White’s work on colonial Uganda, arguing that rumors about doctors or medical practices can be understood to “simultaneously contain local critiques of actual biomedical practices and colonial misappropriation and misrule. Jennifer Tappan, “‘A Health Child Comes from a Healthy Mother: Mwanamugimu & Nutritional Science in Uganda, 1935-1973,” Unpublished PhD Dissertation. Columbia University, 2010.

⁶⁰ Luise White, “‘They could Make Their Victims Dull’: Genders and Genres, Fantasies and Cures in Colonial Southern Uganda,” *American Historical Review* 100, 5 (1995), p. 1381.

and everyday negotiations on the part of doctors and patients.⁶¹ My use of medical statistics – the records produced of sleeping sickness camps – provides a concrete example. Camp intake and treatment charts appear to provide several basic pieces of information about African patients: a person’s sex, rough age, provenance, symptoms, or health status. They also provide a tally of camp practices: the number of people examined, injected, released, or not cured. These pieces of information are useful for gauging the ebb and flow of people into and out of treatment, but also tell us what colonial doctors thought was important: if sick people were from another part of the country, provenance was noted; if people could be judged to be healthier, their status changed. How colonial doctors assembled a concept of sleeping sickness as an epidemic disease, and how they believed it could be control, begins to surface. Further, gaps or inconsistencies in medical records also reveal uncontrollable activity on the part of the African people that colonial doctors saw as their patients – people fled from treatment or refused to return for examinations. I read these inconsistencies not as errors of reporting, but rather as strong and pointed instances of resistance to the imposition of colonial medical systems.

The time period and events that I am interested in led me to seek out conversations about memory of sleeping sickness; conversations about direct individual experience with German health interventions were impossible because of its distance in the past. I conducted interviews in western Tanzania in August 2008, based out of Bukoba⁶². Conversations were conducted in English and Swahili with the help of Fr. Elpidius Rwegoshora, who translated my

⁶¹ Here, I follow Gayatri Chakravorty Spivak’s well-known directive for using the colonial archive and reading “against the grain,” articulated in her essay “Subaltern Studies: Deconstructing Historiography” in Spivak and Ranajit Guha, eds., *Selected Subaltern Studies* (New York: Oxford University Press, 1988), pp. 2-32. Frederick Cooper’s 1994 essay identifies key parallels and divergences in applying the theory and methods of the Subaltern Studies school to African colonial history. Cooper, “Conflict and Connection: Rethinking Colonial African History” *American Historical Review* 99, no. 5, pp. 1516-1545. How colonial and post-colonial medical and research archives may be read has emerged as a new thread in African historiography and ethnography. Susan Reynolds Whyte, “Writing Knowledge and Acknowledgement: Possibilities in Medical Research,” pp. 29-56 and elsewhere in P. Wenzel Geissler and Catherine Molyneux, eds., *Evidence, Ethos, and Experiment: the Anthropology and History of Medical Research in Africa* (New York: Berghahn Books, 2011).

⁶² See Appendix I, “Oral History Interviews.”

questions into Kihaya and helped clarify issues in Swahili when necessary. Elpidius, a youth ministry priest in the Bukoba diocese with a personal interest in history, also helped to introduce me to parish priests in Kashozi and Kigarama, who then suggested people that we might want to talk to – generally elderly men and women whose parents would have lived during the German colonial period, or who were known as local historians themselves. This built on discussions in Dar es Salaam with members of the Catholic church, current White Fathers missionaries, and Protestant pastors who directed me to German colonial ethnographies and histories produced by members of the churches. I gave small gifts at the beginning or end of an interview, and returned to follow up on one particularly rich conversation when possible. Unfortunately, the advanced age of the men and women Elpidius and I spoke with in 2008 may preclude following up on these interviews in my ongoing research. In the future, I hope to extend my inquiries to situate their stories more fully in local social and political history.

A note on orthography and place names

The places and people discussed in the following chapters have gone by an evolving set of names in the past 100 years. Following current convention, I refer to territory of the Haya states as Buhaya, to the language spoken there as Kihaya. Regarding an individual or groups of people from a particular place or of a particular people, I refer, for example, a Haya man or Haya women, rather than using the Bantu prefixes “aba-” or “ba-” (plural) and “mu-” or “m-” (singular). The same applies to major states (as with Buganda and the Ganda people) and smaller kingdoms (as with Kiziba and the Ziba people). When possible, modern conventions for place names replace colonial spellings in both German and British (and so Ussuwi is called Rusubi). However, for places where the exact location of earlier sites is uncertain, older place names persist (so, Urambi rather than Burambi, because the location of the sleeping sickness camp relative to the current Burundian town is not clear). I also retain the use of the German “Urundi” to differentiate the colonial political entity from the modern nation.

Chapter Plan

I organize my dissertation into eight chapters, including this first introductory chapter. My second chapter, "Sleeping Sickness, Tropical Medicine, and Colonial Politics in Germany, 1902-1906," examines early responses to epidemic sleeping sickness in Germany, focusing on tensions between scientists and colonial policy-makers during the development of a German sleeping sickness research expedition to East Africa. Chapter three, "Inter-colonial Science in the Lake Victoria Basin," follows early responses to sleeping sickness paralleling attention in Berlin, focusing on inter-colonial research networks at Lake Victoria. The two strands of activity discussed in chapters two and three converge again with the story of Robert Koch's expedition to Lake Victoria in chapters four and five. Chapters four and five follow the German expedition through East Africa. Chapter four, "Expeditions and Expertise in East Africa, 1905-07" examines the importance of scientific expertise and African mobility at Lake Victoria using new juxtapositions of missionary, colonial, and African sources. Chapter five, "Finding Sleeping Sickness on the Sesse Islands: Robert Koch, 1906-07," places the development of epidemiological ideas and sleeping sickness prevention practices on the Sesse Islands in local and international contexts. My sixth chapter, "Gland-Feelers, Camps, and New Economies of Disease: Sleeping Sickness Research and Prevention in Kiziba, 1903-1914" is a local history of sleeping sickness research and prevention in Kiziba (modern northwestern Tanzania), focusing on social, political, and economic factors that impacted relations between colonial doctors and African communities, particularly the advent of African medical auxiliaries, and examining their implications for disease prevention. Chapter seven, "Old Paths, New Travelers: Ziba Auxiliaries at Lake Tanganyika" focuses on sleeping sickness prevention on the Burundian coast of Lake Tanganyika, examining the further work of new African auxiliaries at Urambi, and African strategies of dealing with new policies. In closing, I connect colonial health projects such as the German anti-sleeping sickness campaign to modern global public health paradigms.

Chapter Two

Sleeping Sickness in Imperial Berlin: Colonial Interests and International Appeals

Introduction

The sleeping sickness epidemic that began in 1901 was significant for its high mortality and the swiftness with which it struck villages in populous Buganda and Busoga kingdoms, on the northern shore of Lake Victoria. It had a swift and vast impact on the economic livelihood and social fabric of Ganda and Soga communities; attempts at the treatment and prevention of the disease brought new colonial involvement in nearly every aspect of life. But with European recognition of the epidemic also began a race to discover its causative pathogen and its mode of transmission. This chapter traces that mad dash down the halls of colonial administrations in metropolitan Europe, but is also mindful a simultaneous dash by European researchers through East African communities around Lake Victoria that is picked up in chapter three. It carves out a transnational and inter-colonial space for the analysis of sleeping sickness research and its impact on scientific communities and colonial policy. It also attends to how ideas about the disease itself developed within an international collegial group.

This chapter focuses on the emergence of sleeping sickness as a priority in German East Africa and on the involvement of tropical medicine researchers in the promotion of German sleeping sickness research expeditions after 1902. Through an examination of discussions about sleeping sickness expeditions in Berlin, I explore the practical importance of the international community of tropical medicine researchers and how this community – and German membership in it – shaped the development of research goals in the initial years of the sleeping sickness epidemic, between roughly 1902 and 1905. I argue that German doctors relied on an international network to make claims on government support for expanded sleeping sickness research in the nation's sub-Saharan African colonies. German researchers, operating both across and within colonial and metropolitan boundaries, justified attention to sleeping sickness not only on the basis of maintaining Germany's prestige, but also through their own participation in a transnational scientific community responding to a dangerous epidemic.

German tropical medicine practitioners worked beyond strictly nationally-oriented scientific schools to make these claims, tapping into a wide-ranging group of colleagues for immediate information on epidemic sleeping sickness as well as ideas about longer-term issues the disease posed.⁶³ Their concerns did not readily resonate with government officials, particularly metropolitan bureaucrats with institutional and budgetary concerns particular to their respective departments. Tension developed between scientists and officials when scientists' desires to act quickly on the new epidemic were at odds with official demands for justification of expenditures in accordance with current colonial priorities in German East Africa. In a draconian light, colonial and medical officials needed proof of greater African mortality on the ground at Lake Victoria, and of a certain threat to lucrative coastal enterprises, before committing German resources to sleeping sickness research. This German approach, early on, was notably in contrast to Belgian and British mindsets, which understood that "ending such an epidemic would assure a fledgling colonial administration not only live labourers, but also international prestige."⁶⁴

My argument about the importance of an international collegial network for German scientists in this and the following chapter rests on a specific approach to the relationship between science and colonial politics before World War I. German scientists – particularly those involved in tropical medicine – did not march in lock-step with officials determining imperial priorities and colonial policies. Examining how and where tension arose between tropical medicine practitioners and imperial policy-makers allows us to better understand two aspects of the discipline's history: first, how tropical medicine functioned among an international group of colleagues, and second, how tropical medicine practitioners contributed to policy formation. I focus on the detail of policy formation about sleeping sickness to capture tension within the German government's approach to the epidemic in East Africa, and place collegial relationships

⁶³ See Alice L. Conklin, *A Mission to Civilize: The Republican Idea of Empire in France and West Africa, 1895-1930*, (Stanford, CA: Stanford University Press, 1997), chapter 3.

⁶⁴ Maryinez Lyons, *The Colonial Disease*, p. 69.

between tropical medicine practitioners and other interested scientists at the center of this process of policy formation. With this, we can identify how a sense of an international scientific community fit into, or conflicted with, ideas about specific German priorities regarding sleeping sickness. Here, we see how German scientists' national schools of scientific training, and the biases for particular methods or frameworks that this training carried with it, became less relevant in the acute early period of epidemic sleeping sickness in East Africa.

My transnational framing of sleeping sickness in Germany complicates approaches in the history of medicine and the history of colonialism in Africa. Histories of sleeping sickness examine the social, environmental, and political impact of the disease within African communities, largely during the colonial period and within the boundaries of colonial states. By contrast, many histories of tropical medicine focus on the heroic work of tropical medicine practitioners and the institutes they represented abroad, and on the political and scientific machinations in metropolitan Europe that brought the discipline into its own.⁶⁵ Taking on board the limitations and benefits of these approaches, I situate German tropical medicine within an international and inter-colonial framework, examining the attitudes and priorities that shaped colonial policy about sleeping sickness.⁶⁶ Here, my analysis works toward a more comprehensive appraisal of German tropical medicine in practice during the early years of the sleeping sickness epidemic in East Africa, understanding its close relation with new and established institutions and as a battleground where scientific and political rivalries played out.

⁶⁵ This is particularly true of the historiography of tropical medicine in Britain, which, because British energies animated the field in its early years, has provided a model for disciplinary and institutional histories in other European nations. See Helen J. Power, *Tropical Medicine in the Twentieth Century: the Liverpool School of Tropical Medicine, 1898-1990*, (Kegan Paul International: London, 1999); Lise Wilkinson and Anne Hardy, *Prevention and Cure: the London School of Hygiene & Tropical Medicine, a 20th Century Quest for Global Public Health*, (Kegan Paul International: London, 2000); Douglas Haynes, *Imperial Medicine: Patrick Manson and the Conquest of Tropical Disease*. (Philadelphia: University of Pennsylvania Press, 2001).

⁶⁶ Wolfgang U. Eckart, *Medizin und Kolonialimperialismus, Deutschland 1884-1945*, (Schöningh: Paderborn, 1997). Eckart's seminal work examines the role of physicians in colonial expansion or tropical medicine, also seeking a comparison within Germany's colonies of the medical services.

By looking at German scientists within the international community, at work in metropolitan Berlin and in East Africa, I destabilize the structure of exclusive and discrete national schools of science or medicine that have characterized the history of tropical medicine at the turn of the century. Michael Worboys, for instance, one of the foremost historians of tropical medicine, argues that the sleeping sickness prevention programs were defined according to national schools of science. My research shows that the impact of national schools, beginning with early attention to sleeping sickness, was tempered by the flourishing movement of ideas and information internationally between individuals and institutions alike.⁶⁷ Taking this into account leads us to a more nuanced understanding of connections and affiliations that were not necessarily nationally bounded. This framing complicates a tendency in the history of tropical medicine to see it merely as an imperial discipline, intimately linked with European expansion overseas. The history of tropical medicine has largely focused on the discipline's close relationship with European imperial priorities and colonial rule, as well as the important role of former colonial medical officials in the discipline's development. My work highlights a tension central to tropical medicine. The lack of consensus among diplomats, administrators, and scientists about sleeping sickness at first news of its outbreak in East Africa points to an uncertainty about the role that medicine would play in shaping German colonialism. When faced with a new epidemic, colonial interests and the research interests of tropical medicine diverged, and metropolitan bureaucrats and scientists contended with differing visions of matters of policy and implementation.

As we approach the history of empire, interlocked with the histories of East Africa and of medicine, these instances of tension and miscommunication become generative moments and guides to the persistence of colonial structures in modern public health. Imperial relationships create feedback loops, or paths of mutual influence and impact, visible when we consider

⁶⁷ Worboys' main argument delineating national schools of thought appears in Worboys, "The comparative history of sleeping sickness in East and Central Africa," *History of Science* 23 (1990).

colony and metropole in a “single analytic field.”⁶⁸ This conception of imperial relationships emphasizes the reciprocal impact of metropole and colony on the culture and politics of each, and suggests that a historical analysis of simultaneous and mutually important events should emphasize continuity and connection. My work retains a sense of the distance and dissonance that was a key aspect of colonial policy-making and the everyday business of governing, or, in this case, of treating the sick and preventing disease.⁶⁹ Separating parallel and sometimes simultaneous activity in Germany and East Africa allows me to recognize the consequences of the messy work of scientific investigation and colonial policy formation.

Here, and in chapter three, I address activity focused on sleeping sickness research in Berlin and parallel activity in East Africa in separate, synchronous chapters to give due time to the personal relationships and small decisions that had an impact on the history of sleeping sickness in both contexts. Broad common concerns and a few key players connected the men shaping colonial policy in Berlin and those responding to the epidemic in East Africa. Though networks of trade, government, and news connected Berlin and East Africa, a practical and cognitive distance separated the administrators, doctors, and health officers at work in each place. Both a practical distance of thousands of miles, and a cognitive distance wherein centers of power and decision-making were viewed as exclusively metropolitan separated colonial doctors from their administrative superiors and metropolitan experts alike. A vast difference in resources, immediate priorities, and personalities made each of their situations distinct – a minor piece of correspondence on an administrator’s desk in Berlin represented days of work, travel, and coordination for a medical officer stationed in East Africa. Encounters important for

⁶⁸ Frederick Cooper and Ann Laura Stoler, eds., *Tensions of Empire: Colonial Cultures in a Bourgeois World*, (Berkeley: University of California Press, 1997), p. 4. Cooper and Stoler’s influential analytic framing has defined the past fifteen years of work in imperial history. Cooper’s more recent work with Jane Burbank expands upon this framing to identify empires as flexible states, the key goal of which was to manage difference. Frederick Cooper and Jane Burbank, *Empires in World History: Power and the Politics of Difference*, (Princeton: Princeton University Press, 2010).

⁶⁹ In linking governance and treating the sick, my thinking has been shaped by Michel Foucault’s *The Birth of the Clinic: an archaeology of medical perception*, trans. M. Sheridan Smith, (New York: Vintage, 1994).

colonial medical officers might not be reported to the colonial government or the supervisory Colonial Section of the Foreign Office until months after they occurred.

Sleeping Sickness and Tropical Medicine in Germany

As they advocated for an independent German research expedition to study sleeping sickness beginning in 1902, German scientists cited several concerns. News of sleeping sickness in Africa triggered panic based on universal public health concerns about infectious diseases, well grounded in the historical experience of epidemic diseases in Europe. European responses toward people in Africa endangered by the disease were not explicitly humanitarian, though a sense of medical responsibility underlay scientists' concerns; this aspect of their profession was largely subsumed in official discussions by practical colonial matters. As more information about the nature of sleeping sickness slowly filtered into metropolitan circles from East Africa, scientists cited the stability and safety of Germany's colonial concerns as the potential consequence of the disease's ravages. An interest in German scientific achievement also emerged as a corollary to the practical matter of morbidity and mortality in the East African territories.⁷⁰

As more became widely known about sleeping sickness, both the broader importance of the disease and the importance of German participation in research came to the forefront. Attempts to set a course for sleeping sickness research in Germany, amid the early years of the epidemic in East Africa, involved a constant back-and-forth between officials and scientists in Berlin and East Africa. Scientists relied on information circulating within the international bacteriological and tropical medicine communities. They took pains to corroborate their general views with specific material from outside of the German academy, citing work in Lisbon, Entebbe, Léopoldville, or London. They identified with this international community

⁷⁰ While Worboys and Arnold both date the interest of tropical medicine and colonial medicine in the health of indigenous peoples worldwide to the post-WWI period, it is not clear whether agitation for research expeditions to East Africa was based on a concern for either European or African health exclusively. See Worboys, "Tropical Diseases" and David Arnold, "Medicine and Colonialism" in Porter and Bynum, *Companion Encyclopedia to the History of Medicine*, (London: Routledge, 1993). Also David Arnold, *Imperial Medicine and Indigenous Societies*, (New York: St. Martin's Press, 1988).

even as they served as advisors, officials, and leaders of institutes in their respective national or provincial scientific academies. Expertise rested upon a life of research and the prominence of professional success; many of the doctors summoned for comment in colonial discussions about disease and health in Africa held chairs or faculty positions in universities, or positions of leadership at research institutes.⁷¹ Scientists such as Robert Koch and Wilhelm Dönitz spoke with the weight of prominent metropolitan institutions behind them, comfortable as specialists in their field, urging colonial officials to support a German research expedition.⁷² However, in the case of sleeping sickness, Koch and others spoke not solely with reference to a nationally oriented concern for the success of German colonies or the triumph of German science over its competitors, but rather as part of a transnational, inter-colonial cohort of experts.

Koch, Dönitz, and others made their case as part of a widening network of scientists and physicians concerned with tropical medicine, which, at the turn of the century, gained prominence and permanence with the funding of dedicated institutes and field-specific journals. Following its foundation in print in 1898 with the publication of Patrick Manson's seminal text *Tropical Diseases: a Manual of the Diseases of Warm Climates*, the discipline gained a more concrete presence as tropical medicine institutes brought the weight of increasing public and private interest to bear on diseases affecting European life in tropical climates. Manson played an instrumental role in the founding of the London School of Tropical Medicine in 1898; the Liverpool School of Tropical Medicine, funded and organized by prominent agents of Liverpool's shipping industry, followed in 1899.⁷³ The Institute for Maritime and Tropical

⁷¹ See Douglas Haynes, *Imperial Medicine: Patrick Manson and the Conquest of Tropical Disease*, (Philadelphia: University of Pennsylvania Press, 2001); William F. Bynum and Caroline Overy, eds., *The Beast in the Mosquito: the correspondence of Ronald Ross and Patrick Manson* (Amsterdam: Rodopi, 1998); Thomas D. Brock, *Robert Koch: a Life in Medicine and Bacteriology*, (Washington, DC: ASM Press, 1999).

⁷² Koch and Dönitz both served as heads of the Institute for Infectious Diseases (Dönitz first in Koch's absence from Berlin for research in Africa). Dönitz had been one of Koch's assistants. Ragnhild Münch, *Robert Koch und seine Nachlaß in Berlin* (Berlin: Walter de Gruyter, 2003), p. 79, p. 198-99.

⁷³ Helen J. Power, *Tropical Medicine in the Twentieth Century: the Liverpool School of Tropical Medicine, 1898-1990*, (London: Kegan Paul International, 1999); Lise Wilkinson and Anne Hardy, *Prevention and Cure: the London School of Hygiene & Tropical Medicine, a 20th Century Quest for Global Public Health*, (London: Kegan Paul International, 2000).

Diseases in Hamburg followed in 1901, and the Institute of Colonial Medicine in Paris and the Institute for Hygiene and Tropical Medicine in Lisbon in 1902.⁷⁴ Tropical medicine itself was a transnational European phenomenon, dependent on the vibrant circulation of ideas and scholars between institutional hubs and periodic disciplinary conferences. Several key field-specific journals were also founded at the turn of the century, and established medical journals began to dedicate sections to the reporting of tropical medicine research and news.⁷⁵ Though not solely aimed at tropical medicine research, metropolitan bacteriological institutes such as the Pasteur Institute in Paris and the Institute for Infectious Diseases in Berlin also worked on related research, their scientists a part of the same community.⁷⁶ Many scientists with practical experience in tropical medicine work from their time in European colonies had positions of leadership and influence in colonial departments as well as in colonial and metropolitan medical and public health institutions.⁷⁷

Though the fundamental ideas and skill sets in tropical medicine had been accumulating into a disciplinary canon over the past decade, the foundational institutional period of tropical medicine overlapped with the outbreak of epidemic sleeping sickness across central Africa. As interest in sleeping sickness accelerated, so did tropical medicine become more institutionally robust. This growth spurt in Europe, however, meant that a lag remained for many doctors

⁷⁴ Erich Mannweiler, *Geschichte des Instituts für Schiffs- und Tropenkrankheiten in Hamburg, 1900-1945*, (Keltern-Weiler: Goecke & Evers, 1998); Raphaël Blanchard, "L'Institut de Médecine Coloniale: Histoire de sa fondation," *Archives de Parasitologie*, IV, no. 4, (1902); Annick Opinel, "The Emergence of French Medical Entomology: The Influence of Universities, the Institut Pasteur and Military Physicians (1890–c.1938)," *Medical History* 52, 3 (2008), p. 391, n. 22; Isabel Amaral, "The emergence of tropical medicine in Portugal: The School of Tropical Medicine and the Colonial Hospital of Lisbon (1902-1935)," *Dynamis* 28 (2008), pp. 301-328.

⁷⁵ The *Archiv für Schiffs- und Tropenhygiene* (1897) is the prominent German example. Both generalist medical journals like the *British Medical Journal* and the *Deutsche medizinische Wochenschrift*, and specific journals like the *Centralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene* and the *Zeitschrift für Hygiene und Infektionskrankheiten, medizinische mikrobiologie, immunologie und virologie* also gave more space to tropical medicine. See also Maureen Malowany, "Unfinished Agendas: Writing the History of Medicine in Sub-Saharan Africa," *African Affairs* 99 (2000), p. 326.

⁷⁶ Münch, *Robert Koch und seine Nachlaß in Berlin*, pp. 71-71; Opinel, "Emergence of French Medical Entomology," pp. 395-97.

⁷⁷ See Worboys, "Tropical Diseases," pp. 518-24, regarding the role of former colonial medical service physicians and scientists in the founding of tropical medicine in metropolitan academies.

stationed in the colonies at the outbreak of the epidemic, trained in metropolitan Europe before dedicated tropical medicine courses existed. This situation would prove complicated for German colonial medical officers as they took on ever greater responsibilities for sleeping sickness diagnosis and prevention in later years.

Sleeping Sickness – a New Epidemic

Though epidemic sleeping sickness was new to colonial East Africa in 1901, it was not an unknown disease. A “Negro Lethargy” or “sleepy distemper” had been reported sporadically in western Africa throughout the nineteenth century without knowledge of its cause; more recently, the disease emerged in Portuguese Angola and throughout the Congo basin in the late 1890s.⁷⁸ In East Africa, the Uganda epidemic quickly came to the fore. Missionary doctors reported it first in Uganda in the spring of 1901, noting ever-increasing deaths over the remainder of the year; A.D.P. Hodges, the medical officer at Jinja, reported with regret in February of 1902 of people clamoring for treatment, “I wish I had something to give them as a cure.”⁷⁹ Colonial recognition of the disease as a new epidemic in early 1902 did not preclude historical, pre-colonial epidemics or prior knowledge of the disease among local African communities by virtue of long-distance trading connections.⁸⁰

But sleeping sickness was new to the British and German governments in East Africa.

Correspondence between diplomats and scientists – two key metropolitan constituencies

⁷⁸ Maryinez Lyons, “African Trypanosomiasis,” in Kenneth Kiple et al., *Cambridge World History of Human Disease* (Cambridge: Cambridge University Press, 1993), pp. 552-61

⁷⁹ Sir Michael Foster to Marquis of Lansdowne (Foreign Office), 3/24/1902, National Archives of Britain (hereafter NA) FO 2/282, p. 13; Diary of Aubrey Dallas Percival Hodges (hereafter A.D.P. Hodges Diary), 2/20/1902, Hodges MSS, Archives of the London School of Hygiene and Tropical Medicine [hereafter LSHTM], GB 0809 Hodges/01/06.

⁸⁰ See John Ford, *The Role of the Trypanosomiasis in African Ecology: A Study of the Tsetse-fly Problem*. Clarendon Press: Oxford, 1971, p. 239-243; James Giblin, “Trypanosomiasis Control in African History: an Evaded Issue,” *Journal of African History* 31, no. 1 (1990): 59-80; E.M. Fèvre, P.G. Coleman, S.C. Welburn, and I. Maudlin, “Reanalyzing the 1900-1920 Sleeping Sickness Epidemic in Uganda,” *Emerging Infectious Diseases*, 10, no. 4, (April 2004), pp. 567-593. The debate about the newness of human trypanosomiasis, as well as the discussion of which species of trypanosome caused the 1900-1920 Lake Victoria epidemic, remains active; see Luise White, “Tsetse Visions,” pp. 222-226 on historical ramifications of debates over tsetse and trypanosome species.

concerned with sleeping sickness – captured both the urgency and uncertainty of the time. Its scale and severity were startling to colonial and Ugandan leaders. Sir Michael Foster, head of the Royal Society, called for a special investigative expedition to Uganda in March 1902 and quoted the “native prime minister of Uganda” (likely Sir Apolo Kagwa, prime minister of Buganda), that the disease was a “terrible pestilence” and “the great trouble of our land at this time.”⁸¹ The German ambassador in London then reported to the Foreign Office in Berlin what had already made news in the *Daily Mail*: that the “sleeping sickness” had broken out in Uganda, carrying “scores of natives” to their deaths.⁸² Robert Koch, then head of the Prussian government-funded Institute of Infectious Diseases, drew on information from Portuguese Angola and British Uganda – not from his own experience – to assert that “sleeping sickness of tropical West Africa has already in a relatively short time drawn the attention of the sanitarian, because one has made the observation that whole families, indeed whole villages, fall victim to it.”⁸³ In April 1902, Uganda Commissioner and General-Consul James Hayes Sadler wired the Foreign Office in London:

Rate of mortality from sleeping sickness very serious and is spreading: glad to receive all available information regarding this disease and also consignment of any known remedies West Africa may know.⁸⁴

The British Foreign Office, in consultation with Patrick Manson, advised that doctors in Uganda should “[r]egard sleeping sickness as a communicable disease & endeavor to isolate patients with due regard to the sentiments of natives.” Furthermore, metropolitan officials assured the colonial government that “the matter [was] one to which medical opinion in this country

⁸¹ Foster to Landsdowne, 3/24/1902, NA/FO 2/282, p. 13.

⁸² Zimmerman to Von Bülow, 12/20/1902, Federal Archives of Germany-Berlin Lichterfelde (hereafter BAB) R 901, 20871.

⁸³ Koch to Althoff, 4/12/1902, BAB R 901 20871. Original text: “Die Schlagsucht des tropischen Westafrika hat schon seit geraumer Zeit als Aufmerksamkeit der Hygieniker auf sich gezogen, weil man die Beobachtung machte, dass ihr ganze Familien, ja ganze Ortchaften zum Opfer fallen.”

⁸⁴ Telegram, Hayes-Sadler to Foreign Office, 4/16/1902, NA/FO 2/828, p. 18.

attaches serious importance.”⁸⁵ It seemed, as Foster wrote, similar to neurological diseases known in Britain, but could be due to another, wholly unknown pathogen; scientific knowledge was, he assured the Foreign Office, “very imperfect.”⁸⁶ First regarded as a communicable disease, British colonial doctors connected sleeping sickness first to the incidence of infection with the parasite *Filaria perstans*, common in the region, which caused elephantiasis (lymphatic filariasis).⁸⁷ As this idea was abandoned, sleeping sickness was then believed to be a bacterial infection caused by a bacillus, and still later due to an inflammation of the brain.⁸⁸

By mid-1902, the stakes for German and British scientists had already begun to change, as East Africa now appeared to be stricken by sleeping sickness. Key elements of the disease’s etiology and epidemiology remained in play: what caused sleeping sickness, how was it spread, and could it be treated? Met with such unknowns, scientists agitated for new, targeted research and, in particular, new expeditions into areas affected by the epidemic to be led by doctors and bacteriologists in positions of authority in metropolitan institutions. The first of many in the coming decade was the British Royal Society’s Sleeping Sickness Commission. Both the British scientific academy and colonial Ugandan authorities favored an expedition, as in May 1902, Ugandan civilian administrator Commissioner Hayes-Sadler wired to London that “Principal Medical Officer recommends and I support that a specialist be sent from School of Tropical Medicine for purpose of guiding researches of our Medical Officers.”⁸⁹ Ultimately, Dr. Aldo Castellani, a bacteriologist at the London School of Tropical Medicine, Cuthbert Christy, an “expert...who has already had experience with the disease in question,” from the Liverpool School of Tropical Medicine, and Dr. George Low, an “expert in diseases of parasitic and

⁸⁵ Letter from Foreign Office (Sir Clement L. Hill) to Col. Hayes-Sadler, 4/18/1902, NA/FO 2/828, p. 30.

⁸⁶ Foster to Landsdowne, 3/24/1902, NA/FO 2/828, p. 14.

⁸⁷ Friedrichsen to Foreign Office, 11/13/1902, Geheimes Staatsarchiv-Preußisches Kulturbesitz (hereafter GStA PK), I. HA Rep. 76 Kultusministerium, VIII B, Nr. 4117.

⁸⁸ Friedrichsen to Foreign Office, 11/13/1902, GStA PK I. HA Rep. 76 Kultusministerium, VIII B, Nr. 4117; Zimmermann to Reichskanzler von Bülow, 12/26/1902, GStA PK I. HA Rep. 76 Kultusministerium, VIII B, Nr. 4117.

⁸⁹ J. Hayes-Sadler to Foreign Office, telegram, “No. 16,” 5/5/1902, NA/FO 2/828.

bacterial origin” at the London School of Tropical Medicine made up the expedition.⁹⁰ This cast of leading researchers came with the support of both the chief tropical medicine institutions in Britain – the schools at London and Liverpool – as well as the backing of the pre-eminent British scientific society.⁹¹ But while Low, Castellani, and Christy may have been “experts” by Colonial Office standards, they were woefully underprepared for intensive, collaborative research. Low and Castellani were promising young scientists, up-and-coming in the field, while Christy brought African experience, but as J.N.P. Davies argues and contemporary accounts confirm, the three men were only nominally a team. Making matters worse, both they and Ugandan medical officers with essential knowledge of the epidemic in Uganda were subject to the tumult of Colonial Office indecision and internal academic rivalries in London.⁹²

Despite preparation for the expedition’s departure in mid-1902, intense interest from scientific and medical quarters appears to have muddied the waters for colonial officials with regard to the utility and timeliness of a long-term government-funded research expedition. The Foreign Office had encouraged colonial authorities in Uganda to do everything in their power locally, in May 1902:

The ravages of sleeping sickness described in your last telegram are so serious that you should not be deterred by economical scruples from submitting any suggestions as to best mode of coping with it by isolation of affected districts temporary increase of medical staff or otherwise.⁹³

Indeed, colonial medical officers in Uganda had scattered to investigate the disease upon initial reports in January 1902.⁹⁴ The Royal Society Commission departed London shortly thereafter and commenced work in the laboratories of Uganda Protectorate medical officers and on the

⁹⁰ Regarding Cuthbert Christy, see Milne to Undersecretary of State for Foreign Affairs, 5/7/1902, National Archives of Britain, FO 2/828, p. 42; regarding George Low, see Foster to Landsdowne, 3/24/1902, FO 2/828, p. 13. Results of this research were published in the Royal Society, *Reports on the Sleeping Sickness Commission*, (Harrison and Sons: London, 1903-19).

⁹¹ Sir Michael Foster to Secretary of Foreign Office, 5/9/1902, NA/FO 2/828.

⁹² J. N. P. Davies, “The Cause of Sleeping Sickness? Entebbe 1902-3,” *East African Medical Journal*, 39 (1962), pp. 88-91.

⁹³ Foreign Office (Sir Clement L. Hill) to Col. Hayes Sadler, telegram, 5/9/1902, NA/FO 2/828.

⁹⁴ A.D.P. Hodges Diary, 1/19/1902, Hodges MSS, LSHTM GB 0809 Hodges/01/06.

northern shore of Lake Victoria.⁹⁵ But within months, suspicions of an ulterior motive surfaced in Foreign Office correspondence, probing whether an expedition best served the interests of the British empire, or rather served British scientists' desires to remain competitive with their continental colleagues. In the fall of 1902, despite mortality now in the tens of thousands in Uganda and with no practical disease prevention measures implemented, British officials questioned further funding for the Sleeping Sickness Commission and the motives of the Royal Society in a Foreign Office minute, writing:

We should also send the scheme to the Royal Society & ask if it has their approval &, if so, how far they wd help financially. I believe their real interest is the wish to obtain a scientific triumph over Germany rather than to put down the sickness.⁹⁶

Although no discussions of a German expedition to East Africa had actually occurred domestically in 1902, nor been reported abroad, a sense of competition between European academies was strong in official circles. This sense was likely rooted in the competing national projects of the founding years of bacteriology, when the leading men of the discipline literally raced around the globe researching the causes and cures anthrax, cholera, rabies, and other epidemic diseases.⁹⁷ The impact of sleeping sickness on Uganda, and the potential danger of the disease's spread into British East Africa and possibly, though improbably, to India, mitigated these suspicions.⁹⁸ Questioning the motives of British researchers on the Sleeping Sickness Commission was not grounds to recall them to England, particularly with the potential for helpful work in Uganda still before the Commission, and so combined government and academic support of sleeping sickness research continued. The acute nature of the epidemic in

⁹⁵ Dr. George C. Low to Col. Hayes-Sadler, copy, 10/20/1902, NA/FO 2/828, p. 118-120.

⁹⁶ Minute of Foreign Office, 10/23/1902, NA/FO 2/828.

⁹⁷ On anthrax, rabies, and national competition, see J. Andrew Mendelsohn, *Cultures of Bacteriology: Formation and Transformation of a Science in France and Germany, 1870-1914*, Unpublished PhD Dissertation, Princeton University, 1996. On cholera, see Brock, *Robert Koch*, chapter 16.

⁹⁸ The possibility of sleeping sickness spreading to India emerged as a concern among policy-makers as the Sleeping Sickness Commission was being deployed in late 1902-early 1903, before the specific species of tsetse fly vector was identified. David Bruce to commissioner and Consul General of British East Africa, 6/30/1903, WTI/RST/G26/28; Minute from Foreign Office, 1/24/1902, NA/FO/2/828.

British Uganda pushed both the scientific academy and government to organize a dedicated research expedition within a matter of months. The same accumulation of information on the sleeping sickness epidemic, and similar perceived conflict between scientific and colonial goals met with different consequences in 1902 in German colonial and public health circles.

Divided Opinions on Sleeping Sickness

The paths taken by various sleeping sickness research expeditions, and the basic contours of their research findings, fit into a broader narrative of tropical medicine and colonialism. Less clear are the internal politics of colonialism and science that lay behind such expeditions, fraught with tension between colonial administrators, scientists and doctors, and official governing in the colonies. Far from operating in lock-step toward a common interest, scientists and administrators debated resources, staffing, and research goals. The German debate over sleeping sickness research brings the relationship between tropical medicine practitioners and colonial administrators into sharper focus and provides a comparative case for the dominant British foundation narrative of the discipline.

Because the German colonial administrative presence was relatively weak in areas where sleeping sickness threatened, meetings in Berlin between 1902 and 1905 initially worked toward general policy formation, rather than aiming to provide resources for staff in East Africa. In the policy-making circles of Berlin, concern about sleeping sickness brought a diverse group of stake-holders into contact: officials from the Imperial Health Office, medical officers and administrators from the Colonial Section of the Foreign Office, officials from the Prussian Ministry of Education, Culture, and Medical Affairs, and scientists from the Institute for Infectious Diseases. Roundtable meetings called by the Imperial Health Office and the Foreign Office's Colonial Section, as well as correspondence and reports on sleeping sickness, reveal much about German colonial priorities for the Lakes region and the salience of transnational scientific networks.

Agitation for sleeping sickness research in Berlin began not with the Lake Victoria epidemic, but with news of epidemic foci in Angola, the Congo Basin, and Senegambia. In 1902, the first proposals for German scientists to travel officially to study sleeping sickness arose from news that patients sick with the disease had been brought to the bacteriological institute in Lisbon from Angola. News of medical publications on these patients circulated through the Institute for Infectious Diseases, led at the time by bacteriologist Robert Koch. On April 12, 1902, Koch wrote to the head of the Imperial Health Office calling for his support in sending German scientists to study the sick in Lisbon, citing the disease's importance for the health of Germany's West African colonies, Cameroon and Togo. Koch also appealed to a more general sensibility about the spread of infectious diseases, attributing "scientific as well as social interests" to the problem.⁹⁹ He referred to the need to learn as much as possible, as quickly as possible, citing European experience with cholera and plague – both diseases that had weighed heavily on historical European anxieties about the potential consequences of expanded global trade and travel on public health.¹⁰⁰ Koch posited the disease as a threat to both the colonies and the metropole, consistent with a disease like cholera. Koch called the disease "Schlafsucht," meaning an abnormal need to sleep, rather than sleeping sickness, describing it symptomatically. He reported that the disease:

had only recently been brought by blacks from the coast of Angola to the island Fernando [Po, sic] and had already nested itself solidly there. In such cases, one usually thinks first of an infectious disease and is inclined to assume that the germ of the disease will be transmitted in a similar way to cholera or the plague.¹⁰¹

⁹⁹ Koch to Althoff, 4/12/1902, BAB, R 901 20871. Original text: "...die Bedeutung, welche der Schlafkrankheit im wissenschaftlichen wie im sozialen Interesse beizumessen ist."

¹⁰⁰ See Peter Baldwin, *Contagion and the state in Europe, 1830-1930*, (New York: Cambridge University Press, 1999); Anne Hardy, "Cholera, the quarantine and the English preventive system, 1850-1895," *Medical History* 37 (1993), pp. 250-269; William Bynum, "Policing hearts of darkness: aspects of the international sanitary conferences," *History and Philosophy of the Life Sciences* 15 (1993), pp. 421-34; Valeska Huber, "The Unification of the Globe by Disease? The International Sanitary Conferences on Cholera, 1851-1894," *The Historical Journal* 49, 2 (Jun., 2006), pp. 453-476.

¹⁰¹ Koch to Althoff, 4/12/1902, BAB R 901 20871. Original text: "...ist...erst seit kurzem durch Schwarze von der Angolaküste nach der Insel Fernando [sic] gebracht worden und hat sich dort schon fest eingenistet. ... In solchen Fällen denkt man zuerst gewöhnlich an eine Infektionskrankheit und ist geneigt anzunehmen, dass der Keim der Krankheit in ähnlicher Weise durch den Verkehr verschleppt wird wie etwa bei der Cholera oder der Pest."

At this early stage, with the etiology and epidemiology of the disease as yet unknown, Koch referred to sleeping sickness not as a disease specific to tropical Africa, but as an “Infektionskrankheit” – an infectious disease – and therefore a general threat to a population’s health.

By referring to cholera and plague, Koch also implied that, as with analogous infectious diseases, sleeping sickness could be prevented with aggressive public health interventions along the lines of those used in Europe – improved water supplies and sewage treatment, streets and housing clear of refuse, or isolation of the sick.¹⁰² Categorizing sleeping sickness as similar to other, better-known diseases also emphasized the capacity of the new science of bacteriology to make it knowable for scientists and to bring measures to treat and prevent it within reach. Bacteriology, as well as hygiene and sanitation, had enjoyed growing prestige following successes in disease prevention in the late nineteenth century – Koch’s own role in the 1892 Hamburg cholera epidemic was among the most recent and most prominent of those successes in Germany.¹⁰³ But the rhetorical turn toward familiar European epidemics like cholera and plague also folded sleeping sickness into a mix of known and managed diseases familiar to administrators and officials, rather than casting it as a priority on the level that these complex and serious epidemics had been.¹⁰⁴ This opened a space for differing interpretations of the importance of epidemic sleeping sickness among colonial officials and the scientists they consulted. Considering how metropolitan administrators responded to scientists’ opinions in the next three years, we can imagine a circular logic in play, influencing the dynamic between

¹⁰² Anne Hardy, *The Epidemic Streets: infectious disease and the rise of preventive medicine, 1856-1900*, (New York: Oxford University Press, 1993), pp. 289-94. The debate on the cause of a “demographic transition” in western Europe in the late nineteenth century continues; see James Colgrove, “The McKeown Thesis: A Historical Controversy and its Enduring Influence,” *American Journal of Public Health* 92, 5 (2002), pp. 725-729.

¹⁰³ Richard J. Evans, *Death in Hamburg: Society and Politics in the Cholera Years, 1830-1910*, (Oxford University Press: New York, 1987).

¹⁰⁴ Gradmann notes that cholera was “the epidemic of the era of industrialization and urbanization in Central Europe” and was “of vital interest to public health.” Gradmann, *Laboratory Disease*, p. 182.

science and governance: if sleeping sickness was indeed similar to cholera and plague, it was serious and potentially disruptive to the populations it threatened. But the modern science of the time had made great strides in figuring out cholera and plague, making them preventable disasters – and so sleeping sickness, too, should be preventable, and not outside the realm of medical and sanitary control. And so this new disease, while noteworthy, could be managed within existing resources and knowledge – and was not so serious as to make it a top priority for the German government. We can also imagine how incommensurable this view likely was to clinical physicians and laboratory scientists alike, to whom cholera, plague, and malaria had only become understood and preventable within the previous generation – and who knew that the gap between knowledge of a disease’s cause and transmission and practical measures to prevent or treat it could be vast and time-consuming to cross.¹⁰⁵

Nothing came of Koch’s request to send German doctors to study sleeping sickness cases in Lisbon. The Imperial Health Office judged “official cooperation” by a German doctor in Portuguese research to be unnecessary, given information at the time indicating that the disease was limited to the West African coast and struck only African populations in specific areas.¹⁰⁶ The scientific press continued to report notes on cases in Lisbon, and about their health and decline. But here, as in Britain, the Uganda epidemic changed the tenor of the debate in Germany after 1902. By early 1903, scientists in German East Africa were able to bring the potential impact of sleeping sickness in German East Africa – direct, local, and immediate – before senior officials in the Colonial Section pressing for a research expedition. To bring about the funding for an expedition, however, diverse institutions like the Imperial Health Office,

¹⁰⁵ The pathogen for cholera was identified in 1883-84, for bubonic plague in 1894, and the pathogen and vector for malaria in 1880 and 1897, respectively. On cholera, see Brock, *Robert Koch*, chapter 16; on plague, see Andrew Cunningham, “Transforming plague,” pp. 224-36; on malaria, see Worboys, “Germs, Malaria and the Invention of Mansonian Tropical Medicine: From ‘Diseases in the Tropics’ to ‘Tropical Diseases’” in David Arnold, ed., *Warm Climates and Western Medicine: the Emergence of Tropical Medicine, 1500-1900*, (Rodopi: Amsterdam, 1996), pp. 181-207.

¹⁰⁶ Wutzdorff to Staatssekretär des Innern, 9/9/1902, GStA PK I. HA Rep. 76 Kultusministerium, VIII B, Nr. 4117.

Institute for Infectious Diseases, Prussian Ministry of Culture, Education, and Medical Affairs, the Foreign Office, and its subsidiary Colonial Section had to reach an agreement.

Attention shifted from sleeping sickness as a potential threat to the German colony to the imminent danger it posed. In February 1903, Dr. Franz Stuhlmann, director of the Biological and Agricultural Institute at Amani in German East Africa, wrote on behalf of the governor in Dar es Salaam to the Foreign Office's Colonial Section. Stuhlmann acknowledged that sleeping sickness's mode of spreading was relatively unexplored, and emphasized that the continued investigation of the disease was an "extraordinarily important duty."¹⁰⁷ Due to the "imminent, very great danger for the protectorate," Stuhlmann recommended that the Foreign Office "authorize a doctor specially trained in bacteriology and pathology for a special mission to research and combat the epidemic and to arrange to send him forth."¹⁰⁸ His report bore the influence of conversations with Robert Koch, lately in East Africa en route to British colonial territories in southern Africa for British-funded research. The government in Dar es Salaam, Stuhlmann also wrote, held off in implementing preventive measures such as local quarantine or closure of the border between German East Africa and Uganda or British East Africa, awaiting the results of the British Sleeping Sickness Commission. The colonial government stood down, as well, because of the difficulty of implementing disease prevention measures in such a large territory and with a lack of detailed knowledge about the disease. Stuhlmann cited Koch's advice in explaining why the government would not pursue preventive measures

¹⁰⁷ Stuhlmann to Auswärtiges Amt, Kolonial-Abteilung (Foreign Office, Colonial Section), 2/16/1903, BAB, R 86 2622. Original text: "...diese außerordentlich wichtige Aufgabe." At the time, Stuhlmann was the director of the Biologisch-landwirtschaftlichen Institut at Amani, German East Africa. He also served as the acting protectorate governor in 1903, and had fought in the Bushiri Uprising in 1888, was involved in the Emin Pascha expedition and later became head of the Hamburg Colonial Institute. See Juhani Koponen, "Population: a Dependent Variable," in Maddox et al, *Custodians of the Land*, p. 24; Glassman, *Feasts and Riot*. See "Franz Stuhlmann," in *Deutsches Kolonial-Lexicon* vol. III, (Quelle & Meyer: Leipzig, 1920), p. 431, for a general biography; Hans G. Schabel, "Tanganyika Forestry under German Colonial Administration, 1891-1919," *Forest & Conservation History* 34, 3 (Jul., 1990), p. 139, n. 2 also provides a brief sketch.

¹⁰⁸ Stuhlmann to Auswärtiges Amt, Kolonial-Abteilung (Foreign Office, Colonial Section), 2/16/1903, BAB, R 86 2622. Original text: "drohenden, sehr großen Gefahr für das Schutzgebiet...einen bakteriologisch und pathologisch besonders vorgebildeten Arzt im Sonderauftrage mit der Erforschung und Bekämpfung der Seuche zu beauftragen und seine Heraussendung zu veranlassen."

immediately, emphasizing that continued investigation, by colonial medical officers and their metropolitan colleagues, remained of primary importance. Koch's advocacy for a dedicated research expedition to key scientific officials in German East Africa, even while under obligation to the British government, indicates that he personally considered sleeping sickness professionally relevant. With more direct and emphatic advocacy to follow in the coming two years, his mark here suggests that, in all likelihood, he had only himself in mind as any expedition's ultimate leader-researcher.

Broadly, metropolitan health officials approached the threat posed to German East Africa along similar lines to the government. In April 1903, Privy Councillor Dr. Wutzdorff of the Imperial Health Office wrote that, first and foremost, Berlin feared the disease's "invasion of the German protectorate."¹⁰⁹ Wutzdorff also expressed a prescient concern about whether the number of doctors available on site, and the supplies they were currently equipped with, would be adequate to allow investigation of cases occurring at Lake Victoria.¹¹⁰ But he maintained that the disease was not yet epidemic in German territory and not worth a dedicated expedition. German colonial doctors' proximity to Ugandan research provided, from the Health Office's perspective, an opportunity to get up to speed on the investigation and prevention of sleeping sickness, but it also mitigated against a formal German research expedition. Should the disease continue not to be found in German territory, sending one of the East African station doctors to the British "Verbreitungsgebiet" (area of proliferation) offered the only chance for first-hand scientific investigation. Wutzdorff specifically cited the "satisfactory results" of an early British report from January 1903, arguing that providing German doctors with the most recent publications without delay via diplomatic mail would keep them abreast of recent developments. The costs of funding an expedition was certainly a concern for the Imperial

¹⁰⁹ Wutzdorff to Staatssekretär des Innern, 4/15/1903, BAB, R 901, 20871. Original text: "...ihr Eindringen in das deutsche Schutzgebiet zu befürchten ist."

¹¹⁰ Wutzdorff to Staatssekretär des Innern, 4/15/1903, BAB, R 901, 20871.

Health Office.¹¹¹ But health officials' lack of support for an expedition, despite questioning the resources and manpower of the colonial medical service on the ground at Lake Victoria, also stemmed from beliefs about the nature of sleeping sickness as a disease. Initial British reports posited that the disease was communicable, and, Wutzdorff emphasized, "enabled by living close together in overcrowded huts," making prevention a simple matter of separating the sick from the well.¹¹² This conception of the disease again fit into extant ideas about infectious diseases more familiar in Europe, one that the Imperial Health Office – generally more concerned with matters of the continental German realm rather than the overseas empire – would have considered by default.

As the year passed, news about the Uganda epidemic continued to flow into the European press. The language from metropolitan scientific quarters grew more dramatic, echoing Stuhlmann's concerns about the epidemic from Dar es Salaam. At the time, promising, if inconclusive, news of British research results matched reports of mounting African deaths at Lake Victoria. In fact, between February and May 1903, the British researchers were in turmoil over competing claims about the disease's causative agent and changes in the research staff. The Royal Society's group of researchers drew closer to figuring out the etiology of the disease, but had made little advancement in practical measures for stopping the spread of sleeping sickness.¹¹³ Chief among those concerned about these developments in the German academy was the acting director of the Institute for Infectious Diseases, Wilhelm Dönitz, the head of the Institute during Robert Koch's research leave. Simultaneously, however, objections to a German expedition grew more stringent in the Colonial Section of the Foreign Office.

¹¹¹ Gradmann, *Laboratory Disease*, p. 202.

¹¹² Wutzdorff to Staatssekretär des Innern, 4/15/1903, BAB, R 901, 20871.

¹¹³ J.N.P Davies' history of the epidemic and Royal Society Commission, though lacking critical perspective, provides a detailed narrative of early research at Entebbe. Davies, "The cause of sleeping sickness? Entebbe 1902-03," *East African Medical Journal* 39, no. 3 (1962), pp. 81-99. See also Harvey Soff, "Sleeping Sickness in the Lake Victoria Region of British East Africa, 1900-1915," *African Historical Studies* 2, no. 2 (1969), pp. 255-68.

Dönitz, on behalf of the Institute for Infectious Diseases, and Aichberger, an advisor in the Foreign Office, wrote within days of one another to the Prussian Ministry of Culture, Education, and Medical Affairs, a putative funder of German scientific and medical research at home and abroad.¹¹⁴ Their letters were opposite sides of the same coin, and indicate that opinion regarding a German expedition had been coalescing into opposing camps within metropolitan circles. Members of the scientific academy in Berlin as well as officials in the protectorate government in East Africa urged immediate action and further research by a German team, while officials in the Colonial Section of the Foreign Office and the Imperial Health Office in Berlin insisted that the government wait to fund an expedition, relying upon the potential of ongoing British research. This internal debate is striking, considered within historical narratives of science and empire that argue that priorities of tropical medicine typically fell neatly in line with European colonial priorities; here, responses to sleeping sickness within the German government diverged sharply.

Scientists, administrators, and the experts they called upon addressed broad issues of empire and health, weighing African mortality against colonial budgets, pitting international scientific competition against national interests, and, throughout, sketching the contours of the importance of Germany's colonies. Advocating for urgent attention to the disease, Wilhelm Dönitz at the Institute for Infectious Diseases described sleeping sickness as "this acute epidemical [sic] disease nearing the borders of the German colonial possession in East Africa with astonishing speed."¹¹⁵ Dönitz, representing the leading metropolitan scientific institution in Germany took up a position aligned with the protectorate government in Dar es Salaam. He contended that information from Uganda indicated that 70,000 people had died of sleeping

¹¹⁴ Gradmann, *Laboratory Disease*, pp. 203-04; George Steinmetz, "'The Devil's Handwriting': Precolonial Discourse, Ethnographic Acuity, and Cross-Identification in German Colonialism," *Comparative Studies in Society and History* 45, 1 (Jan., 2003), p. 82. Ulrike Klöppel discusses the Prussian Ministry of Culture's involvement with funding scientific research at the Institute for Infectious Diseases in "Enacting Cultural Boundaries in French and German Diphtheria Serum Research," *Science in Context* 21, 2 (2008), pp. 167-69.

¹¹⁵ Dönitz to Preußisches Ministerium etc., 5/29/1903, BAB, R 901 20871. Original text: "diese seuchenartig auftretende Krankheit sich mit erstaunlicher Geschwindigkeit den Grenzen des deutschen Kolonialbesitzes in Ost-Africa nähert."

sickness in the last 5 years, directly contradicting the Imperial Health Office's memorandum of September 1902 that attached "no importance to the disease."¹¹⁶ Rather, Dönitz, argued, "it seemed, moreover, urgently necessary to allow inquiry, independent from other countries, in our African colonial possessions as soon as possible, into the nature and kind of this ever-increasing, murderous disease."¹¹⁷ Administrative estimates of the disease's lack of importance by the Imperial Health Office were, implicitly, totally misguided. Further, Dönitz implied that mortality rates in German East Africa would soon follow those in Uganda, requiring the full energies of German medicine at home and abroad, independent of British research and prevention measures. Here, the importance of research by German doctors relevant to German colonial possessions, rather than the colonial medical service's capability to manage sleeping sickness research, stood in the foreground. At this point in 1903, Dönitz and other bacteriologists likely recognized that British research in Uganda remained inconclusive about the cause of sleeping sickness, creating an opportunity for further research in the tropical medicine community, and German researchers specifically. Certainly as Koch's deputy and head of the Institute for Infectious Diseases, Dönitz's possessiveness of gains to be made and his sense of competition accorded with the typical collaborative and competitive engagement with international peers.¹¹⁸ But non-scientists evaluating the potential value of German research on sleeping sickness seized on this emphasis on independent research in their objections to an expedition.

¹¹⁶ Dönitz, *ibid.* Original text: "...welchem zufolge dieser Krankheit keine Bedeutung beizumessen sei." This is not an entirely accurate representation of the Imperial Health Office's priorities by Dönitz, as the 1902 memorandum responded chiefly to Koch's desire to study Angolan cases in Portugal. The 1902 memorandum did not, however, attach particular concern to sleeping sickness as a threat to Africa more broadly.

¹¹⁷ Dönitz, *ibid.* Original text: "Es erscheint vielmehr dringend geboten, in unserem afrikanischen Kolonialbesitz möglichst bald eigene vom Ausland unabhängige Untersuchungen über das Wesen und die Art der Verbreitung dieser im Zunehmen begriffenen mörderischen Krankheit anstellen zu lassen."

¹¹⁸ Deborah Joy Neill, "Transnationalism in the Colonies: Cooperation, Rivalry, and Race in German and French Tropical Medicine, 1880-1930," Unpublished PhD dissertation, University of Toronto, 2005, specifically the introduction.

The Imperial Health Office and colonial government in Dar es Salaam had renewed the conversation about a research expedition, joined by representatives of the Institute for Infectious Disease (who themselves supported the government's position in favor of an expedition). At this point in mid-1903, the Foreign Office and its subsidiary Colonial Section mounted the strongest resistance to a German sleeping sickness expedition. The Colonial Section refrained from sending the requested "doctor specially trained in bacteriology and pathology," according to Legation Councillor Aichberger, citing the need to wait for the conclusions of British research and build upon them.¹¹⁹ Further, Aichberger commented, one person with all the necessary skills would not be easy to find.¹²⁰ As it was, the two station doctors posted on the southern and western shores of the lake had been "trained further in tropical hygiene and bacteriology during their last home leave," so that they could adequately handle such necessary research in the future.¹²¹ The issue of colonial medical officers' capability to meet the demands of the epidemic surfaced here, not with regard to their equipment or manpower strength (cited as an earlier concern by the Imperial Health Office), but rather with regard to their training in skills particular to a complex disease and ability to dedicate time to its research (a factor also mentioned by Stuhlmann from Dar es Salaam). The Colonial Section's confidence in officers already stationed at Lake Victoria contrasted with the colonial government's fear of their inadequacy in skill and number. On the one hand, the Colonial Section had the power to make adjustments in German East Africa – they could ultimately remedy a lack in supplies or specialized equipment with a shipment from Berlin; Aichberger also noted in this report that bacteriological equipment for the doctors in Mwanza and Bukoba had been ordered. German East African officials had simply been the conduits for

¹¹⁹ Aichberger, Auswärtiges Amt, to Staatssekretär des Innern, 6/17/1903, BAB R 86, 2622. Original text: "Endlich dürfte es nach Ansicht der Kolonial-Abteilung nicht leicht sein, eine allen Anforderungen entsprechenden Persönlichkeit zu finden."

¹²⁰ Aichberger, Auswärtiges Amt, to Staatssekretär des Innern, 6/17/1903, BAB R 86, 2622.

¹²¹ Ibid. Original text: "während ihres letzten Heimatsurlaubs in Tropenhygiene und Bakteriologie weiter gebildet werden."

doctors' requests, little more capable than doctors stationed in remote locations themselves of acquiring microscopes or test tubes to laboratory specifications. East African officials' superiors in Berlin also may not have always kept them in the loop. On the other hand, it is also possible, given the circumstances under which reports from local medical officers were transmitted to metropolitan authorities, that officials in East Africa knew more detail about the immediate situation in which colonial doctors found themselves than their metropolitan superiors.

Reports regularly took months in transit between Lake Victoria, Dar es Salaam, and Berlin.¹²² Medical officers, presenting themselves as capable and independent, frequently wrote in the same breath of the impossibility of their situation and resources and the inevitability of their success and triumph. Sheer distance, distribution of resources, and the priority given to a problem by any of the three stakeholding groups (metropolitan colonial officials, East Africa colonial officials, or colonial medical officers) either singly or in combination, could result in the mixed signals that these and subsequent communications between Berlin and East Africa contained.

But, ultimately, an expedition was a matter of funding. As with earlier memoranda and reports, the Colonial Section acknowledged pressure for a German research expedition, but deemed it unnecessary because of the cost:

In terms of the anticipated and indeed very significant costs, in the opinion of the Colonial Section and in view of the situation of the circumstances, a need [for an expedition] is currently not urgent.¹²³

The prevailing concern was financial, part of a calculation that attempted to balance additional costs in the colonies against the severity of the epidemic's toll. In what was becoming a familiar refrain, the Colonial Section argued in favor of awaiting British results and insisted on the adequacy of current staff in East Africa to meet the problem if and when it arose. Keeping current on British reports would continue to be sufficient for doctors nearest to the epidemic.

¹²² Iliffe, *Modern History of Tanganyika*, p. 119.

¹²³ Aichberger, Auswärtiges Amt, to Staatssekretär des Innern, 6/17/1903. BAB R 86, 2622. Original text: "Im Hinblick auf die daraus zu erwartenden, wohl sehr bedeutenden Kosten, ist nach Ansicht der Kolonialabteilung und der Lage der Verhältnisse ein Bedürfnis hierfür zur Zeit nicht dringend."

More stringent still were objections to any further commitment to sleeping sickness research, articulated in an internal memorandum of the Foreign Office's Colonial Section in October 1903. Oscar Stübel, director of the Colonial Section, despite watching the progress of the epidemic with care and recognizing the "scientific importance" of sleeping sickness, did not consider the Protectorate "so endangered that sending a special scientific commission was to be viewed as an urgent necessity."¹²⁴ News from March 1903, only recently arrived in Berlin, indicated that the 5 known cases of sleeping sickness in German-claimed lands had already died, and that the two doctors stationed in areas adjacent to Uganda were equipped with the necessary instruments for research. The same two doctors, Oskar Feldmann at Bukoba and Karl Lott at Shirati, were to make a "study trip" to visit British researchers in Uganda in the coming year, making an expedition launched from Berlin moot.¹²⁵

The Colonial Section considered a research expedition to be contingent on the further outbreak of the epidemic in German East Africa, particularly in consideration of the limited funds available. Stübel's memorandum confirms that supervising colonial administrators in Berlin prioritized keeping to the year's budget, and understood sleeping sickness as an infectious disease but not as a serious threat to the German East African protectorate. That all known cases in the German territories had died meant, for the time being, that the epidemic was naturally arrested. If Colonial Section administrators considered sleeping sickness as analogous to a directly contagious disease like cholera, it had burned itself out in the population – the acute danger had passed. Taking advantage of British resources and an expedition fully committed to researching only sleeping sickness would allow station doctors to

¹²⁴ Oscar Stübel, Memorandum, 10/31/1903, BAB, R 1001, 5895. Original text: "...so gefährdet, daß die Entsendung einer besonderen wissenschaftlichen Kommission jetzt als eine dringende Notwendigkeit zu betrachten wäre." For a biographical sketch, see "Stübel," *Deutsches Kolonial-Lexicon*, 1920, vol. 111, p. 431.

¹²⁵ Oscar Stübel, Memorandum, 10/31/1903, BAB, R 1001, 5895. This likely referred to Dr. Karl Lott and Dr. Oskar Feldmann. Lott began to report from Shirati and Mwanza in late 1902 and into 1903; his work in Mwanza is mentioned by Stuhlmann in a note to the Auswärtiges Amt, 2/16/1903, BAB R 86, 2622. Lott reported his research at Mwanza and Shirati in a report dated 1/11/1903, BAB R 86, 2622. Feldmann was stationed at Bukoba by 1903, per Steudel to Colonial Office, 2/23/1904, BAB R 1001, 5895.

attempt any future containment of the epidemic alongside their responsibilities to monitor the health of an entire district. The entirety of Bukoba District (32,200 square kilometers), and Shirati (a part of Mwanza District, itself 63,800 square kilometers) lay in the purview of 2 station doctors and sometimes a few assisting sanitation officers.¹²⁶ Relying on British research for guidance would allow the colonial medical service to stretch, rather than expand, in response to the epidemic.

Metropolitan reticence to devote resources to the Lake Victoria region also speaks to the relative unimportance of the Great Lakes region in German colonial schemes in 1903. The region was by any stretch remote from the primary foci of German energy and resources in East Africa: the Swahili coastal trading ports of Tanga, Bagamoyo, and Dar es Salaam, and the northeastern agricultural settler highlands in the Usambara Mountains. At the turn of the century, the German East African shores of Lake Victoria were thinly staffed with colonial officials. Bukoba town and its environs were otherwise home to a few German civilians farming coffee, Indian traders, and polyglot European missionaries.¹²⁷ While the thriving local market town and populous hinterland were a potential source of tax revenues for the colonial administration, they were not a source of profit for the colony.¹²⁸ The colonial government further had scant knowledge of local languages, little to no infrastructure, and inconsistent – if not hostile – relations with local leaders. Bukoba and Shirati had only recently become civilian posts. In comparison to British Uganda, the so-called “Pearl of Africa,” where British interests played heavily in local politics, the German colonial administration was not well established in the

¹²⁶ *Deutsches Kolonial-Lexicon*, 1920, vol. 1, p. 252 (Bukoba) and p. 290 (Schirati).

¹²⁷ On Ismaili Indian traders at Bukoba see Iliffe, *Modern History of Tanganyika*, p. 139; Koponen, *Development for Exploitation*, p. 152. Koponen notes that a German coffee farm was established in 1908, with only 7 European farms in Bukoba Residency in 1912, *Development for Exploitation*, p. 254, p. 608. The White Fathers founded missions at Kashozi/Marienberg (1892), Mugana (1902), Kagondo (1903), and a mission and school at Rubya (1904), per 2006 Catholic Directory of Tanzania, (TEC: Dar es Salaam, 2006), M.Afr. DSM. German missionaries did not arrive until 1910, with the Bethel (Lutheran) mission. Koponen, *Development for Exploitation*, pp. 165-66.

¹²⁸ Austen, *Northwest Tanzania*, p. 85, pp. 90-1. Taxation for revenue and to “encourage” African productivity was largely a failure throughout the colony in the first decades of German rule, per Koponen, pp. 215-24.

territories it claimed around the lake.¹²⁹ Neither a sense of endangered cash crops, nor a need to pre-empt the further spread of the disease, moved the Colonial Section or Foreign Office to support calls from scientists to forward dedicated research on sleeping sickness.

Growing Momentum for a German Expedition: 1904

Colonial considerations for the budget and overall impact of sleeping sickness did not, however, dampen the perceived danger of the epidemic in scientific quarters. Agitation in Germany died down in the latter part of 1903, though scientific interest in a German research expedition remained high even after the publication of British Sleeping Sickness Commission's work. In the Commission's 8th report, Drs. David Bruce and David Nabarro and Capt. Edward Greig concluded that infection with a trypanosome parasite caused sleeping sickness, and that a local species of biting fly, *Glossina palpalis*, carried the trypanosome.¹³⁰ The Royal Society published the Commission's conclusive report in November 1903, and the scientific and tropical medicine presses reported their findings widely throughout the winter. In Berlin and Dar es Salaam, this coincided with a lull in discussions about a sleeping sickness expedition.

Robert Koch's return to Berlin from research abroad in the summer of 1904 reinvigorated the debate in Germany, as he inserted himself into conversations between health and colonial officials. Koch, recently returned from a British-sponsored research trip to investigate livestock diseases in Rhodesia, focused on the way forward in combating sleeping sickness in a substantial report circulated to the Foreign Office, Imperial Health Office, and

¹²⁹ John Iliffe, *Tanganyika Under German Rule, 1905-1912*, (Cambridge University Press: Cambridge, 1969); Ralph A. Austen, *Northwest Tanzania Under German and British Rule: Colonial Policy and Tribal Politics, 1889-1939*, (London: Yale University Press, 1968).

¹³⁰ Bruce and Nabarro arrived in Uganda March 16, 1903, overlapping for several weeks with Castellani; Greig joined them on May 25, 1903. Though acknowledging Castellani's prior work, Bruce's team claimed discovery of the trypanosome as the causative agent of sleeping sickness, touching off a controversy that would persist until Castellani's death in 1971. For chronology of expedition personnel, see David Bruce, David Nabarro, and E.D.W. Greig, "Further Report on Sleeping Sickness in Uganda," *Reports of the Sleeping Sickness Commission*, (London, 1903).

Prussian Ministry of Culture, the same institutions as had been involved before.¹³¹ With the basic etiology and transmission of the disease now established from British research, he argued that this particular moment, with more known, was precisely the time for Germany to join in international research efforts. While an interconnected group of tropical medicine scientists had been relied upon in the preceding two years to provide up-to-date information about the epidemic upon which consensus was formed, it now was a matter of Germany joining its scientific and imperial peers in a combined international effort:

We must not allow ourselves under any circumstances to cherish the hope that [sleeping sickness] will stop at the border of the German protectorate...the currently most important [measure] would exist in the deployment of a scientific mission, whose task it would be to find some sort of protective mechanism, be it a rebuttal of the disease in toto or be it the healing of the sick. As the English mission's excellent successes with regard to the research of the etiology of sleeping sickness have told us, we are still completely lacking in means to combat the disease and, in this respect, a mission sent out from the German empire would still work on the most important and most praiseworthy tasks.

In France, the Academy of Medicine, out of similar considerations, has made a motion to send out a mission for studying the epidemic to Africa.

German science should not fall behind in the fight against sleeping sickness that has been taken up by all sides (a Portuguese mission has been active for several years). The unified efforts of English, French, Portuguese, and German doctors will hopefully succeed in mastering this murderous epidemic, also seriously menacing our colonies.¹³²

¹³¹ Regarding Koch's research in southern Africa, see Bernhard Möllers, *Robert Koch: Persönlichkeit und Lebenswerk*, (Schmorl & Von Seefeld Nachf.: Hannover, 1951), pp. 264-74; Brock, *Robert Koch*, pp. 256-62.

¹³² Koch to Prussian Minister der geistlichen, Unterrichts- und Medizinal-angelegenheiten, 7/30/1904, BAB R 86 2613. Original text: "Wir dürfen uns unter keinen Umständen der Hoffnung hingeben, daß [die Schlafkrankheit] an der Grenze des deutschen Schutzgebietes halt macht...Die zur Zeit wichtigste [Maßregeln] würde in der Entsendung einer wissenschaftlichen Mission bestehen, deren Aufgabe es sein würde, irgend welche Schutzvorrichtungen zu finden, sei es zur Abwehr der Seuche überhaupt, oder sei es zur Heilung der Kranken. So ausgezeichnete Erfolge auch die englische Mission in Bezug auf die Erforschung der Ätiologie der Schlafkrankheit erzielt hat, so fehlt es doch noch gänzlich an Mitteln zur Bekämpfung der Krankheit und in dieser Beziehung würde eine vom deutschen Reiche auszusendende Mission noch die wichtigsten und dankbarsten Aufgaben zu bearbeiten haben. ... Auch in Frankreich ist von ähnlichen Erwägungen ausgehend seitens der Akademie de Medicine der Antrag gestellt, eine Mission zum Studium der Seuche nach Afrika zu entsenden. ... Die deutsche Wissenschaft sollte bei dem allseitig aufgenommenen Kampfe gegen die Schlafkrankheit (auch eine portugiesische Mission ist seit einigen Jahren tätig) nicht zurückbleiben. Den vereinigten Bemühungen der englischen, französischen, portugiesischen und deutschen Ärzte wird es hoffentlich gelingen, dieser mörderischen, auch unsere Kolonien ernstlich bedrohenden Seuche Herr zu werden." Koch's language reveals German anxieties about its African empire and its "brittleness" as an empire building, discussed briefly in Cooper, *Colonialism in Question: Theory, Knowledge, History* (Berkeley: University of California Press, 2005), p. 183 and chapter 6; Cooper and Burbank, *Empires in World History*, pp. 312-16. An excellent new overview of German imperial ideologies and practices is Shelley Baranowski, *Nazi Empire: German Colonialism and Imperialism from Bismarck to Hitler* (Cambridge: Cambridge University Press, 2011).

Koch's argument captured the importance of sleeping sickness research to the health of the German colonies as well as the scientific community.

This intervention was crucial: Koch's enthusiasm for an expedition and his official encouragement helped to spur a reversal in the Imperial Health Office's reticence toward an expedition in late 1904. Within months, Wutzdorff reported to the Imperial Ministry of the Interior that sending a scientific expedition to East Africa was "desirable," and that "the encroachment of the disease in German territory was now only a matter of time."¹³³ The absence of a cure and the great practical and scientific importance of the disease only added to its importance for the German homeland – an allusion to competition, though not clearly scientific or colonial in nature. Retreating from the Imperial Health Office's earlier reticence, Wutzdorff echoed the reasons Koch enumerated in favor of an expedition: the disease presented a matter of "great practical and scientific meaning" for Germany, and Germany should not lag behind the work of British and Portuguese researchers. Wutzdorff could only "join the suggestions which this excellent adept of the health circumstances in East African had given," though he stopped short of promoting Koch himself as leader of German research, favoring instead doctors already in the colonial medical service.¹³⁴

The Imperial Health Office's approach to sleeping sickness research had undergone a turnaround – from insisting that East Africa was out of danger to seeing it as imminently threatened. Robert Koch's availability as both an advocate for and potential candidate to lead a German expedition carried weight among metropolitan administrators.¹³⁵ But Koch himself did

¹³³ Wutzdorff to Staatssekretär des Innern, 9/17/1904, BAB R 901, 20871. Original text: "...dass auch mir die Entsendung einer wissenschaftlichen Expedition zum Studium der Schlafkrankheit in Ostafrika wünschenswert erscheint. Denn es unterliegt keinem Zweifel, dass die Ausbreitung der Krankheit auf unser Schutzgebiet nur eine Frage der Zeit ist."

¹³⁴ Wutzdorff to Staatssekretär des Innern, 9/17/1904, BAB R 901, 20871. Original text: "Den Anregungen, welche dieser ausgezeichnete Kenner der Gesundheitsverhältnisse von Ostafrika gegeben hat, vermag ich mich nur anzuschliessen..." Wutzdorff suggested Dr. Karl Lott to lead the expedition, and Drs. Friedrich Fülleborn and Erich Martini as potential collaborators on a two-man team.

¹³⁵ Gradmann, *Laboratory Disease*, pp. 206-10.

not rely on his own prestige and expertise in pushing for sleeping sickness research. He had provided the Imperial Health Office with rough estimates of the costs of an expedition, and perhaps also of a basic itinerary for research, which Wutzdorff also relied upon – the practical elements of an expedition began to fall into place. But despite his role as a national hero in the competition with Pasteur regarding anthrax in the 1860s-70s, his renown as the leader of German technical primacy in the laboratory, and his persistent place as a public health expert at home and abroad, Koch here effectively issued an international call to arms.¹³⁶ His prestige as a national scientific hero gave him traction in the debate over sleeping sickness, but Koch claimed priority for research through the novelty of the disease, the novelty of the work yet to be done (Wutzdorff mentioned immunization, an uncertain field with parasitic diseases), as well as the international importance of the disease for an area bordering several colonial empires of the European powers. The disease was an international concern, taken up by powers as equal as France and Britain, and, even by Portugal, a less powerful colonial player by that time. The combined efforts of researchers from various national backgrounds would yield practical results, and researchers could and would interact to meet a common goal. Koch presented a situation where competitive national rivalries would not hinder transnational collaboration, and where, by joining in an international collective effort to work on sleeping sickness, German science could further distinguish itself. This subtle balance between competition and collaboration, between matters of national or colonial interest and matters of international scientific concern, defined tropical medicine.¹³⁷ Contemporary scientists – particularly those involved in tropical medicine research – were a savvy lot, recognizing that nationalist rhetoric garnered support from European governments jockeying for colonial primacy, but still using transnational networks to collaborate with a wide group of peers, and advance their own knowledge and work.

¹³⁶ On Koch's career prior to his interest in tropical medicine, See Brock, *Robert Koch: a Life in Medicine and Bacteriology*, (ASM Press: Washington, DC 1999).

¹³⁷ Deborah Joy Neill, "Transnationalism in the Colonies: Cooperation, Rivalry, and Race in German and French Tropical Medicine, 1880-1930," Unpublished PhD dissertation, University of Toronto, 2005.

While scientists' concerns about the situation in East Africa registered with colonial and public health officials on one key level – that of the danger posed to immediate German concerns – they failed utterly on an equally important level. Playing to combined national and international interests had a major drawback. Colonial administrators understood scientists' interest in sleeping sickness research, posited as working in accordance with the international network of scientists and academies that German practitioners relied upon to generate reports and advice, as serving purely competitive goals. Oscar Stübel, Director of the Colonial Section, concluded:

With the proposed commission to research sleeping sickness, the scientific benefit should primarily come into consideration, while it must remain open, whether the practical gains to be realized from it would exceed those of a continuous monitoring of the endangered districts by the colonial doctors in question. It should not then, because it is chiefly about a competition of German science with those of other Great Powers, be the Colonial Section that primarily carries the costs of such an undertaking...¹³⁸

Stübel's judgment reflects a sense, at the administrative level, that the desire to participate in sleeping sickness research was self-serving for the scientists, rather than motivated by a true concern for colonial security that could be relied upon by the government. Their great enthusiasm for sleeping sickness research, and perhaps particularly in disagreeing with the colonial administration's lower prioritization of the epidemic, distanced scientists from what was deemed relevant to colonial interests by metropolitan administrators. Koch's and Stuhlmann's earlier appeals for sleeping sickness research resonated with colonial administrators, but only as individualistic, narrowly focused, and essentially academic concerns. The "practical" use of a future commission's results did not outweigh the potential monetary cost of an expedition, perhaps more so now that, in 1904, the focus for scientists now fell upon prevention measures and the development of treatment, rather than the basic

¹³⁸ Stübel to Auswärtiges Amt, 11/11/1904, BAB, R 901 20871. Original text: "Bei der vorgeschlagenen Kommission zur Erforschung der Schlafkrankheit dürfte in erster Linie der wissenschaftliche Nutzen in Betracht kommen, während es offen gelassen werden muß, ob der von ihr zu verwertende praktische Gewinn den einer beständigen Überwachung der bedrohten Bezirke durch die in Frage kommenden Kolonialärzte übertreffen wird. Es dürfte daher, da es sich hauptsächlich um einen Wettbewerb der deutschen Wissenschaft mit derjenigen anderer Kulturstaaten handelt, nicht die Kolonialabteilung in erster Linie die Kosten eines solches Unternehmens zu tragen haben..."

understanding of the disease. Further, Colonial Section officials met calls for sleeping sickness research with caution based on continuing concerns about the actual severity of the epidemic. Stübel cited reports from doctors at Lake Victoria, which indicated that “one need not...estimate the direct encroachment of sleeping sickness from Uganda into German East Africa all too highly.”¹³⁹ Administrators also drew encouragement from new information about the specific habitat of the fly carrier at Lake Victoria and straightforward methods of reducing its numbers by destroying that habitat.¹⁴⁰

The German Colonial Section chief’s objections recalled those of the British Foreign Office from two years prior. Recognizing that scientific competition and triumph were indeed important motivations for research in the colonies, administrators protected their budgets and defended their staff’s abilities to cope with new challenges. But this logic was fundamentally out of sync with scientists’ own sense of the community to which they belonged, which, though competitive, was also collaborative and international as well as inter-colonial. The daily practice of tropical medicine involved use of interlocking skills in parasitology, entomology, bacteriology, clinical medicine, and hygiene/sanitation, at its core.¹⁴¹ Cumulative knowledge, assembled by examining the contributions of diverse researchers in these fields at work in ever-more diverse locations, allowed for verifiable scientific evidence and the development of an international consensus upon which ongoing research was based.¹⁴²

¹³⁹ Stübel to Auswärtiges Amt, 11/11/1904, BAB, R 901 20871. Original text: “Man wird nach diesen Feststellungen die Gefahr des direkten Uebergreifens der Schlafkrankheit von Uganda auf Deutsch-Ostafrika nicht allzuhoch einzuschätzen brauchen.”

¹⁴⁰ British administrators in Uganda, beginning in the summer of 1903, began shaping policy based on Bruce’s determination that the tsetse flies that spread sleeping sickness preferred a habitat near water. Bruce’s research was published widely in the scientific and colonial presses internationally, and would also have been familiar for German colonial policy-makers. It is possible that British memoranda in Uganda also reached officials in German East Africa through diplomatic channels. Hayes-Sadler, Memorandum, 7/2/1903, WTI/RST/G26/29.

¹⁴¹ Worboys, “Tropical Medicine,” pp. 518-24.

¹⁴² However, transnational collaboration still operated within national institutional and funding structures; expeditions were supported by a single nation. Intra-national competition further complicated the dynamic of collaboration among the international group of tropical medicine researchers. See Deborah Joy Neill, “Transnationalism in the Colonies.” This transnational cohort of researchers was not altogether novel, considering the diverse explorers in Africa serving countries other than their own,

Colonial administrators such as Stübel separated scientific research from the practical necessities of running a colony and its medical services. Colonial medical services were, in the western regions of East Africa as elsewhere, more tailored to the needs of European survival than attentive to the health of the African population at large, before the first World War.¹⁴³ From an organizational perspective, colonial administrators did not see their medical service doctors as part of an international community – though these doctors’ reports often provided the only current and local information on epidemics in East Africa for the tropical medicine community. Rather, doctors stationed in East Africa were involved chiefly in responsive, practical medical work, tailored to addressing public health problems as they emerged. Research was not their priority, though it may have animated their interests, in contrast to the academic work of metropolitan researchers. This disconnect, borne of separate government departments and, more importantly, of the general goals laid out for Germany’s colonial efforts, would lead to haggling over funds and personnel as German efforts in sleeping sickness research took shape in later years.

Ironically, while the “competition of German science with those of the other Great Powers” mitigated Colonial Section support of an expedition, the relationships that German scientists had with their peers remained a key asset. Particularly in staffing an expedition, international experience and renown weighed in favor of particular candidates. Though Stübel hedged his support for an expedition in the immediate future, he did mention potential candidates for its leader, specifically Friedrich Fülleborn, then working at the Institute for Maritime and Tropical Diseases in Hamburg. Fülleborn’s work at the Institute and his special knowledge of zoology made him an attractive candidate, but his prior collaboration set him apart. Stübel described Fülleborn as “personally acquainted with all well-known English

often with multiple nationalities. See Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation*, 2nd ed. (New York: Routledge, 2008), especially chapter 9.

¹⁴³ David Arnold, “Medicine and Colonialism,” in Roy Porter and W.F. Bynum, eds., *Companion Encyclopedia of the History of Medicine, Companion Encyclopedia to the History of Medicine*, (Routledge: London, 1993), pp. 1397-1403.

tropical medicine doctors due to numerous visits to the tropical medicine institutes in London and Liverpool, and would therefore without doubt enjoy special accommodation from the English authorities.”¹⁴⁴ The Colonial Section objected to a German expedition on the basis of an international competition among the Great Powers’ scientists, but recognized the utility of transnational networks and, implicitly, the need for colonial medical researchers to rely upon and sustain inter-colonial collaboration. It reflected, however, an essentially utilitarian view of the importance of science for the German colonies.

The logjam did, however, appear to break in late 1904 with a tempered support for a German expedition in the Colonial and Health Offices. In the same memo regarding sleeping sickness research and international scientific competition, Stübel allowed that monies from the “Africa fund” could be used to fund an expedition in the coming year, provided that the burden did not fall solely on the Colonial Section.¹⁴⁵ Funds were eventually cobbled together from the Prussian Ministry of Culture, Education, and Medical Affairs, the Foreign Office, and its Colonial Section.¹⁴⁶ The Imperial Health Office worked in 1905 to pull together a memorandum on sleeping sickness that laid out research priorities that would be the backbone of Robert Koch’s eventual expedition in 1906-07 (the subject of chapter four). In the process of drafting the memorandum – and setting out the goals and parameters of the German expedition – Health Office officials circulated material to a wider circle of German experts, including the head of the Institute for Maritime and Tropical Diseases in Hamburg, Bernhard Nocht; Emil Steudel, the chief doctor in the colonial military’s medical division; and Fritz Schaudinn, a

¹⁴⁴ Oscar Stübel, Memorandum, 11/11/1904, BAB R 901 20871. Original text: “bei mehrfachen Besuchen der Tropen-Institute in London und Liverpool mit allen bekannten englischen Tropenärzten in persönliche Beziehung getreten ist und deshalb sich ohne Zweifel in Uganda besonderen Entgegenkommens seitens der englischen Behörden erfreuen würde.”

¹⁴⁵ Oscar Stübel, Memorandum, 11/11/1904, BAB R 901 20871.

¹⁴⁶ Gradmann, *Laboratory Disease*, p. 204, n. 188.

zoologist researching the causative agent of syphilis, and also at work at the Institute for Maritime and Tropical Diseases.¹⁴⁷

Conclusion

Sleeping sickness burst onto the tropical medicine scene at the turn of the century, capturing the attention of eager metropolitan scientists and occupying the energies of colonial medical officers in East Africa. With this came demands from scientists in Berlin and East Africa for a dedicated German research expedition to match and accompany expeditions launched by the British, French, and Portuguese governments. Despite its potential relevance for the German East African colony, colonial and public health officials in metropolitan Berlin demurred for several years, arguing that enthusiasm for sleeping sickness research stemmed from a sense of national scientific competition and that the disease posed no great, immediate threat to their colony. Tropical medicine scientists, by contrast, emphasized the possibility of Germany's contributions to developing knowledge and their strong sense of the inevitability of the epidemic in German territory. Metropolitan deferrals of an expedition also had to do with tight colonial budgets and the newness of German involvement in the Great Lakes region. In a close reading of debates over sleeping sickness in Germany, with comparative perspective from Britain, I have demonstrated how the interests of tropical medicine and European empires were not in lock-step. I also showed that recourse to a wider international community of tropical medicine colleagues could be both beneficial and detrimental to German scientists' case for their own sleeping sickness expedition. While debates on a sleeping sickness expedition carried on between Berlin and the colonial government in Dar es Salaam, colonial medical officers at Lake Victoria also began to respond to the possibility of epidemic sleeping sickness in their own the districts. On the ground at Bukoba, Mwanza, and Shirati, the main German stations on the

¹⁴⁷ Regarding Fritz Schaudinn's career, see G. Olpp, *Hervorragende Tropenärzte in Wort und Bild*, (Otto Gmelin: Munich, 1932), pp. 360-64. A draft of the memorandum and plan for a sleeping sickness expedition circulated in July 1905 to Emil Steudel, Bernhard Nocht, and Fritz Schaudinn, according to a file copy of the draft retained by the Imperial Health Office. Steudel to Kohler, 7/5/1905, BAB R 68, 2613.

lake, doctors tapped into their own international – or rather inter-colonial – network of peers. The initial years of sleeping sickness research around Lake Victoria illustrate the woeful unpreparedness of colonial medical officers in coping with epidemic sleeping sickness. This early experience also drives home the importance of German participation in a wide-ranging group of colleagues who shared epidemiological information, laboratory techniques, and field skills.

Chapter Three

Inter-colonial Research in the Lake Victoria Basin

Introduction

In East Africa, concern about sleeping sickness after 1902 focused on the Lake Victoria basin and the Great Rift Valley borderlands. Officials in East Africa expected the epidemic, already rampant on the northern shore of the lake in the African kingdoms of Buganda and Busoga in British Uganda, to pass into German territory in a southward spread along both sides of the lake. Traffic across and around the lake, which allowed the vigorous circulation of people, goods, and diseases, brought German colonial stations on the lake – Bukoba in the west, Shirati in the east, and Mwanza in the south – to the center of efforts to monitor the epidemic. But, in this early stage, monitoring the disease required knowledge of its symptoms, as well as the parasite pathogen, its fly vector, and the fly's habitat. German doctors stationed around the lake were not well-prepared to do the necessary investigations. An absence of current information from German East Africa in Berlin and vice versa, born of months-long delays in communication, meant that colonial medical officers faced the inevitability of sleeping sickness in German territory in 1902 with few additional intellectual or practical resources from their colonial government and with uneven input from metropolitan officials. Communication across and around Lake Victoria, however, was more immediate, and German colonial doctors tapped into the resources of their British counterparts and the well-established Catholic missionary community. Without extensive training or experience in parasitology and with limited local resources to hand, German colonial doctors drew upon the expertise of their British colleagues on the north side of the lake. Sharing information, while it tended to favor the expertise of British scientists with a longer experience with sleeping sickness, remained mutually beneficial for both German and British researchers. Though colonial governments did occasionally become involved in the transit of people and information, German and British

doctors working along colonial borders and amid increasing fears of a fast-spreading epidemic operated outside – or around – their colonial governments to share information more readily.

The acute experience of the new epidemic at Lake Victoria indicates that hiccups and disconnects in imperial networks connecting Europe and Africa could lead, for colonial officials working at Lake Victoria, to a reliance on immediate local networks. This, in turn, generated new policies or spread ideas different than those promoted by metropolitan officials. This chapter argues that inter-colonial exchange between German and British scientists shaped ideas about sleeping sickness and strategies to treat and prevent it. Focusing on scientific networks, local resources, and personal connections during early reporting and research on the epidemic, this chapter demonstrates that the day-to-day workings of tropical medicine research in East Africa readily crossed epistemological and political boundaries. I argue that local contacts in the colonies flourished between scientists across colonial borders, helping to disseminate essential information about the incidence and extent of sleeping sickness, but also serving to transmit new and newly-necessary techniques and methods of research. Specifically, I follow the efforts of British researchers and German medical officers in the colonies to gather information about the epidemic and acquire the diagnostic and clinical skills to recognize and treat the sick. Based on a close reading of German doctors' reports and correspondence, I argue that they collected and integrated a significant amount of information from simultaneous British research without the mediation of metropolitan authorities, or, generally, without the government in Dar es Salaam or the Colonial Section in Berlin being aware of the extent of communication. The flexibility with which doctors approached each other's work, the demands of the acute situation of an outbreak in which they found themselves, and their reliance on their peers in a community of scientists, I argue, effectively determined the content of their research and the methods and techniques they used.¹⁴⁸ This cross-pollination mitigated against the dominance of particularly British or German approaches to sleeping sickness research.

¹⁴⁸ An analysis of the qualitative similarities and differences in ideas about sleeping sickness before WWI would be an interesting avenue for further research in the history of parasitology. Deborah Neill's

Transnational and inter-colonial connections in tropical medicine at Lake Victoria remained important at the level of both theory and practice. These connections influenced ideas about what kind of a disease sleeping sickness was and what resources could be marshaled to combat it. Practically, sharing information determined points of engagement between European doctors and African communities on both sides of the Anglo-German colonial border. Concentrating on situations and interactions around the lake highlights how local – and sometimes highly individual – decisions had an impact on broader policy formation, at times moving policies or lines of inquiry forward without mediation (or guidance) from metropolitan authorities. Discussions in Berlin were conducted officially between various branches of the German government, but communication at Lake Victoria was more often a case of doctors meeting with their peers; doctors sometimes found a more sympathetic ear to their concerns among colleagues across a colonial border than within their own government. The competing priorities of scientists and administrators created the possibility, if not the necessity, for doctors working in East Africa to tap into the resources and knowledge of their colleagues across colonial borders. To explore the possibilities and pitfalls that communicating across an imperial network produced for colonial medical officers and local communities – in shaping research priorities, interactions between doctors and potential patients, and the development of disease prevention measures – I here consider the experience of sleeping sickness research and local policy formation in East Africa, simultaneous and overlapping with events in Berlin discussed in the previous chapter.

The historiography of sleeping sickness in the Great Lakes region has largely been focused on colonial policy-making, rather than on the work of scientists and doctors at work in the colonies. This provides a macrohistory of the epidemic and its relevance for the colonies. The local history of the Lake Victoria epidemic and of the connections between the scientists at

forthcoming book provides a comparison of European colonial powers' approaches to sleeping sickness on a colony-wide basis. Neill, *Networks in Tropical Medicine: Internationalism, Colonialism, and the Rise of a Medical Specialty, 1890-1930*, (Stanford, CA: Stanford University Press, forthcoming).

work around the lake, by contrast, is largely absent from the literature focusing on national approaches to sleeping sickness and colony-level implementation of programs. The local history of the work actually done – though “local” belies the vast expanse of the lake and its littoral – reveals a situation impacted by the ecological and epidemiological continuities of Lake Victoria, which made cooperation absolutely necessary for research and for public health policy.

First Responses to Sleeping Sickness in German East Africa: Exploratory Research

When Franz Stuhlmann – a senior scientist in the East African colonial government – recommended the dispatch of a specially-trained scientist to study sleeping sickness to the colonial administration in Berlin in early 1903, he also emphasized the importance of continuing study of the disease in East Africa. The best way to bring German colonial doctors up to speed, he argued, was to bring them into direct contact with British researchers on the Sleeping Sickness Commission in Uganda – who, after all, had a six-month head-start in dedicated work on the disease with the support of colonial medical staff. To that end, Stuhlmann had contacted the British Commissioner in Uganda, James Hayes-Sadler, to arrange for a research trip for the doctor stationed in the chief German port on Lake Victoria, Mwanza, “before he has to fight [the disease] in our protectorate.”¹⁴⁹ Allowing German doctors to work alongside British researchers would allow for a swifter transmission of key information for practical use, in the absence of conclusive British publications about the cause or prevention of sleeping sickness. For Stuhlmann, current work was simply preparation if, “as we expect, the epidemic will be carried into our territory more often.” Augmenting their experience and training was all the more necessary, as Stuhlmann did not consider colonial medical officers adequately prepared to do the necessary research and diagnosis. In the same February 1903 report suggesting sending a German officer to Uganda, Stuhlmann requested that Berlin provide portable bacteriological

¹⁴⁹ Stuhlmann to Auswärtiges Amt, Kolonial-Abteilung, 2/16/1903. BAB R 86 2622. Original text: “ehe er [die Krankheit] in unserem Schutzgebiet zu bekämpfen hat.”

equipment for two doctors at Lake Victoria, following that which Koch had ordered for his current cattle disease research in Rhodesia.¹⁵⁰

The request for specific equipment reflects an awareness that sleeping sickness could require more intensive bacteriological research than a colonial medical officer's typical responsibilities demanded. But this was not shared by all parties involved in responding to sleeping sickness in East Africa, across the Colonial Section, German East African government, and scientific academies, as discussed in the previous chapter. With news of sleeping sickness in the borderlands of German East Africa, colonial officials in Berlin expressed a foolhardy confidence in the resources and skills of local colonial station doctors, either underestimating the novelty and complexity of sleeping sickness or simply brushing it aside for the time being. This contradicted the sentiments of members of the colonial government and the tropical medicine academy. In early 1903, Stuhlmann was an outlier in the metropolitan debate over a sleeping sickness expedition at his post in Dar es Salaam. In this case, the local and immediate situation in Dar es Salaam mitigated in favor of a swift response to Stuhlmann, but the colonial administrative structure and the supplies available in East Africa, not to mention to prevailing sense in the Colonial Section that sleeping sickness was not a priority, made this difficult.

As German officials debated the merits of a dedicated sleeping sickness expedition in Berlin, metropolitan training of colonial medical service doctors justified the Colonial Section's delay in sending an expedition. But while doctors may have been trained during leave in tropical hygiene and bacteriology, this was prior to reports of sleeping sickness and any knowledge of its causative parasite or vector. The Colonial Section of the Foreign Office arranged for additional specialized training for some colonial medical officers, through courses in tropical medicine, hygiene, or bacteriology.¹⁵¹ Unfortunately, records from the German military or the Colonial Section regarding any specialized training in tropical diseases or

¹⁵⁰ Stuhlmann to Foreign Office-Colonial Section, 2/16/1903, BAB, R 86 2622. Original text: "wie zu erwarten, die Seuche öfter in unser Gebiet verschleppt wird." He requested a "bakteriologischen Reiseapparat."

¹⁵¹ Eckart, *Medizin und Kolonial-imperialismus*, p. 114.

bacteriological or parasitological investigation do not survive, and personnel files are generally limited to records of illness, furloughs, and service in the colonies. Course material from the Bernhard Nocht Institute (formerly the Institute for Maritime and Tropical Diseases) in Hamburg indicates that government and military doctors of the colonial army received training there; in 1902, a year after the institute opened, 23 of 38 students were doctors from the then Colonial Section of the Foreign Office.¹⁵² A typical case was likely similar to that of Dr. Ernst Marshall, whose personnel record indicates training in tropical medicine, service in East Africa, and further specialized training in bacteriology. Marshall had already received some training at the Institute for Maritime and Tropical Diseases and was active in the sleeping sickness campaign. In 1912, on furlough from his post in German East Africa, the Colonial Section arranged further study in the bacteriology division of the Imperial Health Office.¹⁵³ But the difference between 1902 and 1912, where sleeping sickness was concerned, was vast. Doctors stationed in the colonies in 1902 and 1903 would not have had the benefit of attending specialized courses in tropical medicine in Germany, rather more likely would have been prepared with courses in “hygiene,” relevant to disease prevention and quarantine measures, as well as basic courses in bacteriology or parasitology.

In colonial East Africa, doctors were in fact not well-equipped to research the disease, and material assistance and new information were both slow to arrive. The case of Oskar Feldmann, station doctor in Bukoba, illustrates the material challenges of researching sleeping sickness. Feldmann reported several cases of sleeping sickness in the district in October 1903 (8 months after Stuhlmann wrote his letter, and 6 months after its arrival in Berlin that April).¹⁵⁴

¹⁵² Bernhard Nocht, Annual report from the Seaman's Hospital and Institute for Maritime and Tropical Diseases, 6/23/1902, BAB R 1001 5964.

¹⁵³ Personnel File, Dr. Marshall, memorandum dated 4/5/1912, BAB R 86, 436; see also “Anschriften-Verzeichnis der ehemaligen Schutztruppen-Offiziere und –Beamten, Namentliches Verzeichnis,” BAB, R 1001, 9581.

¹⁵⁴ By 1909, Feldmann had been in East Africa for 8 years without furlough home to Germany, per Governor Rechenberg to Reichskolonialamt, 7/23/1909, BAB R 1001 5901; Methner to Reichskolonialamt, 11/13/1909, BAB R 1001, 5902. Feldmann's own report dated 11/28/1906 indicates that he was at Lake Tanganyika in 1899, BAB R 86, 2630.

Bukoba, near the Uganda border on the western shore of Lake Victoria, was regularly connected to Uganda and the lake islands to the north by trade and labor migration. Feldmann reported finding trypanosomes in an autopsy and noted two other known cases, describing his process of centrifuging blood and examining slides with a microscope.¹⁵⁵ However, he noted, “the centrifuging must be conducted in the most primitive way, with the help of the wheelworks of a butter machine,” and requested the dispatch of “the announced very welcome bacteriological equipment.”¹⁵⁶ This lack of essential equipment was not uncommon: one of the young British Sleeping Sickness Commission doctors complained in March 1904, “I wired this week to the Royal Society for another centrifuge, as there is not one in working order in either Protectorate.”¹⁵⁷ Not only was proper equipment needed, but space for laboratory and clinical work sometimes had to be created anew. In anticipation of the need for more extensive bacteriological work, Feldmann was having a new laboratory and dissection room built, as well as a new room for sick askari. The German officer closed his report with a pointed comment that the new rooms were being built with all possible speed to be ready for use as soon as new bacteriological equipment arrived.¹⁵⁸

Feldmann wrote to the government in Dar es Salaam to request more sophisticated bacteriological equipment in the same span of weeks in late October 1903 that Colonial Section

¹⁵⁵ Here, Feldmann also cites work of Bruce and Castellani, which indicates that he has more information, and in greater detail, than has passed through either Berlin or through Dar es Salaam. German-era archives in Tanzania and Germany have not yet yielded more detailed correspondence.

¹⁵⁶ Feldmann, Report, October 1903 [Anlage to Götzen, Report, 12/28/1903], BAB, R 1001, 5895. Original text: “...die Centrifugirung auf höchst primitive Weise mit Hilfe des Räderwerks einer Buttermaschine vorgenommen werden musste und bitte die Lieferung und Uebersendung eines Centrifugirapparates als Ergänzung der angekündigten sehr willkommen bacteriologischen Ausrüstung geneigtest erwirken bezw veranlassen zu wollen.” Feldmann’s situation was not unusual, given the complaints of his contemporaries also working in East Africa. A.D.P. Hodges noted in diary entry dated 5/17/1902, “I have dissected a good many mosquitoes & worked very hard, but up to now have found nothing of much importance, which was to be expected with my instruments & no room with light enough for the work. Govt does not yet provide us with microscopes!” Hodges MSS, LSHTM GB 0809 Hodges/01/06. In April 1905, Bruce would advise Gray, a younger member of the British Sleeping Sickness Commission, “You and Tulloch must depend on your own brains and your own imaginations; it is impossible to get much help from people at this distance,” WTI/RST/G27/9.

¹⁵⁷ Greig to Bruce, 3/24/1904, WTI/RST/G27/4.

¹⁵⁸ Feldmann, Report, October 1903 [Anlage to Götzen, Report, 12/28/1903], BAB, R 1001, 5895.

Director Stübel in Berlin cited the scientific training and equipment provided to colonial medical officers as reason not to send a dedicated sleeping sickness research expedition.¹⁵⁹ Corresponding by mail from Bukoba with the central government in Dar es Salaam took at least 1 month, in 1903, while communication to and from Berlin took an additional 3-4 months. Communicating with remotely-stationed colonial medical officers via diplomatic mail could shorten this lag time, as Stuhlmann suggested for providing doctors at Lake Victoria with published British reports with the latest information. By the time Feldmann's report reached Berlin in early 1904, some 4 months after its creation, additional equipment had already been ordered for him and his colleague.¹⁶⁰ The distance and lag time contributed to a sense of remoteness and removal from administrative supervision, as well as unpreparedness, which at times registered in reports as frustration. This is not to say that, had both Stübel in Berlin and Feldmann in Bukoba been equipped with a telegraph and the desire to communicate more quickly, the character of the German anti-sleeping sickness (and Feldmann's sense of his own capabilities) might have been different. But we can connect this marked administrative distance – an inherent aspect of Germany's widely dispersed and loosely connected empire – causally with particular kinds of activity on the ground in East Africa: the implementation of certain established sanitarian measures, an increasing reliance on local networks to supplement individual knowledge, and improvisation of research and prevention measures that were based on relatively new ideas about sleeping sickness circulating in East Africa.

The relatively recent arrival of German colonial forces at Lake Victoria had much to do with the overall lack of preparedness for an epidemic among German colonial medical staff. The German colonial infrastructure – including buildings, roads, and medical materials – was rudimentary at best in 1903, and staff numbers were small. Bukoba and Mwanza were established as military stations in initial gazetting of the territory in 1891, but were not

¹⁵⁹ Oscar Stübel, Memorandum, 10/31/1903, BAB, R 1001, 5895.

¹⁶⁰ Steudel (Kolonial-Abteilung) to Staatssekretär des Innern, 2/23/1904, BAB, R 86, 2622.

transferred to civilian governmental authority until 1906.¹⁶¹ The sleeping sickness epidemic coincided with the expansion of German colonial inroads into the Lakes region, as responding to the epidemic accelerated the deployment of medical staff.¹⁶²

Oskar Feldmann and another staff doctor, Karl Lott, were the only medical staff stationed at Lake Victoria at 1903 (Lott was posted to Mwanza, several hundred kilometers from Bukoba around the lake to the southeast).¹⁶³ Feldmann's initial reaction to African patients with sleeping sickness, from October or November 1902, reveals the resources available in a colonial doctor's toolkit, here deployed with a heightened sense of urgency. Many of Feldmann's ideas were drawn from historically standard European sanitarian practices, draconian and valuing community health over personal liberty.¹⁶⁴ In one illustrative case, upon notification of one case in Kiziba, Feldmann received permission from local authorities (noted only as "the sultan," as Germans called the Haya kings) to look for other sick people recently returned from Uganda. The first person, who had suffered from sleeping sickness for two years, was in the advanced stages of the disease, his body wasted and weakened, and lying in a deep sleep.¹⁶⁵ Finding two additional people he suspected of having sleeping sickness, Feldmann took them from their homes, examined their relatives, and burned down the homes where the people had lived. The three people were then moved to a newly-built isolation building in the Bukoba station's sick bay. One died shortly thereafter, and the other two, in the early stages of the disease, were kept in strict isolation along with the orderlies who tended

¹⁶¹ Juhani Koponen, *Development for Exploitation: German Colonial Policies in Mainland Tanzania, 1884-1914*, (Lit Verlag: Münster, 1994), p.116.

¹⁶² Maryinez Lyons has documented a similar process in Belgian Congo in *The Colonial Disease: a Social History of Sleeping Sickness in Northern Zaire, 1900-1940*, (Cambridge University Press: Cambridge, 1992).

¹⁶³ See Appendix III, Map of the Great Lakes Region.

¹⁶⁴ See Dorothy Porter, ed., *The history of Public Health and the Modern State*, (Rodopi: Amsterdam, 1994); Peter Baldwin, *Contagion and the State in Europe, 1830-1930* (Cambridge University Press: Cambridge, 1999); Anne Hardy, *The Epidemic Streets: infectious disease and the rise of preventive medicine, 1856-1900*, (New York: Oxford University Press, 1993).

¹⁶⁵ Feldmann, Report, October 1903 [Anlage to Götzen, Report, 12/28/1903], BAB R 1001, 5895.

them.¹⁶⁶ This first notification of sleeping sickness occurred during a heated contest for the regency and the ultimate succession of the Ziba throne, exacerbated in aftermath of the death of the king, Mutatembwa, the previous April.¹⁶⁷ As I will discuss further in chapter six, sleeping sickness work, particularly in notification and requests for assistance with local epidemics, provided a new point of connection and conflict between colonial and African authorities and took on political importance.

Feldmann also directed his attention to broader matters of disease prevention, instituting closer scrutiny of people traveling to and from Uganda. He also reported that he would spread information about the dangers of the disease and the necessity of notifying colonial authorities if a person should fall ill. Given his activity in the villages already and the lack of any means to treat or ameliorate the disease, it is difficult to imagine under what circumstances villagers would volunteer information that would lead to removal of a loved one – who himself might not even appear “sick” – and, potentially, destruction of one’s home. Drawing directly on David Bruce’s work in Uganda, Feldmann also directed a cohort of “intelligent natives” equipped with butterfly nets to collect specimens of local tsetse flies from Kiziba, the lakeshore, the Kagera river’s banks, and the banks of small streams flowing into the lake – a massive undertaking for an unnamed number of men.¹⁶⁸ Both his reports on preventive work and the results of the autopsy he conducted referred to the recent research of Bruce and Castellani in Uganda; absent information on sleeping sickness from Berlin, it is likely that clippings from the medical or colonial press provided him with the basics of research to date.

Collaboration and Information-Sharing at Lake Victoria

The exchange of research in progress at Lake Victoria that drew researchers together was complicated by relationships between doctors who had come up in the same national

¹⁶⁶ Feldmann, Report, October 1903 [Anlage to Götzen, Report, 12/28/1903], BAB R 1001, 5895.

¹⁶⁷ Mugana Mission Diary, 3 April 1903, M.Afr. Rome (AGM); see also Austen, *Northwest Tanzania under German and British Rule*, p. 46-47.

¹⁶⁸ Feldmann, Report, October 1903 [Anlage to Götzen, Report, 12/28/1903], BAB R 1001, 5895

academies. Intra-national dynamics brought claims of expertise to the fore, as dedicated sleeping sickness research expeditions arrived in East Africa to work. Sleeping sickness work in East Africa benefited from a widespread desire among tropical medicine researchers to take advantage of new laboratory and experimental methods and to test and re-test new findings, often without a great deal of attention to the national origin of the scientist in question or to the colonial borders that ostensibly separated scientists. In the Lake Victoria basin, particularly along the borders between German East Africa and British Uganda, German and British scientists corresponded with and visited one another at their respective administrative posts and research sites. Connections between British and German doctors were not new; the network within which news, techniques, and strategies of sleeping sickness research traveled was itself built from connections made in investigations of other endemic diseases, including plague and filariasis.¹⁶⁹ But sleeping sickness made the movement of information along these networks more pressing, and, between 1902 and 1904, brought colonial medical officers and sleeping sickness researchers into more frequent contact.

Collaboration and information-sharing in the early months of the sleeping sickness epidemic were not always deliberately planned, as sleeping sickness work fit into a wider concern about infectious diseases in contiguous British and German colonial territories. In November 1902, Oskar Feldmann and Cuthbert Christy, a member of the Royal Society's Sleeping Sickness Commission met at Kifumbiro.¹⁷⁰ Kifumbiro was a key crossing-point of the Kagera River near the German East Africa-Uganda border, and had been a camp on the Karagwe caravan route between Unyamwezi and kingdoms to the north and west of the lake (including Buganda, Nkole, and Bunyoro).¹⁷¹ Christy was likely in Kifumbiro as part of his task

¹⁶⁹ Feldmann, Report "Bubonic plague," 11/26/1902, BAB R 86 2622.

¹⁷⁰ Feldmann. "Bericht: Arbeiten der englischen Kommission zur Erforschung der Schlafkrankheit." 11/26/1902, BAB R 86/2622. Christy was working on surveying populations for *Filaria perstans*, while his colleagues researched the pathogen causing sleeping sickness.

¹⁷¹ On Kifumbiro, see Carl Hermann, "Die Wasiba und Ihr Land," *Mitteilungen von Forschungsreisenden und Gelehrten aus den deutschen Schutzgebieten* (1894), p. 55.

to survey African populations for the parasite *Filaria perstans* (at the time, still suspected of a connection with sleeping sickness), and their meeting does not seem to have been arranged through their respective colonial governments. The two men discussed both sleeping sickness and plague, with Feldmann reporting back to the Colonial Section detailed information about the Ugandan colonial government's approach to endemic plague. Feldmann also learned detailed information about the activities of the three scientists at work for the Commission and their conclusions to date. Feldmann's three-page report to his superiors in Dar es Salaam is a mixture of professional gossip, personal commentary, and scientific data – a quality characteristic of his subsequent work – also reflecting Christy's own sense of the rivalries and responsibilities of the three Commission members. Dr. George Low, Feldmann reported, "hadn't found anything that was not already known," and Christy himself had concluded that *Filaria perstans* had no causative connection to sleeping sickness.¹⁷² Each member of the British Commission worked independently on a different field, and Christy had practically no sense at all of the work of his two colleagues, Feldmann gathered. This is confirmed in a contemporary diary from Ugandan colonial medical officer A.D.P. Hodges, who expressed no surprise that no conclusive results had yet been produced, in April 1902, because the Commission "were 3 young fellows working independently, if not against one another."¹⁷³ Feldmann also reported that the Commission had no experience with the treatment of sleeping sickness. While the Commission had noted a pattern of particular swollen glands in African populations in areas where both sleeping sickness and *Filaria perstans* were found, Feldmann could get no further information on Dr. Aldo Castellani's bacteriological work on a connection between the swollen glands and sleeping sickness.¹⁷⁴

¹⁷² Feldmann, Report "Regarding the English commission for the research of sleeping sickness," 11/26/1902, BAB R 86, 2622.

¹⁷³ Diary of A.D.P. Hodges, 4/22/1902, Hodges MSS, LSHTM, GB 0809 Hodges/01/06.

¹⁷⁴ Aldo Castellani, "Presence of Trypanosoma of Sleeping Sickness," dated 4/5/1903, received 5/8/1903, *Reports of the Sleeping Sickness Commission of the Royal Society*, London, November 1903, p 10. His work was also presented in a paper read to the Royal Society on 5/14/1903, and published in Castellani, "Researches on the Etiology of Sleeping Sickness," *Journal of Tropical Medicine*, June 1, 1903, p. 167-171.

Despite the lack of any groundbreaking news on sleeping sickness, the meeting at Kifumbiro had practical benefits, connecting Feldmann more readily to British research. Feldmann, whose training in bacteriological research appears have to been scant, may have improved his bacteriological technique or been introduced to a means to test disease prevalence.¹⁷⁵ Christy promised to send Feldmann his own reports on *Filaria perstans* and on sleeping sickness; these reports were presumably unpublished, as Feldmann asked the chief medical official of the colonial government to treat them as confidential.¹⁷⁶ Christy and Feldmann also worked together to draw blood from 140 people in the kingdoms of Kianja and Kiziba to test for the presence of *Filaria perstans*. He was so motivated by Christy's findings and their work together, he reported, that he proposed to test 1 in every 100 people in each of the district's areas.¹⁷⁷

While Christy and Feldmann's work together bore no immediate results for sleeping sickness research or prevention in Bukoba, it did lead to the implementation of disease prevention measures on the opposite side of the lake. Christy had informed Feldmann of the extent of the disease's southward spread on the eastern shore of the lake, which Feldmann then communicated to the doctor stationed at Mwanza, Dr. Karl Lott. Within 11 days of Feldmann's report, Lott reported to the central government in Dar es Salaam that he had set up three posts on the Gori River for the "suppression of traffic between natives on this and the other side of the Gori River," citing Christy's assertion that the disease had advanced within a one-day's boat trip north of Shirati.¹⁷⁸ Lott's own discovery of 4 different cases of sleeping sickness – described

¹⁷⁵ Gradmann describes Feldmann's skills as "modest;" they were subject to criticism as the SKB went on. *Laboratory Disease*, p. 212, n. 222.

¹⁷⁶ Feldmann, Report "Regarding the English commission for the research of sleeping sickness," 11/26/1902, BAB R 86, 2622.

¹⁷⁷ Feldmann, Report "Regarding the English commission for the research of sleeping sickness," 11/26/1902, BAB R 86, 2622.

¹⁷⁸ Lott, Report, 12/6/1902, BAB R 1001 5895; Lott. "Bericht über das Auftreten der Schlafkrankheit im Bezirk Schirati." 1/11/1903. BAB, R 86/2622. Original text: "Unterdrückung des Verkehrs zwischen den Eingeborenen auf dieser und jener Seite des Gori;" "eine Bootstagsreise nördlich von Schirati vorgedrungen sei."

only symptomatically, at this point – in people recently returned from working in Uganda led him to suggest increased monitoring of boat traffic and a regular, systematic examination of villages near the border.

Shirati and Bukoba would ultimately become the twin foci for German colonial anti-sleeping sickness efforts at Lake Victoria.¹⁷⁹ Because early epidemiological understandings of sleeping sickness emphasized its spread to the south, Shirati and Bukoba became the first points of defense against the disease in German colonial territory. Correspondence with British researchers who were privy to surveys of populations on the Ugandan side of the border helped German doctors compose a clearer picture of the epidemic and its movements where they worked. In May 1903, a few months prior to confirming cases of sleeping sickness in Bukoba, Feldmann wrote to David Bruce, then at the Sleeping Sickness Commission's main research site in Entebbe, Uganda. Feldmann referred prior correspondence about the extent of the disease in the west, but "was very grateful for a notification about the spread of the disease in the areas neighboring our border, as well as the nature and speed of its progress."¹⁸⁰ Bruce's reply does not survive, but the two wrote throughout the summer of 1903, prior to the publication of the Commission's results that autumn. In August 1903, Feldmann submitted a brief report to the chief doctor of the colonial medical service in Dar es Salaam, citing information from Bruce that established the southernmost reach of sleeping sickness ever closer to the German territorial border. Comparing this to information from the previous November, Feldmann estimated that the disease would reach beyond that border and into German East Africa by the end of 1903.¹⁸¹

¹⁷⁹ Shirati, a smaller outpost and market town on the eastern shore of the lake, lay at greater distance to African communities, which were also smaller in size and more dispersed. The campaign at Shirati lies beyond the scope of my current research. "North Mara Administrative Station," sheets 29, 30, and 41, Mwanza Regional Book, Tanzania National Archives.

¹⁸⁰ Feldmann to Sir David Bruce, 5/20/1903. WTI/RST/G26/24. Original text: "...Benachrichtigung über die Ausbreitung der Krankheit in den unserer Grenze benachbarten Gebieten, sowie über die Art und Schnelligkeit ihres Fortschreitens sehr zu Dank verpflichtet." Feldmann refers to a letter from Bruce dated 4/25/1903.

¹⁸¹ Feldmann, Report, "Betrifft Schlafkrankheit und Surra," BAB R 1001 5895, 8/11/1903.

Expeditions and Intra-National Tension

The higher concentration of scientists conducting research in the Lake Victoria area, the result of posting additional colonial staff and the arrival of expedition teams, fit with a broader increase in attention to sleeping sickness across sub-Saharan Africa and in western Europe. Between 1901 and 1909, eight different expeditions sponsored by European governments and tropical medicine institutes fanned out across sub-Saharan Africa, each lasting at least a year and some resulting in permanent laboratories or research stations in their region of research.¹⁸² The combination of expedition staff – typically considered experts by the national scientific institutions that funded their work – and colonial medical officers stationed in a given area sometimes led to tension and competition for claims on scientific results. German doctors engaging with British colleagues often stepped into the middle of these complex intra-national dynamics.

With the arrival of the three-man British Sleeping Sickness Commission on the scene in 1902, doctors and scientists researching sleeping sickness in East Africa were no longer exclusively members of the British or German colonial medical service. The leading staff of dedicated sleeping sickness expeditions worked alongside but more often drove and directed the research tasks of colonial medical officers. Expedition scientists differed from colonial medical officers stationed at the lake, typically holding teaching positions at metropolitan institutions where colonial doctors may have been trained. They were often well-known for the prior research that made them experts in the eyes of metropolitan scientific academies and colonial policy makers, which had allowed them to marshal resources to get an expedition off the ground, as Koch had. But, while their expertise and prestige at times cut a path through

¹⁸² See John E. Dutton and John L. Todd, "First Report of the Trypanosomiasis Expedition to Senegambia (1902) of the Liverpool School of Tropical Medicine," *Thompson Yates and Johnston Laboratories Reports V* (1903); John E. Dutton and John L. Todd, "Reports of the Trypanosomiasis Expedition to the Congo 1903-1904 of the Liverpool School of Tropical Medicine and Medical Parasitology," *Thompson Yates and Johnston Laboratory Reports VI* (new series) (1905); Gustave Martin, Emile Roubaud, and Alexis Leboeuf, *Mission d'études de la maladie du sommeil au Congo Français*, (Masson: Paris, 1909); Royal Society. *Reports on the Sleeping Sickness Commission*, (Harrison and Sons: London 1903-19); Robert Koch's reports were published serially in the *Deutsche medizinische Wochenschrift*, and are collected in Georg Gaffky and Edward Pfuhl, *Gesammelte Werke von Robert Koch*, (Georg Thieme: Leipzig, 1912).

ongoing work and policies already in place – as happened with David Bruce’s arrival in Uganda, and as we will see with Robert Koch’s work at Lake Victoria in the next chapter – they also depended heavily on the local experience of subordinate colonial medical officers. These medical officers provided an orientation on African mortality and its geographic distribution as well as the local ecology. They also often had more specific training in or experience with African languages and typically had some familiarity with local leaders and communities.

Because expedition research could constitute a wholesale disruption of the established professional hierarchies on the ground, while also demanding a reallocation of resources toward specific, short-term research projects, however, tensions arose. Colonial medical officers set up expedition scientists, typically on orders from the colonial governments: they shared or gave up laboratory space, provided access to patients in local hospitals and clinics, and sometimes worked as assistants. But this could also lead to resentment, as colonial medical officers were drawn away from their other public health responsibilities – without help to cover any normal responsibilities. And while their work was typically not research-focused, medical officers’ own ambitions fed a sense of competition with expedition scientists, whose prominence and access to metropolitan resources and publications could certainly eclipse a colonial officer’s own work product.

A.D.P. Hodges, a district medical officer in Uganda in the early twentieth century, provides a case in point.¹⁸³ Hodges recorded in early 1902, “Got word that I am to go on tour in Kyagwe (NE. Uganda), Buvuma I., Usoga & Kavirondo, investigating the “Sleeping sickness” which has become very prevalent. It will probably take 2 or 3 months, & I wish they had not left it till the wet season is likely to come on.”¹⁸⁴ Hodges continued, “all mad for sleeping sickness now at Entebbe and we get frequent telegrams, many of the instructions being impossible,” and, after the Commission’s members’ arrival, noted “Telegram from PMO

¹⁸³ Anna Crozier, *Practising Colonial Medicine: the Colonial Medical Service in British East Africa*, (I.B. Tauris: London, 2007), pp. 77-80.

¹⁸⁴ Diary of A.D.P. Hodges, 1/19/1902, LSHTM, Hodges MSS, GB 0809 Hodges/01/06.

[Principle Medical Officer] saying I am to prepare to accompany Christy on tour. I do not like it. They did not allow me to go before & now I can do nothing except “small-boy” to the Commission. That is, anything I may do will count to them.”¹⁸⁵ Such personal tensions affected the conduct of research and the design of prevention programs throughout the sleeping sickness epidemic before World War I. Expedition researchers needed the knowledge and expertise of colonial doctors, medical men “on the spot,” who also stood to benefit from the arrival of an expedition. It could mean better resources made available to colonial doctors, or increased attentiveness on the part of the colonial administration to a problem that had long troubled medical officers stationed in a given area. But colonial medical officers such as Hodges often fit in as de facto support staff for expedition researchers, and expeditions were, as Vaughan notes, “rigidly hierarchical” and narrowly focused.¹⁸⁶ Men in Hodges’ position did not operate outside the loop of medical publishing, rather they also contributed to metropolitan and colonial journals and newspapers, and so to a broader body of knowledge. Having to “small-boy” researchers meant a decreased likelihood of publishing independently, and less attention on the colonial scene as well as at home in Europe during periods of leave or when colonial service ended.

Communication and the Shaping of Ideas about Sleeping Sickness

In addition to practical information about the disease’s spread, communication around Lake Victoria in the initial years of the epidemic provided German doctors with a link to ongoing British research. Sleeping Sickness Commission researchers based at Entebbe, particularly after the arrival of David Bruce in Uganda in 1903, sought to establish primacy in defining the causes and course of sleeping sickness.¹⁸⁷ Their work related directly to the overall

¹⁸⁵ Diary of A.D.P. Hodges, 5/26/1902, 7/2/1902, LSHTM, Hodges MSS, GB 0809 Hodges/01/06.

¹⁸⁶ Vaughan, *Curing Their Ills*, p. 37.

¹⁸⁷ Portugese expedition also at work, per Davies, p. 93. “Even while the Commission was in Uganda it heard reports that the Portugese Sleeping Sickness Commission in Angola had isolated a causative streptococcus and confirmatory reports came from Broden in Leopoldville.” They probably learned this

health of the Uganda Protectorate, but, distinct from the Ugandan colonial medical officers, they were not directly responsible for managing the epidemic. Instead, they were experts only temporarily on the scene, and, as such, presented a particular resource for German colonial medical officers. In practical and immediate terms, this meant that Sleeping Sickness Commission researchers' work shaped the direction of German sleeping sickness work locally by establishing scientific terms of art and providing models for the design of experiments and clinical work. The laboratory at Entebbe, in addition to printed reports and word-of-mouth news, became a resource for German colonial doctors interested in coordinating a quick response to the epidemic. Though Ugandan medical officers may have had experience of greater breadth and depth in Uganda itself, they had a correspondingly more expansive set of responsibilities and were also subordinate in the medical hierarchy to the Commission's metropolitan researchers, whose work they were supposed to support.¹⁸⁸ They would, however, become important colleagues for their German counterparts when a formal German sleeping sickness campaign developed after 1907.

Keeping in touch with British researchers also allowed German medical officers to piece together an initial epidemiological survey on sleeping sickness, and set out local prevention measures. Given that this period in the summer and fall of 1903 was also the point at which calls for a German expedition were deferred and caution dominated the colonial government's approach, information-sharing with British colleagues was a means for German doctors to begin to address sleeping sickness without clear instructions from a central authority.¹⁸⁹ Early German reports about sleeping sickness at Lake Victoria, written for both the colonial

by requesting information, relayed through Royal Society, per Malaria Committee meeting minute book, 12/5/1902, RS, CMB 15.

¹⁸⁸ J.N.P. Davies, "The Cause of Sleeping Sickness? Entebbe 1902-03," *East African Medical Journal*, vol. 39, no. 3, pp. 90-98.

¹⁸⁹ The sole instance of mediation by metropolitan colonial officials that I have found to date occurred in March 1903, with the British Foreign Office reaching out to their German counterpart for information about sleeping sickness in West Africa, requesting the completion of a questionnaire. Lascelles (British Embassy) to Baron von Richthofen, 3/20/1903, BAB R 1001, 5876.

government and the Colonial Section of the Foreign Office in Berlin, tracked research results emerging from Uganda. Attention to British research shaped the scientific conventions that German doctors used to address the causative parasite of sleeping sickness. These clues in scientific language point to how German doctors situated themselves relative to other researchers. Doctors Lott and Feldmann followed the terms of art used by British researchers to discuss sleeping sickness. Two instances indicate, in one case, deference to a local and immediate authority, and, in the other, the clout of the medical community at large in defining such terms. Aldo Castellani, the Italian bacteriologist on the British Sleeping Sickness Commission, had developed a “working hypothesis” that the disease involved a streptococcus infection, in the Commission’s first report dated April 4, 1903. Castellani concluded in his brief report, concerned primarily with the results of 34 cases of sleeping sickness, that:

The trypanosoma found in the cerebro-spinal fluid of sleeping sickness does not as far as I have been able to make out differ materially in size and shape from the species one finds in the blood of trypanosoma fever *Trypanosoma Gambiense* (Dutton)...In case it should prove to be a new species, the trypanosoma I have described might be called from the country where I have found it first—*Trypanosoma Ugandense*.¹⁹⁰

German doctors’ initial reports focus more on the presence of symptoms and extent of the epidemic, only referring to their microscopic examinations after the publication of Castellani’s report. Karl Lott’s report of 1903, one of the earliest German colonial reports published on sleeping sickness, referred first to the controversy between Castellani and Bruce over the primacy of recognizing the relation between trypanosomes and Ugandan sleeping sickness, in providing the lay of the land for German readers. He also used Castellani’s nomenclature, referring to the pathogen as “*Trypanosoma Ugandense*.”¹⁹¹ Also in October 1903, Feldmann recounted the microscopic examination of ventricular fluid from cases in Bukoba, reporting

¹⁹⁰ Aldo Castellani, “Presence of *Trypanosoma* of Sleeping Sickness,” dated 4/5/1903, received 5/8/1903, *Reports of the Sleeping Sickness Commission of the Royal Society*, London, November 1903, p 10. His work was also presented in a paper read to the Royal Society on 5/14/1903, and published in Castellani, “Researches on the Etiology of Sleeping Sickness,” *Journal of Tropical Medicine*, June 1, 1903, pp. 167-171.

¹⁹¹ Karl Lott, “Report on sleeping sickness on the Victoria-Nyanza,” 10/6/1903, BAB R 1001, 5895.

presence of “*Trypanosoma Castellanii*.”¹⁹² This different naming was likely the result of Feldmann following German convention. Though implicitly shoring up Castellani’s claim to the trypanosome, Feldmann’s chosen nomenclature in fact reflected the work of a German scientist in the Rhineland, a Dr. Kruse. Castellani’s report, as published in the collected reports of the Sleeping Sickness Commission, also includes a note from August 1903 that Kruse had named Castellani’s new Ugandan trypanosome *Trypanosoma Castellanii* in May 1903.¹⁹³ After Bruce’s work on the trypanosome, and more conclusive connection between it and sleeping sickness in September 1903, as well as his work on the tsetse fly carrier, convention would shift to name the parasite *Trypanosoma brucei rhodesiense*.¹⁹⁴ The ensuing controversy of primacy would dog Castellani and Bruce for decades to come.¹⁹⁵

Acquiring Skills and Establishing Consensus: German work in British laboratories

British researchers also provided an immediate and practical resource for German colonial medical officers. Investigating the spread of the disease and diagnosing it required a solid command of microscopy and knowledge of bacteriology and parasitology – the fundamentals of the new tropical medicine.¹⁹⁶ Specific knowledge of entomology was also essential to identify and differentiate between various species of the fly vector. The epidemic required that those not trained in the necessary research methods acquire them quickly, and, for

¹⁹² Feldmann, Report, October 1903, BAB R 1001, 5895.

¹⁹³ Aldo Castellani, “Presence of *Trypanosoma* of Sleeping Sickness,” dated 4/5/1903, received 5/8/1903, *Reports of the Sleeping Sickness Commission of the Royal Society*, London, November 1903.

¹⁹⁴ David Bruce, David Nabarro, and E.D.W. Greig, “Further Report on Sleeping Sickness in Uganda,” received 9/30/1903, *Reports of the Sleeping Sickness Commission of the Royal Society*, London, November 1903. Bruce’s finding was publicized widely in European journals, most notably in the *British Medical Journal*, 11/21/1903.

¹⁹⁵ John Boyd, “Sleeping Sickness: The Castellani-Bruce Controversy,” *Notes and Records of the Royal Society of London* 28, No. 1 (Jun., 1973), pp. 93-110.

¹⁹⁶ Michael Worboys, “Tropical Diseases,” in Roy Porter and W.F. Bynum (eds), *Companion Encyclopedia to the History of Medicine*, (Routledge: London, 1993); Andrew Cunningham and Perry Williams (eds), *The Laboratory Revolution in Medicine*, (Cambridge University Press: New York, 1992); Burri and Brun, “Human African Trypanosomiasis,” p. 1303.

German colonial doctors, British research and colonial medical service colleagues in Uganda provided the best available resource. During the summer of 1903, Karl Lott, stationed at Mwanza, traveled to Uganda to investigate sleeping sickness.¹⁹⁷ There, he visited David Bruce at Entebbe in a visit arranged by the German East African and Ugandan governments, in a rare case of diplomatic coordination facilitating local research connections. Franz Stuhlmann, head of the Biological and Agricultural Research Station at Amani, reported to the Colonial Section of the Foreign Office in February 1903 that he had requested permission from Ugandan Commission Hayes-Sadler to allow Lott to “be allowed to engage in observations and research on sleeping sickness in English territories,” in order to “get as familiar as possible with the disease, before he had to fight it in our protectorate.”¹⁹⁸ Commissioner Hayes-Sadler assented, informing Bruce in May 1903:

All I know about Dr. Lot [sic] is from a communication I received some months ago from the Governor of German East Africa who said he wished to depute a Medical Officer to investigate Sleeping Sickness in Uganda and asking if I would afford him facilities for doing so. This I readily agreed to. It would seem from this that his will be an independent enquiry conducted by him for his own Government. I shall give him permission to go to the infected districts and make what local investigations he wishes, and I feel sure he would not expect any more than the help you say you would be kind enough to give him.¹⁹⁹

Hayes-Sadler’s permission only granted the official formality of allowing a foreign researcher near the Uganda epidemic. For the visit to bear fruit, Lott depended on British researchers and their welcoming him into their laboratories as a professional and collegial courtesy. David Bruce, for his part, made no objection to Lott’s presence among the Royal Society’s Commission and considered Lott as a colleague, albeit junior in status. Bruce wrote to the Royal Society anticipating the arrival of E.D.W. Greig, a new member of the Sleeping Sickness Commission to begin research in Uganda, mentioning also that “A German Dr. Lott is expected shortly for the

¹⁹⁷ Lott reported returning to Mwanza via Kisumu, a transit point between Uganda and German East Africa, on 10 September 1903, per Lott, “Report about sleeping sickness in Udemu,” 9/18/1903, BAB R 1001 5895. His visit would have had to follow Bruce’s note to Foster dated 5/16/1903, David Bruce to Sir Michael Foster/Royal Society, 5/16/1903, CMB 15, Archives of the Royal Society, London.

¹⁹⁸ Stuhlmann to Foreign Office, Colonial Section, 2/16/1903, BAB R 86, 2622.

¹⁹⁹ Hayes-Sadler to Bruce, 5/13/1903, WTI/RST/G26/19.

same purpose" in late May 1903.²⁰⁰ Observing Bruce, or visiting his laboratory would have been a great opportunity for the relatively isolated German doctor. Bruce was well-known within the tropical medicine and bacteriology communities for his work on *nagana*, a cattle disease also caused by a trypanosomal infection spread by the tsetse fly.²⁰¹

While traveling, observing, and researching independently in Uganda, Lott appears to have focused his energies on gleaning information from the British team led by David Bruce. But a report published in Germany in late 1903 indicates that he spent a productive period of time with the British researchers at Entebbe, observing "numerous and interesting investigations and experiments."²⁰² (A similar visit to Uganda was also slated for the incoming station doctor at Bukoba).²⁰³ Lott arrived in Uganda amid a very productive few weeks for the British researchers. In May 1903, as researchers left and arrived, the new Royal Society Commission came together under Bruce's leadership. His seniority and prominence (and reputation as a strong personality) assured a clearer delegation of work, more rigid hierarchy, and more unified front than in the previous group comprised of Castellani, Low, and Christy. Upon his arrival in March 1903, Bruce hit the ground running, focusing immediately on the trypanosome that Castellani had identified but whose role in sleeping sickness he not explored. Within two months, he had assembled information about the lack of correlation between Africans suffering from sleeping sickness and the presence of *Filaria perstans* in their blood and the positive correlation between those with sleeping sickness and the presence of a

²⁰⁰ David Bruce to Sir Michael Foster/Royal Society, 5/16/1903, RS CMB 15; Götzen to Colonial Section, 12/1/1903, BAB R 1001 5895.

²⁰¹ See Luise White, "Tsetse Visions," pp. 223-24; see Karen Brown, "From Ubombo to Mkhuzi: disease, colonial science, and the control of Nagana (livestock trypanosomiasis) in Zululand, South Africa, C. 1894-1953," *Journal of the History of Medicine and Allied Sciences* 63, 3 (2008), pp. 293-97 on Bruce's research on nagana in South Africa.

²⁰² Karl Lott, "Report on Sleeping Sickness at Victoria-Nyanza," *Sonderabdruck*, "Deutsches Kolonialblatt," no. 4, 1904, p. 2-3. Lott's report was sent to the colonial administration on 10/6/1903, and extracts published as well in the *Medizinal Berichte für die deutschen Schutzgebiete für das Jahr 1903/04, herausgegeben von der Kolonial-Abteilung des Auswärtigen Amtes*, (Ernst Siegfried Mittler und Sohn, Königlich Hofbuchhandlung: Berlin, 1905).

²⁰³ Götzen to Colonial Office, 12/1/1903, BAB R 1001 5895.

trypanosome in their blood. He had also begun to collect information about the various species of tsetse flies, their distribution, and possible role as a carrier, and wrote with confidence to the Royal Society that “I am going on the hypothesis that the *Trypanosoma* is the cause” of sleeping sickness.²⁰⁴

Lott therefore arrived at the Entebbe laboratory in the thick of Bruce’s research, as he determined with certainty that a trypanosome caused sleeping sickness and a biting fly transmitted it from person to person. Lott’s report of September 1903, written after his return from Uganda and included for publication in the *Medical Reports on the German Protectorates*, indicated that the British team confirmed that a trypanosome caused the disease, and also hinted at the role of the tsetse fly in carrying it – but Lott demurred in providing detail, writing that “to report...seemed inappropriate here,” referring to “[Bruce’s] soon upcoming publication.”²⁰⁵ That Lott’s visit coincided with a crucial period in British research may have been mutually beneficial – he worked, for a time, on the cutting edge of sleeping sickness research, but also may have provided Bruce with information from the wider literature on trypanosomal diseases in German that Bruce constantly requested from London.²⁰⁶ Lott remained in contact with E.D.W. Greig in the coming years, whose time at Entebbe overlapped with his own, providing a point of connection for other German doctors stationed around the lake as Greig continued his own work as part of the British Sleeping Sickness Commission.²⁰⁷

And so what were the consequences of Lott’s work among British research in Uganda? A comparison of Lott’s reports before and after his trip allows us to gauge the impact that working in David Bruce’s laboratory had on his approach toward sleeping sickness, and also provides a glimpse into the diffusion of Bruce and the Royal Society team’s findings about the cause and spread of the disease among scientists working locally. Lott returned to the southern

²⁰⁴ David Bruce to Sir Michael Foster/Royal Society, 5/16/1903, RS CMB 15.

²⁰⁵ Lott, “Report on Sleeping Sickness at Victoria-Nyanza,” p. 5.

²⁰⁶ See Bruce to Sir Michael Foster, Royal Society, 4/5/1903, 4/12/1903, and 5/16/1903, RS CMB 15.

²⁰⁷ See Greig to Robert Ahlbory, 9/22/1904, and Ahlbory to Greig, 11/9/1904, WTI/RST/G27/5.

coast of Lake Victoria with new and more detailed information about sleeping sickness and about British guidelines for its prevention. A period of 9 months separated Lott's initial reports that survive from the eastern lakeshore districts, dated December 6, 1902 and January 11, 1903, and his reports completed after his return from Uganda, dated September 18, and October 6, 1903 (the latter of which was published as his "Report on Sleeping Sickness at Victoria-Nyanza" in the *Deutsches Kolonialblatt*). The greatest departure from his previous reports of encounters with sleeping sickness patients, is an emphasis on, first, the laboratory methods used to diagnose the disease, and, second, the range of prevention measures possible to combat the tsetse fly vector. Lott's initial report focused on notifying his superiors about suspected cases of sleeping sickness in the region and detailing their provenance, describing the epidemic surrounding them, and outlining attempts at isolation and prevention. He discussed the implementation of traditional public health measures aimed at controlling the flow of people between areas understood as infected with and free from sleeping sickness. He reported the establishment of "three posts for the suppression of traffic between this and the other side of the Gori River," at the three known fords of the river, the natural border between the German and British protectorates on the eastern lakeshore.²⁰⁸ Boats and vehicles traveling from Kisumu (the primary lake port in British East Africa) and overland into the district should be subject to "particular attention" by the Shirati health officer, though Lott noted that a wholesale quarantine of boats coming from Kisumu would be "misplaced," with the consequence that boats would land on some other point of the coastline and lake traffic would therefore fall completely out of colonial inspection.²⁰⁹ The German colonial presence on the eastern shore of

²⁰⁸ Lott, Report "Regarding Sleeping Sickness," 12/6/1902, BAB R 1001, 5895, p. 1. Original text: "Die Grenze zwischen unseren und dem britischen Gebiet bildet hier der Gorifluss, und da dieser nur an 3 Stellen Furten hat, so hat der Stationschef von Muanza auf meinen Vorschlag 3 Posten zur Unterdrückung des Verkehrs zwischen den Eingeborenen auf dieser und jener Seite eingerichtet, so dass es möglich, erscheint die Einschleppung der Krankheit auf diesem Wege zu verhüten."

²⁰⁹ Lott, report, 12/6/1902, BAB R 1001, 5895, p. 1. Original text: "...habe ich mich darauf beschränkt, dem Sanitätsunteroffizier in Schirati besondere Aufmerksamkeit bezüglich der von Kisumu kommenden Fahrzeuge zu empfehlen. Alle aus Kisumu kommenden Booten in Schirati einer Quarantäne zu unterwerfen, halte ich für unangebracht, da diese Massregel zur Folge haben würde, dass die Fahrzeuge

Lake Victoria was neither broad nor deep – meaning that possibilities were limited.

Lott visited the Gori River area and Shirati district himself within the month between December 1902 and January 1903, noting at least four certain cases of advanced sleeping sickness from villages along the Gori River.²¹⁰ His report provided a more detailed picture of familial ties connecting villages in German East Africa with migrant labor to Uganda, indicating how epidemic sleeping sickness had affected these connections:

Four months ago, two of these four natives came to the aforementioned village and explained that both their companions had suffered from an evil disease that was now carrying off very many people in the English territory, and they themselves did not want to stay there any longer for fear of the disease, rather settle permanently with their relatives.²¹¹

Each of the sick people had been brought to an “isolation station” by the sanitation officer stationed in Shirati or by their relatives. Here, Lott recounted the travelers’ narrative to document where the disease was coming from – how sleeping sickness reached German territory. Lott treaded a line between insisting that sleeping sickness was not yet epidemic in German territory and acknowledging the need for greater resources and further investigation to deal with the cases that were already there.

The colonial medical officer’s emphasis on where the disease came from paralleled descriptions of how it appeared in the stricken. Lott described the basic medical information about each of the four cases – their age, their symptoms. Their “pronounced signs of sickness,” eliminated any doubt of his diagnosis of sleeping sickness in each case:

The boy complains of great exhaustion and pain in the whole body, especially on the back of his head, his gait is unsteady and swaying; by the young man is the desire to sleep still more strongly developed; when awoken, he gives, slowly and unwillingly, yet

an irgend einem anderen Punkt der Küste landteten und der Seeverkehr auf diese Weise gänzlich der Kontrolle entzogen würde.”

²¹⁰ Lott, “Report on the appearance of sleeping sickness in Shirati district,” 1/11/1903, BAB R 86, 2622, p. 1.

²¹¹ Lott, “Report on the appearance of sleeping sickness in Shirati district,” 1/11/1903, BAB R 86, 2622, p. 2. Original text: “Vor etwa 4 Monaten kamen von diesen 4 Eingeborenen nur 2 in das genannte Dorf und erzählten, daß ihre beiden Genossen einer bösen Krankheit erlegen seien, die im englischen Gebiet jetzt sehr viel Leute dahinraffe, und sie selbst wollten aus Furcht vor dieser Krankheit nicht länger drüben bleiben, sondern sich dauernd bei ihren Verwandten niederlassen.”

quite specific and clear answers, and then immediately falls asleep again, while the elderly man can no longer be woken from his sleep at all.²¹²

Lott's description of the sick were typical, focusing on the inability to walk well and to stay awake. This litany of symptoms, evocative and strange, persisted in medical reports even after the bacteriological diagnosis of the disease was possible – onset and severity of symptoms would continue to provide an idea of how long a person had suffered from sleeping sickness and also allow the categorization of distinct “phases” of illness. In early 1903, as this demonstrates, sleeping sickness was for Lott only a collection of symptoms – a clinical entity but not yet a bacteriological or parasitological entity, found among the sick but not yet in the laboratory.

Addressing sleeping sickness as a disease linked to migration and travel allowed Lott to comment on the futility of border closures and large-scale quarantines, but also to emphasize the potential benefit of measures toward isolating sick individuals. Quarantining the villages, he argued, would be impossible given the large number of askari it would require, and also due to the likelihood that it would be at best a doubtful success, and more likely would lead to displeasure and “passive resistance” among the population. Neither was Lott willing to resort to “forcible intervention,” depending instead on educating the local population about the disease's dangers (he cited the case of one family bringing in a sick relative as indicative of the people's understanding and “obligingness”).²¹³

But this “obligingness” from people living near Shirati and Lott's rejection of “violence” are a deceptive gloss, obscuring his and another German colonial officers' activities in the weeks and months prior. The relationship between German colonial authorities and Luo villages near

²¹² Lott, “Report on the appearance of sleeping sickness in Shirati district,” 1/11/1903, BAB R 86, 2622, p. 3. Original text: “Der Junge klagt über große Mattigkeit und Schmerzen im ganzen Körper, besonders im Hinterkopf, sein Gang ist unsicher und taumelnd, bei dem jungen Mann ist die Schlafsucht noch viel stärker ausgebildet, er gibt, wenn geweckt, zwar langsam und widerwillig aber doch deutlich und klar Antwort, um gleich darauf wieder einzuschlafen, während der Greis aus seinem Schlaf überhaupt nicht mehr zu erwecken ist.”

²¹³ Ibid., p. 4. Lott called the Luo “Wagaia,” in line with German convention at the time designating Nilotic peoples of the eastern lakeshore “Wagaja” or “Wageia.” See “Wagaja,” *Deutsches Kolonial-Lexikon*, vol. III, p. 653.

Shirati was not one of cooperation or mutual understanding. In one case in November 1903, after examining the remaining inhabitants of the villages where the sick had lived without finding any further suspected cases, Lott ordered the homes of the sick and dead to be burned down. Lott's actions here were certainly placed in the context of a decidedly violent interaction less than a year prior. A colonial army officer, Lt. von Schach, had made his way through the area around the Gori River on a tour that purported to combine disseminating information about sleeping sickness with an assertion of German colonial power among local chiefs. Von Schach summoned people at several villages to a "shauri," instructing them to send their sick to Shirati and recording information about crops and harvests; he also deployed askari to outlying posts.²¹⁴ At a village called Utende, however, people answered his order for the "shauri" by vacating their homes. The following day, von Schach took four soldiers to the village and found all the women and children gone, and "50 or so men in full war regalia."²¹⁵ The askari fired shots and villagers fled – von Schach's report gives no indication of injuries or deaths, noting only that he and his soldiers did not pursue the armed men because they were outnumbered and the country was hilly. But he burned down the home of the village's leader and departed. We can well imagine that people in the area, faced with von Schach's and Lott's incursions, might have refused to distinguish Lott's "instructions" and his exploratory tour from von Schach's violent foray. It is likely, given the outcome of an investigation of other Luo villages by a military official and sanitation officer the prior month in both burning of huts and shooting at a group of armed, that the colonial government's efforts to find the sick were characterized by coercion and violence from their outset on the eastern lakeshore. These initial, violent incursions into Luo villages near the Shirati station call to mind Cooper's formulation of colonial power as "arterial": "concentrated spatially...and in need of a pump to push it from

²¹⁴ The "shauri" was a formal meeting of colonial officials and African leaders used for legal and political ends throughout the German colony. See Michael Pesek, "Cued Speeches: the emergence of *shauri* as colonial praxis in German East Africa, 1850-1903," *History in Africa* 33, (2006), pp. 395-412; Jan-Georg Deutsch, "Celebrating power in everyday life: the administration of law and the public sphere in colonial Tanzania, 1890-1914," *Journal of African Cultural Studies* 15, no. 1 (2002), pp. 93-103.

²¹⁵ Von Schach, Report to Stuhlmann at Dar es Salaam, 12/24/1902, BAB R 1001 5895, p. 3.

moment to moment and place to place.”²¹⁶ Seeking out sleeping sickness provided, in this particular local context, the push necessary to bring the coercive power of the German colonial military to bear at the time.

Traces of British Research in German Reports

After spending several weeks in Uganda with British researchers and colonial doctors in July and August 1903, Lott’s description of sleeping sickness in the eastern lake districts changed, as did his suggestions for combating the disease. Lott’s report on sleeping sickness in Uдеми (on the Gori River) began not by describing the sick, but by stating that he had “established that the tsetse fly, *Glossina palpalis*, which carried the causative agent of sleeping sickness, is also found in our area.”²¹⁷ The report provided detailed information about the extent of the fly’s habitat on the river, giving its breadth and length in meters. Lott also indicated that the local king in Obo had posted workers to begin cutting back the fly’s bush habitat to be “burned down and deforested.” Now with 7 positive cases at Shirati’s station, Lott concluded that they had all been infected in Uganda and carried the disease to the area. This fact made unnecessary any “further measures against the disease” apart from those already begun, which included the “eradication of flies, isolation of the sick, educating the natives, and limiting the border traffic on the Gori as much as possible.”²¹⁸ Lott’s report is pervaded by a cautious optimism that the epidemic might remain localized and its outbreak due only to migration, but this optimism was at once tempered by his certainty that African travel could not be wholly limited or redirected within a district where more and more tsetse flies were sure to be found.²¹⁹ Writing to medical authorities in Dar es Salaam, but likely expecting an audience in the Colonial Section’s Berlin headquarters as well, Lott foregrounded the importance of the fly

²¹⁶ Cooper, “Conflict and connection,” p. 1533.

²¹⁷ Karl Lott, “Report on sleeping sickness in Uдеми,” 9/18/1903, BAB R 1001 5895, p. 1.

²¹⁸ Karl Lott, “Report on sleeping sickness in Uдеми,” 9/18/1903, BAB R 1001 5895, p. 1.

²¹⁹ Lott, “Report on sleeping sickness in Uдеми,” p. 1. Lott notes that Obo controls both sides of the Gori.

vector.

Lott submitted a more detailed report within two weeks; the *Deutsches Kolonialblatt* published the report in 1904, making it the first article on sleeping sickness from a German East African colonial official. The language and content of this more formal report reflects its likely aim at a wider audience, and the report approached the problem of sleeping sickness in subsections oriented around the disease's cause, transmission, diagnosis, duration, and prevention. Lott gave due credit to David Bruce's recent work, recounting Bruce's narrative of discovering the trypanosome and Bruce's work with cattle trypanosomiasis (*nagana*) as well as to Castellani's work. The report reveals that Lott's time in Uganda yielded not only guidelines for examining and disrupting the fly carrier's habitat, but also, evidently, experience behind the microscope in British researchers' laboratories. Microscopy and detail of bacteriological laboratory work were absent in Lott's prior reports on sleeping sickness, but he here included detailed descriptions of how to centrifuge blood to isolate trypanosomes for examination.²²⁰ More broadly, Lott's post-Uganda writing relied more heavily on Latin scientific nomenclature, as well as the clinical details of the disease's progress, described through changes in body temperature and onset of tremors and weakness in different parts of the body.²²¹ Here, the technical details of the fly habitat, the trypanosome in the laboratory, and clinical processes of illness came to the forefront.

Despite perceptions in Berlin that competition motivated German interest in sleeping sickness, German doctors do not appear to have been reluctant to recognize the expertise of their British colleagues. Their pursuit of more complete information, however, took the recommendations of the German Colonial Section to keep tabs on British work a step further. As scientists continued to research the spread of the disease and consider different anti-disease

²²⁰ Lott, "Report on Sleeping Sickness at Victoria-Nyanza," 10/6/1903, BAB R 1001, 5895, p. 5.

²²¹ Lott, *ibid*, p. 2-4.

strategies, communication continued.²²² British doctors, correspondingly, wrote to German doctors around the lake inquiring about the presence of the disease, and in at least one later case, visited a German station to observe disease control and treatment measures in place.

Given the acute nature of the epidemic, the nature of this communication – directly between individual scientists at work in East Africa – occurred largely without mediation from metropolitan authorities or any formal diplomatic introduction. Official diplomatic introductions may also have been deemed unnecessary because, apart from David Bruce and the two other members of the Sleeping Sickness Commission, all of the men investigating the disease were members of the colonial medical service in some capacity and were required to report to the colonial administration.

Conclusion

This chapter explored the relevance of international tropical medicine communities and their attendant networks during the early years of sleeping sickness research between 1902 and 1905. International interest in the disease provided a basis for German scientists and colonial government officials to advocate for an independent German research expedition. However, competing interests and differing opinions among the various government offices with a stake in the colonies stymied quick action on an expedition. Interest in the disease in metropolitan Europe was balanced by, but never smoothly coordinated with, laboratory research and field investigations in East Africa. In the absence of a well-coordinated approach, physicians, scientists, and administrators in East Africa relied upon local, and sometimes inter-colonial, connections to gather information about the extent of the sleeping sickness epidemic, learn laboratory techniques and clinical skills, and share developing information about the cause and transmission of the disease. Information-sharing in East Africa changed the capacity of German

²²² In one example, in September 1904, E.D.W. Greig (in Entebbe) wrote to Robert Ahlbory (in Mwanza), asking if sleeping sickness was present in the Mwanza district, if a “trypanosoma infection” occurred without sleeping sickness, and how numerous cases were; if *G. Palpalis* flies were found, where, and in what kind of place. Greig mentioned that Dr. Lott had promised “to obtain the information for me,” but was then on leave. E.D.W. Greig to Robert Ahlbory, 9/22/1904, WTI/RST/G27/5.

doctors to respond to and investigate new cases of sleeping sickness and contributed to the sense of an inter-connected, regional epidemic requiring the energies of multiple colonial administrations across borders and communities.

Further analysis of governmental, institutional, and personal manuscript sources will indicate how inter-colonial relationships, such as those between German and British scientists, affected sleeping sickness research and the development of ideas about both the disease and its control. Several preliminary conclusions are, however, possible. First, whereas national allegiances and scientific rivalries were important factors in research in East Africa, coordination between administrators and scientists indicates that the influence of national scientific schools or national-colonial styles of disease prevention should not be overstated. Both metropolitan institutions and colonial administrations were subject to internal divisions and policy disagreements, and scientific academies were rife with intra-national jockeying for power and clout. Particularly in the early stage in sleeping sickness work in East Africa, sharing of information occurred, and went hand-in-hand with the protection of individual scientific achievements and appeals to wider transnational professional networks. Secondly, despite the novelty of sleeping sickness as an epidemic disease in East Africa, prior experience with domestic and colonial epidemics shaped administrative and scientific approaches to sleeping sickness. Sleeping sickness researchers referred frequently to their experience in malaria research and anti-malaria campaigns, both in terms of disease epidemiology and public health interventions. Plague, smallpox, cholera, and typhus were also points of reference with regard to designing both research methods and anti-disease campaigns. This point of expertise, for scientists, was read as a point in favor of caution by colonial administrators. The novelty of sleeping sickness, in addition to the sheer distance separating metropolitan policy-makers from contemporary events, proved a significant obstacle to German scientists' arguments in favor of an independent expedition. In the case of early attention to sleeping sickness, tension between different departments and interest groups in the German government was a challenge to

organizing research; research proceeded, despite this, because of connections fostered by the tropical medicine community.

Tropical medicine has been cast, historically, as following the priorities of empire, if not the prerogatives of colonial administrations and interests. Nationalism in tropical medicine has arguably been over-determined. While intimately linked with colonial concerns, and shaped by men whose experience in colonial medical services defined its practice, tropical medicine did not always follow the interests of empire in lock-step. Metropolitan scientists and colonial service doctors, part of this young community, shared a common sense of urgency about sleeping sickness and based that sense of urgency on information flowing across a transnational and inter-colonial network. Diseases had always transcended arbitrary political boundaries, but tropical medicine now encouraged a more directly transnational approach to research. Its institutions were explicitly international and the realities of its practice ensured that colleagues of diverse nationalities followed one another's work

Chapter Four

Expeditions and Expertise in East Africa, 1906-07

Introduction

This chapter picks up the narrative of sleeping sickness research during the German expedition led by Robert Koch between April 1906 and November 1907, with particular attention to the negotiations and accommodations in East Africa that shaped the expedition's work. It explores the *ad hoc* character of research on sleeping sickness treatment and prevention, and seeks to understand the range of experiences for the African communities intimately involved in that research. Here, I locate the German expedition's path within patterns of migration and commerce around Lake Victoria established in the two centuries prior. I analyze the expedition as a chase after patients, flies, and parasites around Lake Victoria that hopscotched between colonial stations, mission settlements, and African communities along the lake. Pursuing the local history of sleeping sickness, this chapter follows the German expedition's pursuit of trypanosomes and tsetse flies, seeking to de-center traditional narratives of tropical medicine research and to better understand the intertwined social and scientific aspects of medical research in East Africa.

This history of sleeping sickness research focuses on the impact of people and ideas in circulation around the lake, in deliberate contrast to histories of tropical medicine research that follow the work of eminent men. Here, understanding prominent scientist Robert Koch as one of many people involved in the German expedition's work in East Africa, I situate his activities within the regional history of sleeping sickness and focus on the contingencies and uncertainties of research encounters.²²³ Koch did not work in isolation, but rather within Sesse and Kome island villages, alongside French-speaking missionaries, and in the company of colonial military officers. In this chapter, I build a narrative of sleeping sickness around the processes and experiences of research. I begin with the goals and intentions set forth for the expedition by

²²³ Warwick Anderson, "Natural Histories of Infectious Disease: Ecological Vision in Twentieth-Century Science," *Osiris* 19 (2004), pp. 39-61.

colonial and public health officials in Berlin in 1905, and with Koch's general expedition to East Africa – two simultaneous episodes that shaped the 1906-07 expedition. Koch's 1905 expedition laid the groundwork for subsequent research in East Africa by connecting him with capable colonial doctors, who worked as his assistants, and networking with men in positions of scientific or medical authority in the regional colonial governments. I then turn to the German sleeping sickness expedition's work around Lake Victoria in the fall of 1906.

I first address allegations of poor research work leveled discreetly at a colonial medical officer assisting Koch's investigations, and the ease with which the work of outside experts was seen as a corrective to scientific uncertainty. The predicament of that doctor, Oskar Feldmann, reveals the imprint of scientific and professional hierarchies defining who was a reliable expert, and who was simply a local informant assisting a larger project. I then explore the circumstances leading to Koch's assertion that sleeping sickness was neither endemic nor epidemic in German East Africa. This idea connected with ideas about Uganda as the ultimate origin of the epidemic, and the disease's prevalence among travelers who were defined as non-local or simply "not from here" by administrators and doctors. In contentious processes of research at Mwanza, and later at Kome Island, we see how assertions of expertise and changing conceptions of the association between mobility and disease shaped relations in which doctors, missionaries, and African villagers became entangled.

This narrative uses as its touchstone the human tragedy of death and illness, unfolding amid unpredictable and contested medical work, to construct a local history of sleeping sickness research at Lake Victoria. I address African agency in creating contested, unstable processes of research. Several sets of encounters shaped ideas about sleeping sickness, its spread, and its prevention, all of which had far-reaching consequences for African communities around the lake. The encounters between scientists with different kinds of expertise, between those scientists and European missionaries, and between European missionaries and scientists and African villagers, migrants, and patients each pushed the German sleeping sickness expedition

toward a focus on treatment and prevention of sleeping sickness, and, ultimately, to a primary research site on the Sesse Islands of colonial Uganda.

Preparations and Practicalities for the Expedition

The German sleeping sickness expedition, backed by financial and logistical support from Berlin that had been hastily assembled during the summer of 1905, was tasked with a set of broad-ranging and complex potential goals. Its aims were not well-defined: all possible “further research” on trypanosomes, tsetse flies, and sleeping sickness theoretically fell under its purview. A memorandum of the Imperial Health Office drawn up between May and July 1905 guided the expedition’s preparation and set out its research agenda. The memorandum was itself a consensus-building measure, and circulated within the Imperial Health Office, and also likely to representatives of the Foreign Office’s Colonial Section, the Imperial Treasury and Imperial Health Office, the Prussian Ministry of Health, Education, and Cultural Affairs, the Hamburg Institute for Maritime and Tropical Diseases, and Berlin’s Institute for Infectious Diseases. Each institution was also represented on an initial advisory committee convened in April 1905 to consider an expedition.²²⁴ Scientists experienced in protozoology and bacteriology developed the memorandum, in consultation with prominent officials from the Hamburg tropical medicine institute and the Foreign Office’s Colonial Section.²²⁵ Research priorities fell broadly into four different categories: firstly, understanding the meaning of the trypanosome parasite for the disease as clinically observed, and how it caused the symptoms of sleeping sickness and/or “trypanosome fever,” and how each ended in death; secondly, determining what insects could carry the disease, what animals might serve as alternate or intermediate hosts for the parasite, the habitats of each, and how this fit into the disease’s epidemiology;

²²⁴ Various, ““Aufzeichnung über die am 7. April 1905 im Reichsamte des Innern gepflogene kommissarische Beratung über die Entsendung einer wissenschaftlichen Kommission zur Erforschung der Schlafkrankheit,” BAB R 68, 2613. Koch’s opinion was represented by the Prussian Ministry for Education, Medicine, and Cultural Affairs, see p. 2.

²²⁵ See Gradmann, *Laboratory Disease*, p. 206; see Emil Steudel to President Bumm, 7/5/1905, BAB R 68, 2613; Bernhard Nocht to Köhler, 7/15/1905, BAB R 68, 2613.

thirdly, developing treatments for the disease by expanding prior work with arsenicals and chemical dyes to kill the parasite in the human body; and fourthly, testing measures to prevent the disease, either in human populations or in the fly vector and its natural environment.²²⁶ Each related closely to the other, fitting within an understanding of vector-borne diseases in tropical medicine that cast a wide net to determine where and how a sanitary or medical intervention might be made to halt an epidemic.

Though the expedition aimed at working with the current epidemic in East Africa, the memorandum's authors took pains to remind their readers, the expedition's metropolitan stakeholders, and likely its funders, of the wider relevance of trypanosome research. Approaching the expedition, and its contribution both to international research and colonial health, as important to Germany's place among nations linked national prestige with colonial activity. Echoing the sense of obligation articulated by Koch and other scientists who initially pushed for an expedition in 1904, the memorandum asserted that Germany was "honor-bound" to take part in efforts – already begun by other nations – to research and combat the African epidemic.²²⁷ Along pragmatic economic lines, the expedition would help to protect the profitable German interests on the East African coast, as well as the white settler communities in the Usambara Mountains and their plantations. German East Africa occupied a vulnerable position geopolitically and epidemiologically, threatened by the epidemic as it traveled along traditional human paths locally at Lake Victoria, but also endangered by recent inroads made by railways connecting the lake, the coast, and other agricultural or military installments in both Uganda and German East Africa. The memorandum played upon the sense that sleeping sickness could, and would, spread from the Great Lakes region to other areas of the colony,

²²⁶ Various, ""Aufzeichnung über die am 7. April 1905 im Reichsamte des Innern gepflogene kommissarische Beratung über die Entsendung einer wissenschaftlichen Kommission zur Erforschung der Schlafkrankheit," BAB R 68, 2613.

²²⁷ "Denkschrift über die Entsendung einer wissenschaftlichen Expedition zur Erforschung der Schlafkrankheit," various, Fred Neufeld (Imperial Health Office), BAB R 86, 2613, p. 7.

either by well-established caravan routes or by new rail or steam routes, and threaten better-developed plantation agriculture and colonial commerce.²²⁸

The significance of sleeping sickness for the German colony also fit into the disease's broader relevance for European science and public health. As a complex disease, caused by a parasite that required a life cycle in both its human host and insect carrier, sleeping sickness afforded analogies to an entire category of modern diseases. Studying it could illuminate "diseases caused by similar pathogens and transmitted in similar ways," even some "native in Europe."²²⁹ Sleeping sickness readily invited comparisons to other vector-borne diseases caused by complex micro-organisms.²³⁰ Malaria, the closest analog to sleeping sickness, no longer posed a threat to northern Europe, but remained in the Mediterranean and occasionally flared up on the northern German coast.²³¹ Cholera, which had struck the European continent only a decade before, was well understood but not perfectly controlled. The cause and transmission of

²²⁸ The concern that sleeping sickness could spread throughout Africa and beyond was widespread, particularly in Britain. See David Bruce to Commissioner and Consul General of British East Africa, 6/30/1903, WTI/RST/G/26/28; Minute from Foreign Office, 1/24/1902, NA/FO 2/828; Letter to Secretary of State for India from Kitchener, Curzon, Raleigh, Law, Elles, Arundel, and Denzil Ibbetson, 8/27/1903, NAB, FO 2/828; Minutes of Tropical Diseases Committee, Royal Society, 7/27/1905, RS CMB 50; Gudowius, "Bericht über die Ausbreitung der Schlafkrankheit im Bezirk Bukoba, die Ursachen ihrer Einschleppung und die Massnahmen, die zur Verhinderung ihrer weiterverbreitung getroffen werden können," 5/31/1908, BAB R 1001, 5898; Koch, Memorandum on Sleeping Sickness to Prussian Ministry of Culture, 7/30/1904, BAB, R 86 2613. See also Gradmann, *Laboratory Disease*, pp. 203-205.

²²⁹ "Denkschrift über die Entsendung einer wissenschaftlichen Expedition zur Erforschung der Schlafkrankheit," various, Fred Neufeld (Imperial Health Office), BAB R 86, 2613, p. 7. Original text: "Das Studium der Schlafkrankheit kann unter Umständen wesentlich gefördert werden, wenn dabei andere, auf ähnlichen Erregern beruhende und in ähnlicher Weise übertragbare Krankheit gefundenen Resultate vielleicht neues Licht auf andere Krankheiten zu werfen vermögen, und zwar auch auf solche, die in Europa heimisch sind."

²³⁰ *Ibid.*, p. 7.

²³¹ Frank Snowdon, *The Conquest of Malaria: Italy, 1900-1962*, (New Haven: Yale University Press, 2006). Manuela Bauche's forthcoming dissertation addresses parallels between German anti-malaria programs in Europe and in colonial East Africa and Cameroon. Manuela Bauche, "Zwischen Metropolen und Peripherien. Malariabekämpfung in Kamerun, Ostafrika und Ostfriesland, ca. 1880-1920," PhD Dissertation, University of Leipzig, forthcoming.

typhus was not yet known.²³² Broadly, advocates believed that research on the African continent could be applied to improve lives in Europe.

Dedicated expeditions held the promise of bringing information on tropical diseases from Africa back to European research institutes directly, where it could be interpreted and understood. According to one of Koch's colleagues, expeditions were preferred over working with the scant number of patients who survived "new" diseases and traveled to Europe, and were far easier than attempting to build suitable laboratories in the tropics.²³³ Koch seized the prize of the sleeping sickness expedition through a complicated set of maneuvers aptly characterized by Gradmann as ruthless. He positioned himself as leader of the expedition in part because of his command of the theoretical and technical skills required in the laboratory, but also due to his experience in dealing with the practical matters of a public health campaign. Although the memorandum enumerated several avenues for further research, including the etiological "importance" of the causative parasite, the possibility of other insect carriers as well as host animals, and the development of trypanosomes in the fly carrier, the expedition would ultimately be more concerned with practical prevention and treatment of the disease.²³⁴ Though Koch's expertise truly lay in bacteriology and microbiological investigation, the expedition's wide-ranging concerns required the broader skill set of the tropical medicine practitioner in entomology, zoology, parasitology, and hygiene or sanitation – in claiming leadership, he effectively positioned himself as an expert in tropical medicine. Koch's action to secure his leadership of the expedition came late in the expedition's planning and after his return to Berlin in the fall of 1905 after a year's research abroad; in fact, the development of the planning memorandum occurred simultaneously with Koch's 1904-05 expedition in East Africa.

²³² See Victoria A. Harden, "Typhus, Epidemic," and Reinhard Speck, "Cholera," in Kiple, ed., *Cambridge World History of Human Diseases* (Cambridge University Press: Cambridge, 1993), pp. 1080-1084, pp. 642-48.

²³³ Claus Schilling, Report on meeting of the British Medical Association and visit to Liverpool, August, 1905, GStAPK I. HA Rep 76 VIII B, file 2908.

²³⁴ Gradmann, *Laboratory Disease*, pp. 206-210.

The 1904-05 Expedition: Gathering Data and Building Relationships

Koch's 1905 expedition shaped the sleeping sickness expedition that he would lead in 1906. It cemented his claim to be an expert in tropical diseases, provided him with a cohort of assistants familiar with East Africa, and connected him with a network of British researchers at work in Uganda. His trip entailed ten months of research in East Africa between January and October of 1905, during which time he traveled around the colony studying relapsing fever and African coastal fever, researching local plague outbreaks and, ultimately, working on trypanosomiasis infections in cattle and humans (*nagana* and sleeping sickness, respectively).²³⁵ Koch's his time in East Africa was characterized by short stops around the colony and the lack of a single research priority; his primary goal was not research on either sleeping sickness or *nagana* (cattle trypanosomiasis). By the trip's end, Koch's interest had been piqued, as he wrote to his colleague Georg Gaffky, now head of the Institute for Infectious Diseases, that he had "learned and experienced much" with regard to trypanosomiasis infections in cattle, and had succeeded in identifying trypanosomes in tsetse flies himself.²³⁶ His commitment to further research was clear and personal in a subsequent letter to Gaffky, where he confessed: "Especially close to my heart is the study of trypanosomes, which in effect contain the key to further research on sleeping sickness."²³⁷

Relying on his work around the East African colony in 1905, Koch could then, in 1906, authoritatively claim personal research experience with sleeping sickness, its carrier, and its environment. This positioned him to assume leadership of a dedicated sleeping sickness

²³⁵ Brock, *Robert Koch*, p. 262-3; Koch, "Vorläufige Mitteilungen über die Ergebnisse einer Forschungsreise nach Ostafrika," in Gaffky, ed., *Gesammelte Werke von Robert Koch*, (Leipzig: Thieme, 1912), vol. 2-1, p. 477.486.

²³⁶ Koch to Gaffky, 5/3/1905, quoted in Möllers, *Robert Koch*, p. 298. Original text: "Dann habe ich viel in Bezug auf Tsetse gelernt und erfahren, und es ist mir gelungen, die Trypanosomen in der Tsetsefliege nachzuweisen. Sie machen offenbar einen bestimmten Entwicklungshang in der Fliege durch, was ich auf dem Rückmarsche zur Küste, wenn ich wieder in einen fly-belt komme und Gelegenheit haben werde, viele Glossinen zu erhalten, hoffentlich noch genauer feststellen kann."

²³⁷ Koch to Gaffky, 6/25/1905, quoted in Möllers, *Robert Koch*, p. 299. Original text: "Namentlich liegen mir die Trypanosomenstudien am Herzen, welche eigentlich den Schlüssel zu den weiteren Untersuchungen über die Schlafkrankheit enthalten."

expedition. His broad recent research experience, mostly for British and German colonial governments – in New Guinea in 1899, Rhodesia in 1902, East Africa in 1904 – augmented his reputation as a skilled technician in the laboratory with research and fieldwork with tropical diseases. Metropolitan officials in the Foreign Office and Imperial Health Office and the colonial governor himself cited Koch's familiarity with the specific East African disease environment and the more general "circumstances" in promoting his leadership for an upcoming dedicated expedition. The governor of the East African protectorate, Adolph Count von Götzen, wrote:

Apart from the fact that a more suitable figure than the aforementioned researcher could not be found to handle a question so urgent for the protectorate, the same [Koch], has, through his currently conducted experiments and research here in solving the cattle trypanosomiasis – and the closely related sleeping sickness – question already proceeded so far, has already worked out the methods of research and is so familiar with the local circumstances, that it would be exceedingly regrettable in the interest of a speedy execution as well as for economic reasons, not to take advantage of this great benefit, [and] instead, through a completely new expedition, also start the entire work from scratch.²³⁸

The head of the Prussian Ministry for Health, Education, and Cultural Affairs echoed von Götzen's sense of the utility and practicality of Koch's experience for forthcoming work:

Koch would in all likelihood gladly find himself a participant on an expedition for the further research of sleeping sickness, upon which the experiences already collected by him would be of great advantage. Without intending to anticipate the ultimate resolution of the selection of expedition participants, I believe I should however now direct the attention of your Excellency to the advisability of Koch's participation.²³⁹

²³⁸ Götzen to Foreign Office - Colonial Section, 9/17/1905, BAB R 68, 2613. Original text: "Abgesehen davon, daß eine geeignetere Persönlichkeit als der genannte Forscher zur Bearbeitung der für das Schutzgebiete so brennende Frage überhaupt nicht gefunden werden könnte, ist derselbe durch seine jetzt hier betriebenen Versuche und Forschungen in der Lösung der Tsetse- und der damit eng zusammenhängenden Schlafkrankheitsfrage bereits soweit vorgedrungen, hat er die Methode der Forschung bereits soweit ausgearbeitet und ist mit den örtlichen Verhältnissen so bekannt geworden, daß im Interesse einer raschen Erledigung sowohl als aus Ersparnisgründen äußerst bedauerlich wäre, diese großen Vorteile nicht auszunützen, sondern durch eine ganz neue Expedition auch die ganze Arbeit von neuem beginnen zu lassen."

²³⁹ Kirchner, Prussian Minister of Health, Education, and Cultural Affairs to Jonquières, Chancellor of the Department of the Interior, 11/16/1905, GStA PK, I. HA Rep. 76 Kultusministerium, VIII B, Nr. 4118. Original text: "Koch würde aller Voraussicht nach zu Beteiligung an einer Expedition zur weiteren Erforschung der Schlafkrankheit sich gern bereits finden lassen, wobei die von ihm schon gesammelten Erfahrungen von großem Nutzen sein würden. Ohne der engültigen Entschließung hinsichtlich der Auswahl der Teilnehmer an der Expedition vorgreifen zu wollen glaubte ich doch schon jetzt die Aufmerksamkeit Euer Durchl. auf die Zweckmäßigkeit einer Beteiligung Kochs dabei lenken zu sollen."

Amid concerns about the expense and utility about dedicated sleeping sickness research conducted by a German team, Koch had the support of high officials in the metropolitan and colonial government.

The relationships Koch established with members of the East African army medical corps and with colonial researchers in 1905 were of great practical importance at the time and during his 1906 expedition. He commandeered, or arranged the placement of, junior officers with his expedition with relative ease. Koch's ability to fill the manpower needs of his work certainly facilitated a quick transition to research in Africa from familiar institutes in Europe, but seconding colonial army medical staff to his expeditions also benefited the colonial government and the individual doctors themselves. In 1905, there was no over-abundance of scientists with training in bacteriological research in the colony and the diseases that threatened both European and African health were more and more often diagnosed definitively in the laboratory.²⁴⁰ Neither experience in clinical observations (for doctors), nor the ability to implement hygienic measures (for sanitation officers) alone was sufficient in, for example, differentiating between the various "fevers" that struck the European settlers or stopping the spread of cholera in a town. Serving on Koch's expedition functioned as a master class in laboratory technique for a young scientist. The colonial government recognized the mutual benefit of this arrangement, in the case of Robert Kudicke, at the time only 28, according to the governor, "it would be in the interests of the government, with regard to the need of a specialist trained sanitation officer, as well as in accordance with the wishes of Councillor Dr. Koch, to assign to the expedition Dr. Kudicke."²⁴¹ In addition to the colonial medical officers he worked

²⁴⁰ See Andrew Cunningham, "Transforming Plague: the laboratory and the identity of infectious disease," in Cunningham and Perry, eds., *The Laboratory Revolution in Medicine*, (Cambridge University Press, 1992), p. 209-244.

²⁴¹ Governor Gustav Adolph von Götzen to Foreign Office-Colonial Section, 10/23/1905, BAB R 86, 2613. Original text: "Ebenso würde es sowohl im Interesse des Gouvernements liegen, des eines in der Hinsicht spezialistisch ausgebildeten Sanitätsoffiziers (B)bedarf, als den Wünschen des Geheimrats Professor Dr. Koch entsprechen, den Oberarzt Dr. Kudicke, der bereits seit dem Januar dieses Jahres als Assistent bei diesem tätig ist, der Expedition zuzuteilen."

with directly, Koch and the expedition took advantage of a wider circle of colonial employees. Koch's 1905 expedition, as it wound its way through the colony, crossed paths with the sanitary officers and doctors of the protectorate at each military and civilian post. While touring the western districts on Lake Victoria, Koch also met Oskar Feldmann and Robert Ahlbory, staff doctors who would later play prominent roles in the anti-sleeping sickness campaign.²⁴²

The 1905 expedition took Koch, Kudicke, and Stuhlmann to the Protectorates of British East Africa and Uganda on a short tour around Lake Victoria in September 1905. In Nairobi, German and British scientists discussed the plague; within a week's time, the German group was at Lake Victoria.²⁴³ There, Koch met for the first time with members of the British Sleeping Sickness Commission, led by protozoologist and professor Edward A. Minchin at the Commission's Entebbe laboratory. In 1905, the sleeping sickness epidemic still raged in Buganda, Busoga, and on the nearby Sesse Islands. The German Vice-consul arranged for Koch to spend six days working in the laboratory at Entebbe. Neither the British nor the German scientists were forthcoming about their work. Franz Stuhlmann reported that the British team worked on questions surrounding the *tsetse* fly's anatomy, as well as the possibility that other species of *tsetse* fly transmitted sleeping sickness. But, Stuhlmann continued:

We did not gain very much information from the sleeping sickness commission working under the leadership of Prof. Minchin, [and] also deliberately avoided questions, in order not to get in their way. ... How far the English commission has come with their work, we do not know; a report is supposed to appear soon.²⁴⁴

The German expedition's eagerness in inquiring after the British team's results matched British guardedness, as one of the team explained to David Bruce:

²⁴² Koch, Draft of "Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Amani," BAB R 1001, 5895, p. 1.

²⁴³ Stuhlmann to Foreign Office-Colonial Section, 10/6/1905. BAB R 1001, 5895, p. 1.

²⁴⁴ Stuhlmann to Foreign Office-Colonial Section, 10/6/1905. BAB R 1001, 5895, p. 2. Original text: "Von der unter Leitung des Prof. Minchin arbeitenden Schlafkrankheits-Kommission erhielten wir nicht viel Auskunft, vermieden auch absichtlich Fragen, um ihnen nicht in die Quere zu kommen. ... Wie weit die englische Kommission mit ihren Arbeiten gekommen ist, wissen wir nicht, ein Bericht soll demnächst erscheinen."

You will be surprised to hear that Professor R. Koch and two assistants have just arrived in Entebbe, with the idea of working at Sleeping Sickness and the fly. They came up to the laboratory this afternoon. We were, of course, very pleased to see them, and to show them cases, etc., but were careful not to give away too much. They are leaving in October, so I don't suppose they will find not anything very startling [sic].²⁴⁵

Collegial generosity did not preclude an active sense of competition, particularly in a situation where research results would soon be published.

The German scientists still took the opportunity to observe and collect information about sleeping sickness at Lake Victoria, particularly with regard to the duration and severity of the epidemic, and information about the fly and its habitat. Again and again, Stuhlmann reported about the massive proportion of the lakeshore's population killed by the disease. He asserted that, soon, travelers between German stations would not be able to depend on African canoes for transport around the lake. The short journey's greatest payoff may have been in a new familiarity with the area – the team also visited the Sesse Islands, the Ugandan mainland district of Buddu just opposite, and the German station Bukoba to the south. Another key gain came with the opportunity to examine 600 living specimens of *Glossina palpalis* and to observe 100 people who had been diagnosed with sleeping sickness.²⁴⁶ Further, Koch's experience with epidemic sleeping sickness in Uganda in 1905, however brief, brought him into personal contact with British researchers and administrators, as well as German colonial medical officers at their field stations.

Robert Koch took on the leadership of the German sleeping sickness expedition to East Africa with an eye on maintaining his position of prominence within the German scientific academy, and on establishing himself securely at the forefront of tropical medicine and parasitology, for which trypanosomes were a top priority. As discussed in chapter two, the debate over the funding of a German expedition between 1902 and 1905 revolved around the extent of the danger posed by sleeping sickness for the German East African protectorate. Now,

²⁴⁵ A.C.H. Gray to David Bruce, 9/12/1905, WTI/RST/G27/22.

²⁴⁶ Stuhlmann to Foreign Office-Colonial Section, 10/6/1905. BAB R 1001, 5895, p. 2.

with the expedition imminent, Koch's research in East Africa in 1906-07 depended on the ongoing epidemic in the Uganda Protectorate. The expedition changed both course and focus as Koch and his team circulated around Lake Victoria, joining British officials and scientists, French Catholic missionaries, and African villagers and migrants already connected to one another by the morbidity and mortality of the Lake Victoria epidemic. In searching for an epidemic in areas where there was none, the expedition would end up in the middle of an epidemic still at fever pitch, in British Uganda.

Searching for Sleeping Sickness at Lake Victoria: Expertise, Mobility, and Processes of Colonial Research

Arrival in East Africa

On April 16, 1906, the German sleeping sickness expedition set sail from Naples, arriving in the East African port of Tanga a little more than two weeks later.²⁴⁷ Koch and his roving team then set out to find trypanosomes, tsetse flies, and people suffering from sleeping sickness, searching for the right combination of pathogen, carrier, and patient to conduct experiments and observations on the etiology and epidemiology of the disease. The expedition's route followed a counter-clockwise circuit around the lake, hitting consecutive coastal stations and larger settlements by government steamer and small boat, including the British port of Kisumu, the German port of Mwanza, and Ukerewe and Kome islands. Koch hopscotched around Lake Victoria in search of tsetse flies and sick people, training his microscope and hunting gun on animals large and small that offered both sport and the possibility of harboring trypanosomes for ultimate transmission to humans.²⁴⁸ Ultimately, their work would span nearly

²⁴⁷ Bernhard Möllers, *Robert Koch: Persönlichkeit und Lebenswerk 1843-1910*, (Hannover: Schmorl & Von Seefeld Nachfl., 1950), p. 698.

²⁴⁸ My narrative of Koch's expedition follows the reports he drafted and published in a series between October 1906 and September 1907, found in the *Gesammelte Werke von Robert Koch*, Georg Gaffky and Eduard Pfuhl, eds., (Leipzig: Thieme, 1912); it follows accounts provided in Friedrich Kleine, *Ein deutscher Tropenarzt*, (Hannover: Schmorl & Von Seefeld Nachf., 1949); Bernhard Möllers, *Robert Koch: Persönlichkeit und Lebenswerk*, (Hannover: Schmorl & Von Seefeld Nachf., 1951); Thomas D Brock, *Robert Koch: a Life in Medicine and Bacteriology*, (Washington, DC: ASM Press, 1999); and Christoph Gradmann, *Krankheit im Labor: Robert Koch und die medizinische Bakteriologie*, (Göttingen: Wallstein Verlag, 2005), published in

a year and a half and range throughout German and British colonial territory, dependent on relationships old and new.

Koch now returned to East Africa at age 62, was accompanied by a scientist friend, Arnold Libbertz, and his chief research assistant from the Institute for Infectious Diseases, Dr. Friedrich Kleine. The expedition staff expanded beyond the men who initially traveled to East Africa from Germany – Koch, Libbertz, Kleine, and Dr. Max Beck from the Imperial Health Office. (Koch's young wife Hedwig also accompanied the group; she and Libbertz traveled at their own expense). The expedition immediately connected with the colonial government's scientists at the biological research station at Amani, picking up three additional members, Staff Doctors Robert Kudicke and Otto Panse, and Sanitation Field-Sergeant Sacher.²⁴⁹ Kudicke, a doctor and native of Frankfurt-am-Main whose background in the colonial medical services remains otherwise obscure, had the rank of staff-doctor and worked in 1905 as an assistant to Stuhlmann in Amani and met Koch on his prior expedition. Koch had met Sanitation Field-Sergeant Sacher, likely not a medical doctor but with some training in microscopy or hygiene, at Amani in 1905; Sacher also became a part of the sleeping sickness expedition as it passed through Amani again in late 1906. High-ranking figures in science and government, such as Stuhlmann of the Biological Research Institute, and Dr. Hugo Meixner, senior medical officer in the colonial army's medical division, also moved into and out of the expedition's circle. When Libbertz's health failed in the "tropical climate," Kudicke was brought onto the team as his permanent replacement. Koch's regard for Kudicke grew out of the 1905 expedition, after which, in Koch's absence, Kudicke had continued Koch's experiments with *tsetse* flies at the

English as *Laboratory Disease: Robert Koch's Medical Bacteriology*, (Baltimore: Johns Hopkins University Press, 2009). Gradmann argues that travel, particularly travel to Africa late in life, was important for Koch both personally and professionally, as life and work in Berlin grew ever more embattled, pp. 171-78.

²⁴⁹ Möllers, *Robert Koch*, p. 304. According to correspondence within the Imperial Health Office, Kudicke had worked as Koch's assistant beginning in January 1905. Götzen to Foreign Office, Colonial Section, 9/17/1905, BAB R 68, 2613.

Amani research station, earning “rich experience” in the area of trypanosome research.²⁵⁰ Kudicke had also been an “outstanding assistant” in Koch’s estimation, in the elder scientist’s research on relapsing fever, and had also assisted with research on plague in Dar es Salaam under Dr. Meixner in the intervening year.²⁵¹ Rounding out the group was Staff Doctor Otto Panse, with whose addition in May 1906 in Amani the expedition’s workforce was complete.²⁵² Hedwig Koch remained with the group only briefly, eventually returning home to Germany ailing with malaria.²⁵³

The sleeping sickness expedition rushed away from the mountain research station at Amani in the fall of 1906, spurred by reports of new sleeping sickness cases from a colonial medical service doctor, Oskar Feldmann, who had been investigating reports of high mortality without a known cause at Mwanza. At the time, Mwanza was the primary German port on Lake Victoria, connecting trade across the lake to the savannah grasslands to the south and caravan routes to Lake Tanganyika further west; it was also the colonial government’s primary military and civilian station on the lake. Scattered reports of trypanosome infections had trickled in from Mwanza to the colonial government in the few years prior, all the more tantalizing and suspicious because, in each case, the person had purportedly lived in Mwanza for some time, pointing to either a localized epidemic or indicating that the disease was already endemic to the area.²⁵⁴ With Feldmann’s report of sleeping sickness came the promise of the

²⁵⁰ According to correspondence within the Imperial Health Office, Kudicke had worked as Koch’s assistant beginning in January 1905; Götzen to Foreign Office, Colonial Section, 9/17/1905, BAB R 68, 2613.

²⁵¹ Koch to Gaffky, 6/25/1905, quoted in Möllers, p. 299. Original text: “Auch in anderer Beziehung habe ich unerwartete Erfolge gehabt. Ich hatte Dr. Kudicke, an dem ich hier eine ausgezeichnete Hülfe habe, beauftragt, während meiner Abwesenheit die kurz vor dem Abmarsch begonnenen Versuche, Affen durch Zecken mit *Recurrentis* zu infizieren, fortzusetzen.” Koch to Home Secretary Posadowsky, 6/10/1906, BAB R 68, 2613; on plague, Meixner to Koch, 10/25/1905, Archives of the Robert Koch Institute (hereafter RKI) as/b1/575.

²⁵² Koch, *ibid.* 6/10/1906, BAB R 68, 2613. See also Wolfgang Eckart, *Medizin und Kolonialimperialismus*, p. 342.

²⁵³ Brock, *Robert Koch*, p. 266.

²⁵⁴ As Koch used both terms, an “epidemic” described an acute outbreak of an infectious disease, implicitly not of local origin; by contrast, “endemic” conditions described a disease that existed locally,

“Krankenmaterial” – “patient material” – that Koch so urgently sought for his research.

The team traveled in haste to Mwanza, seeking the “most imperiled spots.”²⁵⁵ To Feldmann’s discredit and Koch’s disappointment, evidence unfolded indicating that epidemic sleeping sickness had not yet reached the southern shores of the lake – at least not in the manner that would facilitate the desired broad-ranging research with flies, people, and trypanosomes. At Mwanza, colonial priorities meshed with particular colonial perceptions of local conditions to shape German understandings of sleeping sickness and of local Africans. Chief among Koch’s and the expedition members’ prevailing perceptions about the situation at Mwanza in 1906 were, first, judgments on the competence and expertise of colonial medical service officers, and, second, categorizations of the residency and mobility of local African communities.

Expertise and Authority

Colonial medical officer Dr. Oskar Feldmann would become a key figure in the German government’s sleeping sickness campaign after 1907. But in the summer of 1906, he played the role of a local contact, a colonial foil to Koch’s metropolitan expert. Feldmann had been involved for several years in investigating sleeping sickness as a station doctor working at various posts around Lake Victoria, though little remains in the historical record about his medical training or prior career in the colonial medical service. In his reports and evaluations of his work, Feldmann emerges as an eccentric, strong-willed, verbose, and brutal man. He had been resident in East Africa without home leave at least since at least 1901; at Bukoba in 1903, he

and that a population suffered from constantly. See Draft of Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 25. November 1906,” 11/27/1906, BAB R 86, 2613, p. 11. On the development of epidemiology in the early twentieth century, see Alfredo Morabia, ed., *History of Epidemiologic Methods and Concepts*, (Basel, Switzerland, Birkhauser Verlag, 2004); Kenrad E. Nelson and Carolyn F. Masters Williams, eds., *Infectious Disease Epidemiology: Theory and Practice*, (Sudbury, MA: Jones and Bartlett Publishers, 2007), p. 10-16; David E. Lilienfeld and Paul D. Stolley, *Foundations of Epidemiology*, 3rd ed., (Oxford: Oxford University Press, 1994), p. 28-32.

²⁵⁵ Koch, “Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Amani,” 6/10/1906, BAB R 68, 2613 and R 1001 5895, p. 1.

had sent on the first reports of sleeping sickness in German territory.²⁵⁶ Feldmann himself was not at Mwanza when the expedition arrived, but traveled from Bukoba shortly thereafter, bringing with him three patients he believed to be suffering from sleeping sickness. Koch assessed the three Bukoba cases with evident interest, noting that the diagnosis for only one of the three remained uncertain, but that the question of the epidemic at Mwanza about which Feldmann had warned the government remained. Reliant on the information provided by colonial medical officers – but also superior to them in rank and prestige – Koch’s response to the uncertain situation at Mwanza made the pecking order very clear. Koch charged Feldmann to conduct another search of the Mwanza district for sleeping sickness. Feldmann first brought back six suspected cases from nearby fishing villages, none of whom were found to have sleeping sickness after “meticulous review.”²⁵⁷ Feldmann then cast a wider net, searching the lakeshore between Mwanza and Kome Island, roughly 30 miles distant, after which he returned to Mwanza with four people whom he suspected had sleeping sickness. Once again, sleeping sickness could not be confirmed in any of the four. At this point, Koch reported, Feldmann explained that he no longer “adhered to his statement regarding the endemic occurrence of the epidemic in the Mwanza district.”²⁵⁸ Recalling A.D.P. Hodges’ complaints about having to “small-boy” the British Sleeping Sickness Commission in 1902, we can well imagine the stakes of Feldmann’s interactions with Koch. Koch and his team swooped in, interrupting the daily rhythm for the Mwanza station doctor, much better equipped and certainly more able to focus on one investigation rather than a host of issues and ailments. Feldmann had to re-produce the epidemic on command, in bringing forward the bodies and blood samples of his suspicious

²⁵⁶ Hugo Meixner to Robert Koch, 10/23/1909, BAB R 68, 3515.

²⁵⁷ Koch, Draft of “Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Muansa,” 7/31/1906, BAB R 1001, 5895, p. 4. Original text: “Feldmann...brachte 6 seiner Meinung nach der Schlafkrankheit Verdächtige ins Hospital, welche sich bei sorgfältiger Nachprüfung sämtlich nicht als Schlafkranke erwiesen.”

²⁵⁸ Koch, Draft of “Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Muansa,” 7/31/1906, BAB R 1001, 5895, p. 5. Original text: “Hiernach erklärte Stabsarzt Dr. Feldmann, daß er seine Angabe über das endemische Vorkommen der Seuche im Muansa-Bezirk nicht mehr aufrecht halte.”

cases. But ultimately, Koch's expertise in the laboratory trumped Feldmann's field observations.

Studies of scientific field work, research expeditions, and other metropolitan-directed projects aimed at Europe's African colonies have demonstrated of how local governance may be at odds with metropolitan authority and sometimes broader imperial goals. Competing sources of expertise and knowledge are a key part of this friction.²⁵⁹ In the case of sleeping sickness, differing approaches to research, treatment, and prevention of the disease related to different sources of expertise. Koch and Feldmann's respective strengths and available resources make distinct the kinds of expertise in play in this episode of colonial medical research, one associated with status in metropolitan Europe, scientific institutions, and disciplinary definition, and the other associated with colonial experience and applied tropical medicine and public health. Overlapping and interdependent, each was intimately related to the expansion of empire and the professionalization of medicine, intertwined and contemporaneous cultural projects at the turn of the century.²⁶⁰ Comparing the two men's claims as experts, a juxtaposition between metropolitan and colonial authority as the basis for expertise emerges. Koch's mastery of laboratory techniques and familiarity with the most relevant diagnostic methods contrasts with Feldmann's imperfect use of improvised instruments. But Koch had only a rudimentary knowledge of Swahili or other local languages, in contrast to Feldmann's familiarity with languages spoken around the lake, local political situations, and the terrain and environment.²⁶¹ Governmental and institutional support of Koch from metropolitan Berlin allowed him to call

²⁵⁹ See, for instance, Alice L. Conklin, *A Mission to Civilize: The Republican Idea of Empire in France and West Africa, 1895-1930*, (Stanford, CA: Stanford University Press, 1997).

²⁶⁰ See Cunningham and Williams, *The Laboratory Revolution in Medicine*; Douglas Haynes, *Imperial Medicine: Patrick Manson and the Conquest of Tropical Disease*, (Philadelphia: University of Pennsylvania Press, 2001).

²⁶¹ Feldmann peppered his reports with Swahili terms over the course of the subsequent sleeping sickness campaign. See, for example, Feldmann, report, 5/20/1908, BAB R 1001 5898. Koch carried with him a German-Swahili phrasebook, dating from at least 1904, see "Vokabelheft zum Erlernen von Kisuaheli," RKI L3/013.

upon colonial manpower in addition to the abundance of supplies already brought with him, while Feldmann had only what rudiments were at hand.

Working at Lake Victoria brought out several points of overlap in these disparate expertises, however. Both Koch and Feldmann worked independently, in essence. Though Koch ostensibly reported to the diplomatic and public health authorities in Berlin, and Feldmann reported to the government in Dar es Salaam, both were quite remote from oversight by either authority at Lake Victoria. Successful work on sleeping sickness potentially brought rewards to them both. Koch's gains were more obvious, cemented through publications and recognition of figuring out another piece of the trypanosome's puzzle, but Feldmann was not excluded from publishing articles based on his experiences or leveraging his work into monetary recognition or upward mobility in the colonial army. Indeed, the colonial government rewarded Feldmann (as well as Kudicke and Sacher) with a small monetary honor for their good work on the expedition.²⁶² And, despite Koch's frustration with Feldmann's laboratory skills, both the metropolitan expedition leader and the local colonial officer contended with a common problem: finding trypanosomes in African bodies. Both experienced the problem of an individual's or a family's flight from examination, a rejection of the doctor-patient encounter – Koch first at Kome Island in the coming weeks, Feldmann first years earlier in Bukoba District.²⁶³ A deployment of their varied skill sets, either individually or in tandem, could bring the ultimate goal of working with sleeping sickness in human cases closer, but neither could guarantee it.

²⁶² See correspondence dated 3/17/1908, 6/17/908, and 8/10/1908 between Ministry of the Interior and the Imperial Health Office, BAB R 1001 5890. Key assistants on Koch's expedition received monetary rewards for their service, of 10,000 M (Kleine), 6,000 M (Kudicke), 4,000 M (Sacher) and 3,000 M (Feldmann).

²⁶³ Koch's work on Kome is described in the White Fathers Diaries for the Kome Mission (Our Lady of Perpetual Hope), entry dated 7/7/1906; Kome Diaries, 1906, Archives of the Missionaries of Africa (Maison Général) Rome (hereafter M.Afr AMG-Rome).

Defining Sleeping Sickness at Lake Victoria

The people sick with sleeping sickness that the expedition encountered while traveling around the southern half of the lake pointed to the prevalence of the disease among people from elsewhere in the region. Koch preliminarily concluded in his report to Berlin from Mwanza that “despite exhaustive exploratory research, only one case of sleeping sickness existed and [that] this case came from Uganda.”²⁶⁴ Koch’s analysis of African people’s individual and group mobility, birthplace, and domicile – a combination of factors he used to judge where a person had contracted the disease – aimed to track the epidemic’s movement, but also to determine whether sleeping sickness was endemic, epidemic, or remained absent in German East Africa. For the purposes of his research and for the Colonial Section’s appraisal of the epidemic, this interpretation was paramount: if all cases of sleeping sickness found in German East Africa could be traced back to Uganda as their point of origin, then the disease had not yet established itself in the German colony.

Scientists’ difficulty in finding sleeping sickness in local African populations pointed to a problem in approaching the disease more generally: should they consider the disease epidemic or endemic around Lake Victoria? Ambiguity about the disease’s endemicity or epidemicity fit into the ongoing contemporary development of ideas about infectious diseases in the early twentieth century and, indeed, in the disciplinary development of epidemiology itself.²⁶⁵ A disease could be both endemic and epidemic, depending on the scale of the area or

²⁶⁴ Koch, Draft of “Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Muansa,” 7/31/1906, BAB R 1001, 5895, p. 3. Original text: “...trotz gründlicher Nachforschungen nur ein Fall von Schlafkrankheit existierte und daß dieser Fall aus Uganda stammt.”

²⁶⁵ Epidemiology took shape as a scientific discipline and field of expertise through the study of late-nineteenth and early-twentieth century epidemics, contemporaneous with the development of tropical medicine. How connections between the two disciplines might have shaped each is a fruitful potential field of further study. The importance of the bacteriological revolution and sanitation looms large in Anne Hardy, *The Epidemic Streets: Infectious Disease and the Rise of Preventive Medicine, 1856-1900*, (New York: Oxford University Press, 1993); Kenrad E. Nelson and Carolyn F. Masters Williams, eds., *Infectious Disease Epidemiology: Theory and Practice*, (Sudbury, MA: Jones and Bartlett Publishers, 2007); Alfredo Morabia, ed., *History of Epidemiologic Methods and Concepts*, (Basel, Switzerland, Birkhauser Verlag, 2004); and Olga Amsterdamska, “Demarcating Epidemiology,” *Science, Technology, & Human Values*, vol. 30, no.1, p. 17-51. Anne Hardy’s ongoing work points to the importance of statistical methods as British scientists during and after the First World War shaped epidemiology’s disciplinary boundaries and

timespan measured; this is consistent with modern understandings of epidemic and endemic disease.²⁶⁶ Efforts to distinguish between epidemic outbreaks and persistent endemic diseases also involved judgments about where a disease came from, who or what carried it, whether it was new, and how it spread. Recall that colonial officials and tropical medicine practitioners believed sleeping sickness to be a new epidemic in East Africa, with an unspecified origin in western or central Africa. In their efforts to arrest it, even in their belief that it was possible to arrest its spread in German East Africa, German doctors needed to deliberately define sleeping sickness as epidemic rather than endemic, as foreign rather than native. This dovetailed with fundamental colonial ideas about African mobility, and efforts to define some people as “local” and others “foreign.”²⁶⁷ In the case of sleeping sickness in German East Africa, disease patterns and African populations directed scientists toward the “origin” of the epidemic in Uganda. Using a person’s home, birthplace, or travel patterns to judge whether they had been infected locally in German East Africa or originally in British Uganda rested on a particular understanding of mobility, one that understood traveling and moving as singular events and not as part of fluid, regular patterns of changing residency and movement, such as seasonal migration or caravan portage.²⁶⁸ These same connections between epidemics, residence, and mobility would later surface in the colonial government’s anti-sleeping sickness campaign.

And so Koch endeavored to establish a direct correlation between any suspected cases of sleeping sickness and a person’s residency in Uganda (particularly since the epidemic’s onset in 1901), in order to insist that sleeping sickness was neither endemic nor epidemic in German East

techniques. See, for instance, Hardy and M. Eileen Magnello, “Statistical methods in epidemiology: Karl Pearson, Ronald Ross, Major Greenwood and Austin Bradford Hill, 1900–1945,” *Social and Preventive Medicine* 47, No. 2, pp. 80-89.

²⁶⁶ See Alfredo Morabia, ed., *A History of Epidemiologic Methods and Concepts*, (Basel, Switzerland, Birkhauser Verlag, 2004).

²⁶⁷ Nancy Rose Hunt, *A Colonial Lexicon of Birth Ritual, Medicalization, and Mobility in the Congo*, (Durham, NC: Duke University Press, 1999).

²⁶⁸ See, for instance, Thaddeus Sunseri, *Vilimani: Labor Migration and Rural Change in Early Colonial Tanzania*, (Portsmouth, NH: Heinemann, 2002); Rockel, *Carriers of Culture*.

Africa. Focusing on cases originating in Uganda moderated his initial claim that Lake Victoria did not “remain untouched by sleeping sickness,” but rather was firmly in its grip.²⁶⁹ Imminent danger to the lake region had been used both as agitation for the expedition, as discussed in the previous chapter, and to justify the expedition’s hasty departure from Amani after its arrival in East Africa. That danger now had to be qualified and categorized as limited to a specific subset of the African population: fishermen, rowers, and people who had lived in Uganda. Koch insisted mere weeks later, after refuting colonial army doctor Feldmann’s claims to have discovered an epidemic near Mwanza, that the German territory “was thus far still completely free from endemic sleeping sickness and the few scattered cases, which have been observed so far, come without exception from the English territory,” that is, Uganda.²⁷⁰

A specific episode in Koch’s research on Kome Island reveals how presumptions about disease, mobility, and natality functioned in practice, and what work could be done with information about an individual or family’s health. Key theoretical and practical aspects of Koch and his team’s approach to sleeping sickness – both in terms of who or what they were looking for and in terms of how they searched – came together in the bodies of a Ugandan woman and child at the Roman Catholic mission on Kome.

On their circuit around the lake, the expedition’s German government steamer passed by the islands of Ukerewe and Kome, both home to sizable communities of several thousand people. Kome Island lay just a few kilometers off of the German East African mainland directly west of Mwanza and getting to and from the town meant a journey divided between travel on land and water; Ukerewe Island was directly north of Mwanza in the lake. These islands were also home to missions established in recent years by the Catholic Society of the Missionaries of

²⁶⁹ Koch, “Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Amani,” 6/10/1906, BAB R 68, 2613 and R 1001 5895, p. 1.

²⁷⁰ Koch, Draft of “Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Muansa,” 7/31/1906, BAB R 1001, 5895, p. 5. Original text: “...Dasselbe ist bis jetzt noch vollkommen frei von denemischer Schlafkrankheit und die wenigen verstreuten Fälle, welche bisher beobachtet wurden, stammen ausnahmslos vom englischen Gebiet.” Koch referred to fishermen and rowers as elements of the disease’s spread around the lake on p. 6 of the same report.

Africa, also known as the White Fathers. On Kome Island, the church of Our Lady of Perpetual Help was founded at Msigo in 1900.²⁷¹ Four priests staffed the mission, and in the year 1905-06 they counted 295 neophytes and 459 catechumens, treating 3126 sick people in their clinic.²⁷² The priests' obligation to capture the daily life of the mission produced volume upon volume of diaries now housed in the Missionaries of Africa archives in Rome and Dar es Salaam, which provide a perspective on the history of the region external to that of official colonial government documents.

Reporting on baptisms, political intrigue, and the spiritual and physical development of the parish, the missionary priests also cataloged comings and goings within the surrounding community. At Kome, the diaries roughly chart patterns of travel between the island and surrounding communities on the mainland, as well as more distant areas. The diaries also recount incidents of disease and the progress of epidemics in the surrounding community and among travelers. Early in 1904, the priest-diarist recorded information from the German administration about the tsetse fly in nearby coastal areas, noting that they were providing samples to the colonial station doctor at Mwanza. The tsetse fly was the "vehicle of sleeping sickness and caused all of the ravages in Uganda," the diarist wrote in January, but he continued "it would be a sad discovery, but no one is sick here...the natives report that there are more [flies] now than before."²⁷³ In 1904, the diaries mention several groups of Bahaya (people from the northwestern coastal Haya kingdoms) coming and going, some for work near the Kome mission. One group of "Kahigi's Bahaya" departed (likely for the Haya kingdom of

²⁷¹ On Ukerewe at Kakunguli, the church of Our Lady of Good Hope was founded in 1895. Foundation dates for the Kome and Ukerewe missions are from the 2006 Catholic Directory of Tanzania, (TEC: Dar es Salaam, 2006), generously provided by Fr. Donald Anderson at the Missionaries of Africa Provincial Archives in Dar es Salaam (hereafter M.Afr. DSM) in August 2008.

²⁷² Missionaries of Africa (White Fathers), "Vicariat Nyanza Méridionale – Statistique de Juillet 1905 à Juillet 1906," *Rapports Annuels* no. 1 (1905-06), M. Afr. DSM.

²⁷³ Kome Mission Diary, 1/13/1904, M. Afr. AMG-Rome. Original text: "Le P. Sup. va à Kigara et rapporte des mouches tse-tse semblables aux échantillons venus de Mwanza; on en enverra au docteur de Mwanza; elles seraient le véhicule de la maladie du sommeil qui fait tant de ravages en Uganda: ce serait un triste découverte, mais personne n'est malade ici. Elles sont nombreuses à Ikuru dans le fond de brousses, sa piqûre produit en enflure comme un bille; d'après les indigènes, il y en aurait beaucoup plus qu'autrefois."

Kianja, ruled at the time by Kahigi) in September of 1904, and the diarist noted, “we bade them farewell,” suggesting a friendly departure.²⁷⁴

Comings and goings of groups of people were in themselves significant, attesting to traveling around the lake as regular part of life at the time for people living on Kome, in Buhaya, or elsewhere. Fluidity in the population of the mission community could also bring with it insecurity, however. Haya travelers arrived in Kome once more later in 1904, but the added element of sleeping sickness circulating around the lake apparently created an environment of distrust. On October 4, the diarist wrote, “we have been told that a bahaya [sic] is stricken with sleeping sickness; the Father Superior went to see but did not see any of the characteristic signs.”²⁷⁵ Those signs would have included the telltale inability to stay awake, but could also have included the more subtle appearance of swollen glands or an unsteady gait. Though none in the group were reported to appear sick, four days later, the diarist continued, “we asked the bahaya to withdraw [from the mission], for fear of an issue with sleeping sickness.”²⁷⁶ The next day: “today their houses were burned; it was a matter of five minutes.”²⁷⁷

In 1906, Robert Koch and the sleeping sickness expedition passed by Kome Island and the White Fathers mission there. As we read the Kome mission diaries and Koch’s research reports together, we can better understand how the process of research historically involved social interaction, and can tease out links between mobility, coercion, and colonial power within the context of sleeping sickness research. Three distinctive perspectives on research – from the missionary priest, the expedition leader, and the people under their scrutiny – come together in an episode at the Kome Island mission in early July of 1905. This episode, particularly when

²⁷⁴ Kome Mission Diary, 9/14/1904, M. Afr. AMG-Rome; Austen, *Northwest Tanzania under German and British Rule*, “Tribes, Chiefdoms, and Rulers” Appendix, p. 263.

²⁷⁵ Kome Mission Diary, 10/4/1904, M. Afr. AMG-Rome. Original text: “On nous dit qu’un des bahaya est atteint de la maladie du sommeil; le P. Sup. va le voir mais ne voit pas les signes caractéristiques.”

²⁷⁶ Kome Mission Diary, 10/8/1904, M. Afr. AMG-Rome. Original text: “Nous prions les bahaya de se retirer, craignant avoir affaire à la maladie du sommeil.”

²⁷⁷ Kome Mission Diary, 10/9/1904, M. Afr. AMG-Rome. Original text: “Aujourd’hui leurs maisons sont incendiées; c’est l’affaire de cinq minutes.”

considered in the broader context of colonial labor and disciplinary regimes, illustrates how happenstance and tenuous contact between the researchers and their potential patients could be in practice.²⁷⁸ Understanding the different meanings attached to medical examination allows us greater insight into the overlapping factors impacting the reception of sleeping sickness research and prevention in African communities on the lake.

Accounts from Robert Koch's preliminary report and the White Fathers diary agree on several points. Both note that Koch and his expedition team came to Kome Island to search for cases of sleeping sickness, that they arrived and gathered information from a Father Van Thiel, and that they learned of a woman and child suspected of having the disease who had originally come from Uganda. Each recounts that the woman and child were summoned to be examined by Koch, who wanted to take them to Mwanza (where better facilities existed to conduct clinical and laboratory investigations). Both conclude by noting that the woman and child did not ultimately go to Mwanza with Koch and his companions. But the accounts provide different details of interactions between Koch, the missionaries, and the small cohort of Kome islanders involved, revealing different motivations and strategies among each of the actors involved. Differences in the accounts of the White Fathers' diarist and Koch himself can be attributed to style and personality – one is the work of a daily event-keeper, and the other a report seeking to establish a pattern of constant progress. These narratives of Koch's visit also reflect different priorities and a different investment in establishing illness or wellness as a scientific certainty, as well as distinctive relationships with the two suspected patients.

When presented with an unexpected visit from Koch and the military doctors accompanying him, the missionaries on Kome treaded a line between assisting the German researchers and laying claim to protect the African communities to whom they ministered. The diaries from July 1906 read:

²⁷⁸ John Iliffe, *A Modern History of Tanganyika* (Cambridge: Cambridge University Press, 1979), p. 151-163; Juhani Koponen, *Development for Exploitation: German Colonial Policies in Mainland Tanzania, 1884-1914*, (Münster: Lit Verlag, 1994), p. 359-412.

July 6. Dr. Koch landed at our port; he came to inform himself about the mission to know if we would have any [people with] sleeping sickness. A military doctor came up to the mission to ask of the Father Superior to kindly provide the doctor with information. Father Van Thiel, who alone knows German, went down to the port to respond to the request of the illustrious traveler. He gave him our regards and all the information he wanted; we don't have any sick people, strictly speaking; a woman and child who came from Buganda two years ago are suspected; we sent them to him.

July 7. The men broke camp at 7 a.m.; we learned that they had picked up one of our little orphans, whose curiosity had driven him to the port; they would have confused him with a little girl that we brought to them yesterday. Father Van Thiel ran to wait for them at Nyamiyaga, where they had to arrive to search for tsetse flies; the orphan has been returned, there had been confusion; the woman and little girl refused to go to be examined at Mwanza; they disappeared into the bush, in the confusion.²⁷⁹

The encounter indicates that Koch's international prestige carried weight even among non-scientists living on a relatively remote lake island in Africa – he arrived an “illustrious traveler.” A “military doctor” – likely one unfamiliar to the White Fathers, who typically mentioned colonial officials by name – mediated between Koch and the priests, keeping colonial authority at the center of the exchange. But it is also clear that sleeping sickness in particular was a concern for the mission, having struck nearby Ikuru Island to devastating effect, and so the priests were inclined to answer Koch's inquiries quickly and openly.²⁸⁰ The White Fathers also maintained an interest in protecting people not specifically affected by sleeping sickness, such as the curious orphan, while also volunteering those suspected of it, as with the woman and

²⁷⁹ Kome Mission Diary, 7/6/1906-7/7/1906, Missionaries of Africa (White Fathers) Archive Maison Général, Rome. Original text: “[July] 6. M. le Dr Koch aborde à notre port; il vient s’informer auprès de la mission pour savoir si nous aurions des malades du sommeil. Un médecin militaire monte à la mission pour prier le P. Sup. de bien vouloir fournir au docteur des renseignements. Le P. Van Thiel, connaissant seul l’allemand, descend donc au port pour répondre aux désirs de l’illustre voyageur. Il lui présente nos respect et lui donne tous renseignements voulus; des malades proprement dits, nous n’en avons pas; une femme et un enfant venus du Buganda il ya deux ans sont soupçonnés; nous les lui envoyons. [July] 7. Ces messieurs lèvent le camp á 7 heures; on nous apprend qu’ils ont embarqué un de nos petits orphelins que la curiosité avait conduit au port; ils auront confondu avec une fillette que nous leur avions présentée hier. Le P. Van Thiel court les attendre à Nyamiyaga, où ils doivent aborder pour chercher des mouches tsetse; l’orphelin est ramené, il y avait eu confusion; la femme et la fillette ont refusé d’aller se faire examiner à Mwanza; elles ont disparu dans la brousse, de là confusion.”

²⁸⁰ References to sleeping sickness at Ikuru accompanied the first mention of the disease in the White Fathers' diaries in January 1904, with further reports in 1906, see Kome Mission Diary, 8/5/1906, M. Afr. AMG Rome.

child from Uganda.²⁸¹ The woman and child were not forced to accompany Koch to Mwanza, and the affair passed without further comment.

Robert Koch's telling of the expedition's visit to Kome Island emphasized cooperation with the White Fathers. His tone asserts his expertise in interpreting the information provided by Father Van Thiel, interjecting his own opinion on the priest's suspicion of illness among the African community. Koch's synthesis of the situation at Kome also charted the relationship between local geography, African mobility, and the arrival of sleeping sickness. Koch wrote:

Firstly an excursion to the island Kome was made, where Father van Thiel [sic] from the mission station of the White Fathers, who are quite well informed about the health situation in their district, willingly gave information. He mentioned several cases suspicious to him, which obviously suffered from other sicknesses, however. There ultimately remained only one family suspected of sleeping sickness, consisting of husband, wife, and one child. The husband had recently died. The wife was sent to us and she in fact gave the impression of a sleeping sickness [case] in the first stage. The child had conspicuously large lymph nodes in the neck. Unfortunately the woman could not be moved to accompany us to Mwanza for more detailed observation and examination. But if the diagnosis could have been ascertained more firmly, it would once again have been a matter of a family, who had fled Uganda due to sleeping sickness, had moved first to Bukoba, then to the Emin Pasha gulf, and had eventually settled on Kome in the neighborhood of the mission.²⁸²

Koch's account leaves out any difficulty or tension in the interaction with the White Fathers or, more significantly, with any other people on Kome island. The mistaken orphan and other youngster make no appearance, nor does the "confusion" which allowed the woman and child

²⁸¹ The history of childhood in Africa including the experience of orphans has recently been addressed in a special volume of the *Journal of Family History*, contributing to a silence in the literature identified by Audra Diptee and Martin Klein their introduction. See Audra A. Diptee and Martin A. Klein, "African Childhoods and the Colonial Project," *Journal of Family History* 35 no. 1, (2010) pp. 3-6.

²⁸² Koch, Draft of "Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Muansa," 7/31/1906, BAB R 1001, 5895, p. 3. Original text: So wurde zunächst eine Exkursion nach der Insel Kome gemacht, wo der Pater van Thiel von der Missionsstation der weißen Väter, welche über den Gesundheitszustand ihres Bezirks immer recht gut unterrichtet sind, bereitwilligst Auskunft erteilte. Er erwähnte mehrere ihm verdächtige Fälle, welche aber offenbar an anderen Krankheiten litten. Es blieb schließlich nur noch eine Familie als der Schlafkrankheit verdächtig übrig, aus Mann, Frau, und einem Kind bestehend. Der Mann war vor kurzem gestorben. Die Frau wurde uns vorgeführt und sie machte in der Tat den Eindruck einer Schlafkranken im ersten Stadium. Das Kind hatte auffallend große Halsdrüsen. Leider war die Frau nicht dazu zu bewegen, uns nach Muansa behufs einer genaueren Beobachtung und Untersuchung zu begleiten. Aber wenn auch die Diagnose noch mehr gesichert worden wäre, so handelte es sich doch wieder um eine Familie, die vor der Schlafkrankheit aus Uganda geflüchtet war, sich zuerst nach Bukoba, dann nach dem Emin-Paschagolf gewandt und sich schließlich auf Kome in der Nachbarschaft der Mission niedergelassen hatte."

to escape into the bush factor into his report. Instead, Koch focuses on the Ugandan family as an example of how sleeping sickness has, and will continue to, spread around the lake, pointing especially to the problem of latent, asymptomatic infections in travelers.

Both the missionaries and the researchers involved betray a sense of entitlement toward the lives and bodies of the Kome islanders suspected of having sleeping sickness, operating within hierarchical concepts of power, race, and science common of their time.²⁸³ African bodies could be requisitioned for hut tax labor, for constructing the mission's buildings and breaking ground for planting, or, here, for examination for illness. The White Fathers sometimes functioned as intermediaries between German colonial administrators based at Mwanza and the population of Kome, but also at times came into conflict with the district administrator over government demands for the labor of villages near the mission.²⁸⁴ Mwanza, a town around 50 kilometers by boat from Kome on the mainland, was the regional center of government and trading.²⁸⁵ Movement to and from Mwanza from Kome involved African compliance with the demands of the colonial administration for labor, portage, or taxes.²⁸⁶ Mwanza was the seat of the regional colonial government, meaning that the district administration, a division of the colonial army, and additional African auxiliary soldiers (often referred to as *ruga-ruga*) were also based there. People from Kome also went to Mwanza for treatment for ailments that the White Fathers could not address. The most visible manifestations of colonial power and coercion emanated from the boma at Mwanza, and African labor and resources, when demanded, were directed toward it.

²⁸³ Megan Vaughan, *Curing their Ills: Colonial Power and Africa Illness* (Cambridge: Polity Press, 1911), specifically Vaughan's introduction. More generally, see Nancy Stepan, *The Idea of Race in Science*, (Macmillan: London, 1982).

²⁸⁴ See Kome Mission Diary for April and May 1904 for records of conflict between the District Chief Hermann, the White Fathers Monsignor Hirth, and local chief Mulindemula over multiple demands on the mission villagers' labor. Kome Mission Diary, M. Afr. AMG Rome.

²⁸⁵ Mwanza was roughly equidistant from Kome Island either by boat directly, or a combination of boat and overland travel.

²⁸⁶ Hut tax payment was also taken to Bukokwe, adjacent to Kome on the mainland (see Kome Mission Diary, 6/7/1906, M.Afr. AMG-Rome).

We have only the missionary and the scientists' parallel accounts to attempt to understand the situation in which the "woman from Uganda" found herself with her child. Koch conflated the White Fathers' identification of the woman as "from Buganda" with the Ugandan colonial state; although a small slip, it indicates a schematic understanding of pre-colonial African states and identities and a privileging of colonial political boundaries.²⁸⁷ The doctors' desire that the Ganda woman and child come to Mwanza for examination should be understood in the context of colonial demands on the work, time, and resources of people from Kome Island. The government summoned people to build roads, roof buildings, and clear fields, requisitioning groups of men from Kome and returning them days later, exhausted.²⁸⁸ Going to Mwanza or the mainland at the demand of the district administrator, Hermann, disrupted the rhythms of daily life, taking the young and able-bodied away from the fields or fishing. The Ganda woman and her child's situation stood in stark contrast to patterns of labor extraction and requisitioning that would have become more familiar for Kome Islanders, where a representative from the government came to demand a certain number of men or a certain kind of work, and a group of people departed soon after. In relationships mediated by their chief with the missionaries and the government (and sometimes by chief, missionaries, and government together), people living near the mission worked to build a road in front of it, for example, or went to the mainland to work on a road when called by the government. Work for the mission fit into a dynamic that may have also involved schooling for village children, basic medical services, and people attaching themselves to the mission at times of insecurity.²⁸⁹ In

²⁸⁷ I here use "Ganda" to refer to a person from Buganda, rather than "Ugandan," in keeping with historical political and geographical designations.

²⁸⁸ See Kome Mission Diary 2/13/1904, for the district officer's demand for labor to put on roof at Mwanza, M.Afr. AMG-Rome.

²⁸⁹ Missions provided a crucial potential refuge for people who found themselves in marginal or tenuous social positions at times of insecurity, such as women, orphans, and slaves. On women's relations with Protestant missions in southwestern Tanzania, see Marcia Wright, *Strategies of Slaves and Women: Life-Stories from East/Central Africa* (London: James Currey, 1993); on Catholic missionary sisters at Lake Tanganyika, see Kathleen R. Smythe, "African Women and White Sisters at the Karema Mission Station, 1894–1920," *Journal of Women's History* 19, No. 2, (2007), pp. 59-84.

the case of the district administration, located further away, a more purely extractive relationship dominated with regard to local labor. The missionaries' record of the comings and goings of laborers between Kome and Mwanza suggest that demands for laborers had become commonplace, but were not uncontested.

More than what was known about going to Mwanza, however, what was unknown may have been feared – particularly in the context of the arrival of a group of unfamiliar soldiers and Europeans, the absence of mediation by the local chief or government's *katikiro*, and the possibility of going away not in a group of people, but alone. The Ganda woman likely found herself and her child in the center of a debate between doctors, soldiers, and missionaries about her own removal from Kome, under scrutiny at the island's port. This combination of factors was likely at once familiar in the context of labor demands, yet wholly different for the new players involved – Koch and his expedition members – and their focus on only two people. And so the woman's refusal to go to the mainland also makes clear that the doctors' request, implicitly supported by the priests but not enforced by them, did not fit neatly into any pre-existing framework defining the relationship between islanders and the colonial state. Compulsion to come and go from the island had its limitations. The unfamiliar situation may also have caught the missionaries, researchers, and soldiers involved off-balance, though neither of the two accounts mention open conflict between them. But this newness and unfamiliarity combined to open a space for the woman to take advantage of the situation – described as “confusion” by the priests – to flee completely from the purview of doctors and priests alike.

Reading Koch's account along with that of the White Fathers' mission, several points of instability and unpredictability in the research process emerge, despite his attempts to convey an orderly examination. Koch's dependence upon the White Fathers for local information, and his faith in the accuracy of that information, problematizes his assertion of his position as an expert on sleeping sickness. Koch, though supported by colonial military-medical authority, could not actually complete the work he set out to do, that is, to examine patients suspected of

sleeping sickness and determine with scientific certainty – in the laboratory, using the standard barrage of tests – whether the disease existed on the island. The German expedition's process of investigating reports of sleeping sickness in African communities here demonstrates their dependence on Europeans already living in an area to facilitate contact with potential patients. Within this situation of dependence, Koch's authority still played a mediating role. Though relying on missionary information, he mobilized missionaries to assist him, as well as the colonial military that accompanied him – whatever its quality, all information came to him as the expedition's leader. But despite the presumption of control and influence by European authorities, the Ganda woman could not be coerced to put herself into the custody of the expedition; the work of research met with resistance. Examinations were completely contingent on the potential patient's actions, in this case. Fitting this episode into the existing literature on Koch at Lake Victoria, and German colonial medical research more generally, we see not absolute control by scientific authorities, but an interaction held together by cordiality and shared interests and undone by individual agency.

The Absent Epidemic and the Turn to Uganda

Research at Kome struck at the heart of larger epistemological problems facing sleeping sickness researchers in the early twentieth century. Classifying sleeping sickness as epidemic or endemic was essential for German researchers, both in constructing the disease as a British problem and defining the research agenda of the sleeping sickness expedition. Endemic sleeping sickness meant that the disease had gained a foothold in German East Africa, sustained by both human cases and fly carriers locally; epidemic sleeping sickness implied, in the language of the time, a more acute outbreak of infectious disease. By 1906, a rough matrix to categorize suspected cases of sleeping sickness was evolving, and within it, connections between illness and place grew more definite. When Dr. Oskar Feldmann traveled to meet Koch's expedition at Mwanza in June 1906, he had brought with him three suspected cases of sleeping sickness from Bukoba. The three were emblematic of German fears about the epidemic

in East Africa: the first, most advanced case, had been on the “heavily contaminated” Sesse Islands numerous times; the second with less pronounced symptoms had been in the Lake Tanganyika area, likely infected there; but the third’s diagnosis remained “uncertain,” though the man had most likely been on the Sesse Islands and was therefore highly suspected of being ill.²⁹⁰ Travelers from Uganda, identified by the White Fathers on Kome and evaluated by Koch’s expedition, posed an equal threat with familiar, though not confirmed, signs of sleeping sickness’s early stages.

The sleeping sickness expedition’s work at Mwanza and Kome drove home Koch’s conviction that sleeping sickness was not yet endemic in German East Africa, based on specific instances of sick people coming from (or having lived in) Uganda. This did not preclude hotspots in the region-wide epidemic, broadly conceived, as were rumored to exist in communities more distant from the lakeshore to the east and west. In effect, German experts defined the disease as endemic among travelers, fishermen, and rowers, who could then cause a localized epidemic under the right circumstances, as Koch wrote of the Ugandans on Kome Island, “...like so many other refugees, the unfortunates already carried the germ of the disease in them, when they left Uganda.”²⁹¹ But the distinction between epidemic and endemic disease served several purposes for Koch with regard to his own research agenda and the German government’s colonial priorities. Koch’s attempt to define the disease as epidemic or endemic based on the place of infection of individual sufferers from the disease rings hollow to the modern reader: after all, the expedition had found cases in German East Africa, and also had found tsetse flies that could have spread the infection, meaning that the disease was present locally. Yet Koch insisted that the disease had not yet gained a foothold in German East Africa. He was correct in judging, in 1906, that the disease had not struck coastal populations with the same ferocity as in Buganda and Busoga – no clusters of cases on the lakeshore could be found,

²⁹⁰ Koch, Draft of “Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Muansa,” 7/31/1906, BAB R 1001, 5895, p. 3.

²⁹¹ Koch, Draft of “Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Muansa,” 7/31/1906, BAB R 1001, 5895, p. 3.

nor were reports of mortality related to it widespread. But his insistence on Uganda as the sole origin of all cases found in German East Africa, and therefore on the absence of any local epidemics or widespread endemicity, gave colonial government officials in Dar es Salaam false confidence in the limits of the future spread of the disease, in the disease's potential impact, and their ability to combat it.²⁹²

Seeing Uganda as the ultimate source of sleeping sickness worked against a holistic view of the German colony's vulnerability to the disease, seeking instead targeted, specific points for a public health intervention. Linked to colonial political concerns as well as his own research agenda, Koch's view had several repercussions. First, by limiting the disease's spread according to colonial political borders, sleeping sickness remained primarily a British colonial problem, and its prevention a matter of colonial cooperation between German and British authorities to control sick people's movements at colonial borders. This fit into a broader sense of the importance of border control in disease control, which became a key component of ongoing prevention efforts. Secondly, focusing on Uganda, and travel on the lake, also directed the government's focus toward dense populations on the lakeshore and islands, where mobility was clearly visible and commonplace, and away from rural communities living along rivers and streams more distant from the lake's littoral. This focus came partly out of necessity given the expedition's constrained time and limited resources, but was partly drawn from Koch's experience with epidemics in dense urban populations and livestock herds.²⁹³ It was also strategic in terms of ongoing disease prevention, as these busy ports, way stations, and transit points offered the possibility for the disease to leapfrog across Tanganyika to settler plantations or to the coast. Communities where there were tsetse flies, such as those along the Mara and

²⁹² Koch's idea about disease coming from "elsewhere" was influenced by his experience with cholera. See Norman Howard-Jones, *The Scientific Background of the International Sanitary Conferences 1851-1938*, (Geneva: World Health Organization, 1975), cited in Neill, "Paul Ehrlich's Colonial Connections."

²⁹³ Richard J. Evans, *Death in Hamburg: Society and Politics in the Cholera Years, 1830-1910*, (New York: Oxford University Press, 1987); Christoph Gradmann, "Robert Koch and the invention of the carrier state: tropical medicine, veterinary infections and epidemiology around 1900" in *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 41,3 (Sept. 2010), pp. 232-40.

Mori rivers east of the lake, and those in western Buhaya west of the lake, were equally vulnerable to an outbreak of sleeping sickness, but not viewed as instrumental to its spread. Lastly, given Koch's unrestrained enthusiasm for the opportunities that the Uganda epidemic afforded, the emphasis on Uganda in reports he sent back to the Foreign Office may reflect a pragmatic presentation of the intertwined research and public health problem confronting the expedition. If Uganda was the sole origin of sleeping sickness infections at Lake Victoria, it was also the richest research environment available. The "Krankenmaterial" he sought would certainly be there in ample supply, justifying his speedy departure from the German colony and his move away from the practicalities of public health there, and his resulting concentration on British Uganda.

Chapter Five

Finding Sleeping Sickness on the Sesse Islands

Introduction

Beliefs about infectious diseases and the importance of regional migration to the Lake Victoria epidemic, along with Robert Koch's confidence in his own abilities, combined to push the German sleeping sickness expedition toward Uganda as an ideal site for sleeping sickness research. The move to Uganda was neither wholly unexpected nor lacking in practical and theoretical groundwork. Within weeks of his arrival at Lake Victoria in the summer of 1906, Koch had already made arrangements with the British colonial government to travel to the Sesse Islands for sleeping sickness research in the near future.²⁹⁴ Koch's experience in East Africa the previous year had allowed him to connect with British researchers at Lake Victoria who, added to the familiar team of researchers on the German expedition, provided an additional group of colleagues to facilitate the expedition's manpower and resource needs. His superiors in Berlin were aware of a likely expansion of his research area to include "the entire area of East Africa afflicted by the epidemic," and diplomatic correspondence to smooth the way for a visit to Entebbe was in place by March 1906 (prior even to the expedition's departure from Germany).²⁹⁵ By the time news of the expedition's decision to work in Uganda reached Berlin, it was a *fait accompli*. In Uganda, Koch could engage – at times competitively, at times collaboratively – with British colleagues on the Royal Society's Sleeping Sickness Commission and in the colonial medical service. The timing of Koch's work, coming after the basic etiology of sleeping sickness had been established but before prevention or treatment measures had been standardized, located German sleeping sickness research in the realm of practical approaches

²⁹⁴ Koch, Draft of "Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Muansa," 7/31/1906, BAB R 1001, 5895, p. 13.

²⁹⁵ Posadowsky (Ministry of Interior) to Minister of the Foreign Office, 3/3/1906, BAB R 901 20872. Original text: "...ihre Forschungen auf das ganze von der Seuche heimgesuchte Gebiet Ost-Afrikas insbesondere auch auf Britisch-Uganda auszudehnen." The letter continues with a request to contact the appropriate authorities in British East African and Uganda.

rather than theoretical advances.²⁹⁶ Work in Uganda also placed the expedition in the thick of African communities on the lake's littoral at a period of intense crisis.

In this chapter, we follow Robert Koch and the German sleeping sickness expedition during a year-long period of research on the Sesse Islands, focusing on the points of negotiation and contention that played a part in the development of ideas about and practices of sleeping sickness research.²⁹⁷ Examining intersections and overlaps between British and German research, I highlight the continuing mutability of Koch's research agenda with regard to sleeping sickness treatment and prevention and the intertwined benefits and perils of engaging with an inter-colonial group of colleagues. I also place experimental drug research undertaken on the Sesse Islands in context, situating work with atoxyl within Koch's prior work on disease prevention as well as within the research priorities of the international tropical medicine community. I locate the sleeping sickness camp that developed at Bumangi as a novel element in German strategies on sleeping sickness as well as a continuation of established public health practices. My narrative of sleeping sickness research on the Sesse islands closes with Koch's guidelines developed for the sleeping sickness prevention in German colonial territory, developed upon his departure from East Africa in September 1907, and with the inauguration of a formal anti-sleeping sickness campaign coordinated by Dr. Friedrich Kleine and implemented under his supervision by colonial medical and sanitation officers.

Sesse and Entebbe: Locating German Sleeping Sickness Research in Uganda

The German sleeping sickness expedition connected with British government officials and medical officers at Entebbe as its members negotiated a research site in Uganda, tapping into collegial networks and sharing information about the state of the epidemic. Koch used the

²⁹⁶ Christoph Gradmann, trans. Elborg Forster, *Laboratory Disease*, pp. 208-10.

²⁹⁷ The circumstances in which examinations, research, and treatment happened were fluid and were developed on site; I would include research practices and sleeping sickness prevention policies that followed them in the "policy and ideology" that Frederick Cooper argues "also reflected European adaptation (and resistance) to the initiatives of the colonized," in "Conflict and Connection: Rethinking Colonial African History," *American Historical Review* 99, no. 5 (1994), p. 1531.

trip in Uganda to identify the contours of British research and prevention work, a move that in historical perspective captures both the fluidity of sleeping sickness research agendas at a time of transition and the relevance of inter-colonial networks in defining these research agendas. Immediately prior to settling in on the Sesse Islands, Koch spent a few days in early August 1906 with British colonial officials and sleeping sickness researchers at Entebbe talking about different options for sleeping sickness prevention. Entebbe, the colony's administrative capital, lay a short distance north of the Sesse Islands, in an area itself hit hard by the epidemic. Records of the visit indicate that British medical officers, researchers, and administrators had also not yet come to a consensus about sleeping sickness prevention in the colony, and that Koch was aware of the fluidity of the situation in Uganda. Ugandan officials, along with their metropolitan counterparts in the British Colonial Office, were in the middle of a broader debate about the development and implementation of preventive measures, including the evacuation of the lakeshore and islands and moving the administrative capital from Entebbe.²⁹⁸

Koch's visit also illustrates the continuing importance of a transnational network of peers and colleagues within tropical medicine for those conducting sleeping sickness work around the lake. Moving within this network facilitated Koch's two meetings with A.D.P. Hodges, the acting Senior Medical Officer for the colony; it allowed colleagues to come together to air opinions, strategize, and gossip. Hodges recorded Koch's visit in his diary:

Koch came to my office, (I met him yesterday at Pordegges) and we had a long talk. He has no great hope of a cure & believes, as I do, that the only hope is preventive measures. I opened my heart to him of all my ideas, as I think it is too serious to keep anything back wh[ich] might be useful, and at the end he said "It is wonderful, since we have never met and talked, how our thoughts agree on this subject."²⁹⁹

²⁹⁸ A.H. Milne (Liverpool School of Tropical Medicine) to Colonial Office, 5/2/1906, NA/CO 885/9/11, p. 42-44; A.H. Milne to Colonial Office, 7/20/1906, NA/CO 885/9/11; Colonial Office to Liverpool School of Tropical Medicine, 8/3/1906, NA/CO 885/9/11, p. 50; R.N. Moffat to Colonial Office, 8/9/1906, NA/CO 885/9/11, p. 51; see also A.D.P. Hodges to David Bruce, 10/31/1907, WTI/RST/G27/40. See also Kirk Hoppe, *Lords of the Fly*, ch. 3, "Depopulations and Safe Corridors in Colonial Uganda, 1906-1920," p. 55-79.

²⁹⁹ A.D.P. Hodges Diary, 8/11/1906, LSHTM, Hodges MSS, GB 0809 Hodges/01/10.

But Hodges was also cynically aware of his place in the pecking order, noting of a later “long talk” between them that, while Koch agreed with all of Hodges’ ideas, Koch would “probably get the credit – of any of them that are carried out successfully.”³⁰⁰ Koch, for his part, may have known that his emphasis on preventive measures would find a sympathetic ear in Hodges. Koch used the time in Entebbe to focus on the merits of preventive work, putting less emphasis in developing a treatment for the disease. He passed over the brand-new and well-equipped laboratory at Entebbe, built for the Sleeping Sickness Commission but as yet unused, in favor of the promise of “Krankenmaterial” on Sesse.³⁰¹ Koch arranged no time to work in the Entebbe laboratory, choosing instead to move immediately on the islands, because “only [there] did the outlook exist to find sufficient medical material and at once the possibility to study the *Glossina palpalis* [tsetse fly].”³⁰² While he insisted to Hodges that he had no hope for a drug that could treat or cure sleeping sickness, his subsequent work on the Sesse Islands soon became famous – and later infamous – for claiming to find precisely that.

The visit to Entebbe oriented the German expedition to conditions in Uganda and cemented cordial relations with British health officials and administrators, but it also likely drove home the benefits of working relatively independently at some distance from the capital. Koch chose the islands as the focal point of his expedition’s work for the same reason that British authorities elected not to locate their research laboratories there – they were too remote from Entebbe, and too deep into the thick of the outbreak.³⁰³ But the Sesse Islands’ unique place at the center of the epidemic offset their isolation from colonial resources for Koch’s expedition.

³⁰⁰ A.D.P. Hodges Diary, 8/16/1906, LSHTM, Hodges MSS, GB 0809 Hodges/01/10.

³⁰¹ On the laboratory, see Hesketh-Bell to Colonial Office, 11/23/1906, NA/CO 885/9/11, p. 104.

³⁰² Koch, Draft of “Bericht über die Tätigkeit der Expedition zur Erforschung der Schlafkrankheit während ihres Aufenthalts auf den Sese-Inseln bis zum 15. Oktober 1906,” BAB R 1001 5895, p. 1 Original text: “Obwohl es sehr verlockend war, das vortrefflich eingerichtete Laboratorium bei Entebbe zu wählen, so mußte ich mich doch für die von allem Verkehr abseits gelegenen Sese-Inseln entscheiden, weil nur hier die Aussicht bestand, ausreichendes Krankenmaterial und zugleich Gelegenheit zu Studien über die *Glossina palpalis* zu finden.”

³⁰³ British officials in Uganda were particularly sensitive to researchers’ health after Lt. Forbes Tulloch had been infected with sleeping sickness in early 1906. See ADP Hodges Diary, 2/16/1906, LSHTM, Hodges MSS; Robert Moffat to David Bruce, 3/13/1906, WTI/RST/G27 26.

His interests lay not in shaping British policy or getting involved in debates between metropolitan and colonial authorities, rather in advancing his own research and developing a broader knowledge of sleeping sickness prevention applicable in German East Africa.

At Bumangi and Bugalla in August 1906, Robert Koch and the sleeping sickness expedition, now numbering six German men and several African men working as porters, cooks, and servants, found a horrifying situation that was, for the purposes of their research, ideal. High mortality and morbidity – evidence of the disease’s advance – existed throughout the population; many of the islands’ younger men had already died, given their greater likelihood for an earlier exposure to the disease during fishing or seasonal labor on the mainland. They left behind a population composed mostly of the elderly, women, and children. Around the Catholic and Protestant missions, Koch found buildings suitable for research work and lodging – now largely empty, as the church’s community and activities shrank in relation to the death rate from sleeping sickness.³⁰⁴ In the Sesse, the team had a local community accustomed to a European missionary presence, and to the practices of European biomedicine in the White Fathers’ rudimentary clinic. But most importantly for the expedition’s research agenda, the people living near Bumangi and Bugalla were the epicenter of the sleeping sickness epidemic on the islands, experiencing the disease in its various stages. The fly carrier was abundant, a factor accepted, by this time, as essential to a sustained epidemic. After its circuit around Lake Victoria trailing a disease that existed only in anxious reports, the sleeping sickness expedition now landed amid a full-blown epidemic.

A hilly archipelago lying close to the mainland in the northwestern corner of the lake, the Sesse Islands were home to communities with close political, economic, religious, and military ties with the kingdom of Buganda on the mainland immediately to the north. Economic and social connections also linked Sesse to the Haya kingdom of Kiziba (in German

³⁰⁴ The White Fathers mission at Bumangi was founded in 1893; “IV-Stations en fin 1906,” *Rapports Annuels*, no. 1 (1905-06) M.Afr. AGM-Rome. The Church Missionary Society (Anglican) mission at Bubembe was founded in 1896, and the mission at Bugala dates from at least 1900; Anne Clark, personal correspondence, August 26, 2010.

East African colonial territory).³⁰⁵ The village and mission station of Bumangi sat on the largest island of the Sesse Archipelago, Bugalla, roughly midway between mainland Buganda and its capital, Entebbe, and the German East African town and station of Bukoba. Once the hub of canoe-building on the lake and a key to Ganda naval dominance, the Sesse Islands had declined in political importance after the turn of the century as Ganda energies turned inward in a time of turmoil.³⁰⁶ They remained important for the religious and political lives of people on the northern littoral, as the island of Bubembe was home to the shrine of Mukasa, a major Ganda deity and the *lubaale* or “national spirit” of the lake.³⁰⁷ Canoe-building expertise, long-standing fishing communities, and the islands’ position between Buhaya and Buganda meant, however, that the archipelago remained an important way station for Haya use of the lake as well as Ganda dominance.³⁰⁸ The islands, connected and yet separated from mainland Buganda, likely became more isolated as sleeping sickness spread along the lakeshore and among the islands, though connections to kingdoms further afield on the lakeshore would have persisted until lake

³⁰⁵ The Sesse archipelago is made up of 84 islands, covering 432 square kilometers; the largest island, Bugala, covers 269 square kilometers, a majority of the islands’ total landmass. Histories of pre-colonial and early colonial Buganda and Sesse rely in large part on the accounts of early missionaries and explorers, such as John Roscoe’s *The Baganda* (1911) and *Twenty-Five Years in East Africa* (1921), as well as Henry Morton Stanley’s *Through the Dark Continent* (1878) and *In Darkest Africa* (1890), John Speke’s *Journal of the Discovery of the Source of the Nile* (1863), and J.A. Grant’s *A Walk Across Africa* (1864). See Richard J. Reid, *Political Power in Pre-Colonial Buganda: Economy, Society, and Warfare in the Nineteenth Century*, (Oxford: James Currey, 2002); Reid, “The Ganda on Lake Victoria: a Nineteenth-Century East African Imperialism,” *Journal of African History* 29 (1998). Apolo Kagwa’s histories of Buganda, *The Kings of Buganda* (tr. M.S.M. Kiwanuka; Nairobi, 1971) and *The Customs of the Baganda* (tr. E.B. Kalibala, 1934) have also been heavily relied upon as sources on the Ganda kings and court. Kagwa himself looms large in the national histories of Buganda and Uganda as a historian and political figure; see, for instance, Holly Hanson, *Landed Obligation: the practice of power in Buganda*, (Portsmouth, NH: Heinemann, 2003), especially chapter 7.

³⁰⁶ Richard Reid, “The Ganda on Lake Victoria: a Nineteenth-Century East African Imperialism,” *Journal of African History* 29 (1998), p. 353, 358-60; Hartwig, “Lake Victoria as a Trade Route,” pp. 551-52.

³⁰⁷ Kodesh, *Beyond the Royal Gaze*, pp. 46-47.

³⁰⁸ On the relationship between the Sesse islands and Buganda in the nineteenth century, see Reid, *Political Power in Pre-Colonial Buganda*, p. 228-31, pp. 237-40. Gudowius, a German administrator at Bukoba, discusses Haya travel and trade on Lake Victoria, including increasing movement to and from islands near Entebbe, likely the Sesse islands. Gudowius, “Bericht über die Ausbreitung der Schlafkrankheti im Bezirk Bukoba, die Ursachen ihrer Einschleppung und die Massnahmen, die zur Verhinderung ihrer weiterverbreitung getroffen werden können,” 5/31/1908, BAB R 1001 5898.

travel was formally disrupted by colonial policy.³⁰⁹ This isolation was both benefit and trouble, as Hoppe argues, in that people living on the lake islands could “withdraw from state encroachment” but also remained “valuable” to the Ganda state.³¹⁰ Distance from the mainland brought the islands to colonial attention as well. When sleeping sickness was believed to be directly contagious in the epidemic’s first years, British officials proposed using one of the Sesse Islands as an isolation station for cases from the lakeshore kingdoms.³¹¹ Both British Anglican and Francophone Catholic missionaries had established churches on the largest of the islands in the last decade of the nineteenth century, but the missionary presence was also shaken by the epidemic.³¹² The precipitous drop in the islands’ population, as some fled in fear of the epidemic and many others died from it, paralleled a drawing-down of the missionary and colonial presence on the islands. Koch reported upon his arrival in late 1906 that the Anglican mission’s buildings had been abandoned; a new colonial government ordinance would severely restrict lake travel later that same year, isolating Sesse further.³¹³ Doctors, missionaries, and administrators alike reported that nearly two-thirds of the archipelago’s estimated former

³⁰⁹ On the relationship between Sesse and Buganda, see M.S.M. Semakula Kiwanuka, *A History of Buganda: from the Foundation of the Kingdom to 1900*, (New York: Africana Publishing Corp., 1972), p. 65-67; Richard Reid, “The Ganda on Lake Victoria: a Nineteenth-Century East African Imperialism,” *Journal of African History* 29 (1998), p. 353, 358-60; Kirk A. Hoppe, *Lords of the Fly: Sleeping Sickness Control in British East Africa, 1900-1960* (Westport, CT: Praeger, 2003), p. 44-46, p. 64-65. The Sesses were never completely isolated from the mainland, even after British authorities prohibited unmonitored lake travel.

³¹⁰ Hoppe, *Lords of the Fly*, p. 64.

³¹¹ Isolating cases on an island had been proposed since the early years of the epidemic, and continued to be considered as a preventive measures. George Low to Commissioner Hayes-Sadler, 10/20/1902, NAB FO 2/828, p. 118; Moffat to Bruce, 5/2/1905, WTI/RST/G27/16; Hesketh-Bell to Colonial Office, 11/23/1906, NAB CO 885/9/11, p. 102-103.

³¹² The White Fathers mission had established a mission at Bumangi in 1893, and the Anglican mission started nearby at Bugalla village, also on Bugalla island, in 1902. The Anglican mission at Bugalla may have been a mission from the nearby island of Bukasa relocated to Bugalla. The White Fathers at Bumangi reported that “Protestants are building a church at Bugalla,” in February 1902, Diary of Sese-Bumangi Mission, M.Afr. AGM Rome, p. 125.

³¹³ Koch, draft of “Bericht über die Tätigkeit der Expedition zur Erforschung der Schlafkrankheti während ihres Aufenthalts auf den Sese-Inseln bis zum 15. Oktober 1906,” 10/15/1906, BAB R1001 5895, p. 2; Despatch from Commissioner Hesketh-Bell to Colonial Office, 11/23/1906, BNA, CO 885/9/11, p. 102-12.

population of 30,000 had died from sleeping sickness between 1902 and 1908.³¹⁴ With the main energies of the British colonial administration focused on the lakeshore littoral in heavily populated areas of Buganda and Busoga, only a few Catholic and Protestant missionaries remained at Sesse at their station on Bugalla, the largest of the islands.³¹⁵



“Uganda Sud”³¹⁶

³¹⁴ Koch cited the White Fathers’ figure of 30,000 before the epidemic, and only 12,000 people remaining in 1906 in his 10/15/1906 draft report, “Bericht über die Tätigkeit der Expedition zur Erforschung der Schlafkrankheit während ihres Aufenthalts auf den Sese-Inseln die zum 15. Oktober 1906,” p. 3; Father Malet in a White Fathers regional report for 1908 indicated that the Sese island populations as 35,000 in 1900 and was 7,000 or 8,000 in March 1908, Malet to Mgr. Hirth, 3/26/1908, Society of the Missionaries of Africa (White Fathers), M.Afr. AMG-Rome, Regionaux Nyanza Meridional, Malet Correspondence, Dossier 96, folder 2, 096555; Commissioner Hesketh-Bell reported devastating mortality in his report of 11/23/1906, NA/CO 885/9/11, p. 102.

³¹⁵ While Koch notes that the CMS had abandoned at Bugalla, CMS material indicates that it was not until 1910, when the islands were evacuated by a government ordinance.

³¹⁶ Plate 22, *Nos Missions – Atlas Historique*, Société des Missionnaires d’Afrique (Maison Carrée, 1931).

While Koch arrived at Sesse believing it was to be the site of the research he had wanted to undertake since arriving in East Africa, that research agenda was not yet fully formed. In a draft letter to Dr. A.D. Milne, Medical Officer for British East Africa, Koch declared his intention to make use of the laboratory at Entebbe and later “go to the Sese-Islands and try the new remedies as well as the prophylactic measures.”³¹⁷ “Remedies” meant atoxyl and other chemicals and chemical dyes the expedition carried with it, though the nature of “prophylactic measures” – potentially running the gamut from fly control to preventive use of drugs – remained vague.

Mission Care and Sleeping Sickness at Bumangi and Bugalla

The German expedition’s choice to work on the Sesse Islands linked it into yet another source of information and material support: the French Catholic and British Anglican missionary churches on the largest islands of the archipelago. Relations with British colleagues as well as French missionaries in Uganda played to Koch’s advantage, facilitating some stability for the as-yet itinerant expedition. Sleeping sickness had, since the onset of the Lake Victoria epidemic, struck the Sesse missions fiercely. On Sesse, the expedition would work among missionaries, not among scientific colleagues, allowing the expedition to make the most of the White Fathers mission’s strong local presence but conduct their research relatively undisturbed – particularly by the social and professional niceties that sharing laboratory space with British scientists would require. And so in their day-to-day work, Koch and his assistants depended on the priests for an orientation to the surrounding villages and the history of the epidemic and resulting mortality. In addition to the tents, field supplies, and laboratory material they carried with them, the mission also gave them access to locally available resources, particularly unused buildings nearby the mission for their laboratory and clinical workspace. The expedition and

³¹⁷ Draft of letter, Koch to A.D. Milne (Medical Officer in British East Africa), 7/22/1906, RKI as/b2/160. Milne had also recently served as a medical officer in Uganda, and would go on to serve as Principal Medical Officer in British East Africa from 1909-1921, per Anna Crozier, *Practising Colonial Medicine: the Colonial Medical Service in British East Africa*, (London: I.B. Tauris & Co., 2007), p. 141, p. 147.

the missionaries likely came to work in a way mutually beneficial to them both – the missionaries had help in dealing with their sickest patients, and the expedition gained an association with an institution and medical treatment familiar to Sesse Islanders.

In his annual report for 1901-02, Père Ramond of the White Fathers mission at Our Lady of Good Comfort at Bumangi on the Sesse Islands reported on the spiritual and “temporal” state of the mission to his superiors in Europe. Spiritually, the mission’s fortunes were fine, if moving forward less quickly than the priests desired. However, the mission found itself in grave circumstances otherwise: illness took its toll on the African population to whom the Fathers tried to minister, creating a population weakened by disease and death. Ramond and his confrères were suspicious of the souls that they did win in baptism, for their converts’ nearness to death. Bubonic plague he reported as a familiar threat. Newer and less predictable was the illness “called sleeping sickness,” for which no remedy had been found: it was “very terrible and very murderous for all.”³¹⁸ In a population estimated at 26,000, Père Ramond reported that the mission had treated 6,000 cases that year (some of which could have been repeat visits).³¹⁹ Neither the Catholic mission nor the neighboring Anglican mission could cope with the sleeping sickness epidemic as it gained momentum. Reports of sleeping sickness – “which wreaks frightening havoc on our archipelago” – pepper the correspondence and regular diary entries of the White Fathers priests living on Sesse, beginning in late 1901.³²⁰

The missions provided a crucial stopgap in the colony’s ability to survey for and nurse the sick, later recognized by the government with small monetary assistance.³²¹ Like their

³¹⁸ *Rapports Annuels, Mission de Notre Dame de Bon Secours, Bumangi, Père Ramond*; M. Afr. Maison General Archives (Rome), Nyanza Septentrional, Sese Correspondence, Dossier 87, 087469-70.

³¹⁹ *Questionnaire, 1901-1902, Mission de Notre Dame de Bon Secours, Bumangi, Père Ramond*; M. Afr. Maison General Archives (Rome), Nyanza Septentrional, Sese Correspondence, Dossier 87, 087470.

³²⁰ Père Ramond to Mgr. Streicher, 5/24/1903, Sese-Bumangi Correspondence, Dossier 87, 087455-56, M.Afr. AGM-Rome. Original text: – “qui... fait des ravages effrayants dans notre archipel.”

³²¹ See Aylward Shorter, *Cross and Flag in Africa; the “White Fathers” during the Colonial Scramble (1892-1914)*, (Orbis Books, Maryknoll, NY; 2006), p. 115; regarding the hospital at Kisubi (nearest Entebbe), see Hesketh-Bell to Colonial Office, 11/23/1906, 11/23/1906, NAB, CO 885/9/11, p. 103-104.

colleagues' stations near Kampala, Entebbe, and at Villa Maria (adjacent to the Sesse Islands on the mainland), the White Fathers on Sesse built hospices, which they called hospitals, to house both early and advanced cases of sleeping sickness. They could only offer palliative care through the months-long course of the infection. At Sesse, one priest described how people came in the early stages of the disease, demanding much of the men and women affiliated with the mission who cared for them, needing "everything that a mother would do for her child."³²² On Bumangi, appealing to the mission for care, and coming forward to receive new medicine (in the form of atoxyl), was for many a last resort.³²³ Many people only came to the mission because they had no surviving relatives to care for them, or were brought by relatives perhaps unable to care for them when they displaying the "madness" that occasionally accompanied the late stages of the disease.³²⁴ Some catechists expressed a desire not to be far from a priest on their deathbed. In all cases, the mission functioned not as a clinic, but as a hospice, and within a few years of the disease's arrival at Sesse, these situations of last resort likely confronted the islanders more and more frequently.³²⁵

We can glean something of the motivations of the sick and their relatives in coming to the mission hospital, from the diaries and letters of the missionaries as well as patient charts and notes. When taken alongside Koch's account of his research at Sesse and the initial experience of the sleeping sickness campaign doctors in the following year, the contours of a pattern among local communities on Sesse emerge. Mission catechists and those otherwise affiliated came readily to the priests for care, and were also more likely to be brought into more

³²² "La maladie du sommeil aux îles Sésé. (Lettre d'un missionnaire de Boumangi)," *Mission d'Alger*, no. 177, May 1905-Jan. 1906, p. 290, M.Afr. AGM-Rome. Original text: "Le personnel chargé des malades est, en général, admirable de dévouement, et Dieu sait s'il en faut pour satisfaire les caprices de pauvres gens qui, à la première période de leur mal, sont si exigeants, et qui, à la dernière [sic], ont besoin qu'on leur rend tous les service qu'une mère donne à son enfant!"

³²³ Ibid, p. 290; see also Kirk Hoppe, *Lords of the Fly*, p. 74, note 69, regarding use of British camps as a last resort.

³²⁴ Hoppe, *Lords of the Fly*, pp. 75-76.

³²⁵ Diary of Sese-Bumangi Mission for the years 1902-1907, M.Afr. AMG-Rome.

aggressive regimens subsequently.³²⁶ Sesse Islanders received new treatments and new approaches to illness with cautious acceptance and persistence amid unfamiliarity, but could as easily abandon them, along with withdrawing from the people administering them, if their utility was not readily apparent.³²⁷ Sleeping sickness treatments, discussed below and in the following chapter, proved a disastrous combination of effecting initial improvement followed by eventual decline in health, accompanied at times by debilitating side effects. Atoxyl provides the best example of such a drug, effective at poisoning trypanosomes in the short-term and toxic to humans as well in the longer term. In this way, it perhaps worked better than any other drug available at the time to attract and then destroy the willingness of African communities to engage with colonial anti-sleeping sickness measures.³²⁸

By 1904, a British researcher on the Sleeping Sickness Commission wrote that “sleeping sickness is very bad on the islands,” noting that the population on the lakeshore had been “almost completely wiped out.”³²⁹ As months went by at the larger hospice at Kisubi and the smaller, 36-cot shelter at Bumangi, however, rooms full of the sick emptied as people

³²⁶ Father Le Neux at Villa Mariya noted in a letter to the vicariate that one of their catechists was being treated by Koch, Le Neux to Vicariate, 4/28/1907, M. Afr. Villa Maria Correspondence, Dossier 87bis, 087565.

³²⁷ I view the process during which Sesse Islanders, engaged with German sleeping sickness treatments as fitting into a larger process of individuals, families and communities selecting from available therapies for an illness, following Feierman and Janzen. See Steven Feierman and John M. Janzen, “Introduction,” *The Social Basis of Health and Healing in Africa*, (Berkeley: University of California Press, 1992), p. 12-13; John M. Janzen, *The Quest for Therapy in Lower Zaire*, (Berkeley: University of California Press, 1978); Steven Feierman, “Struggles for Control: The Social Roots of Health and Healing in Modern Africa,” *African Studies Review*, vol. 28, no. 2/3 (Jun.-Sep. 1985); John M. Janzen, “Therapy Management: Concept, Reality, Process,” *Medical Anthropology Quarterly*, vol.1, iss. 1 (March 1987). Filip de Boeck revisits the problem of therapy and consensus in “Therapeutic Efficacy and Consensus among the Aluund of South-Western Zaire,” *Africa: Journal of the International African Institute* 61, 2 (1991), pp. 159-185.

³²⁸ Maryinez Lyons reaches a similar conclusion regarding use of atoxyl in the Belgian anti-sleeping sickness campaign; my analysis of German anti-sleeping sickness campaign in chapters 5 and 6 focuses on the local dynamic surrounding sleeping sickness camps, of which atoxyl treatments were a part. Lyons, *Colonial Disease*, p. 198.

³²⁹ E.D.W. Greig to David Bruce, 4/14/1904, WTI/RST/G27/4.

recognized that they and their relatives could not be healed.³³⁰ The missionaries stood by, watching together with Sesse Island communities as death made “dry islands” of the archipelago and the population continued to diminish.³³¹ By late 1906, the Ugandan colonial government agreed with Koch’s estimation that everyone on Sesse had been infected with sleeping sickness, and that the population would decrease further in the coming years.³³²

Research in Process at Bumangi and Bugalla

Sleeping sickness research at Bumangi and Bugalla involved scientists, missionaries, and villagers, each drawn into relationships and interactions newly ordered and defined by illness and disease. Those relationships and interactions centered largely on activity at the sleeping sickness camp at Bugalla, the development and growth of which provides insight into the processes of research undertaken by the German expedition. The sleeping sickness expedition and the White Fathers at Bumangi began a cordial relationship in August 1906. Koch’s narrative of the expedition’s work unfolds seamlessly, recounting that the team of men arrived, set up shop, and soon began to examine people, draw blood and palpate glands, identify trypanosomes under microscopes, and develop regimens to test and treat people with anti-trypanosomal drugs. This story, undoubtedly read favorably by his metropolitan audiences, glosses over the complex processes of organizing and recruiting patients – of creating a clinical and laboratory order useful for Koch’s research – involved in making the camp function.³³³

³³⁰ Koch, Draft of “Bericht über die Tätigkeit der Expedition zur Erforschung der Schlafkrankheit während ihres Aufenthalts auf den Sese-Inseln bis zum 15. Oktober 1906,” BAB R 1001 5895, p. 2. Original text: “Wie mir die Missionare mitteilten, hatte diese Abnahme der Krankenzahl ihren Grund teils in der erheblichen weiteren Abnahme der Bevölkerung, teils darin, daß die Eingeborenen ihre Schlafkranken nicht mehr ins Lazarett brachten, weil ihnen doch nicht zu helfen war.” On the Sese-Bumangi hospital, see “La maladie du sommeil aux îles Sésé. (Lettre d’un missionnaire de Boumangi),” *Mission d’Alger*, no. 177, May 1905-Jan. 1906, p. 289, M.Afr. AGM-Rome.

³³¹ Quoted in Koch, “Draft of Bericht über die Tätigkeit der Expedition zur Erforschung der Schlafkrankheit während ihres Aufenthalts auf den Sese-Inseln bis zum 15. Oktober 1906,” 10/15/1906, BAB R 1001, 5895, p. 3.

³³² See Hesketh-Bell to Colonial Office, 11/23/1906, BNA, CO 885/9/11, p. 105.

³³³ Latour discusses the different “moves” that Pasteur must make to assert control over anthrax, wresting it from farmers and veterinarian and how this political-organizational work appears naturalized, in retrospect. Koch’s reports also made his work in organizing the camp at Sesse the result of a familiar and

Koch's work on Sesse – in process, contentious, and contingent – ran a decidedly more complicated route. Unpacking the process of development of specific elements of that research and of the sleeping sickness camp reveals the social and medical factors involved in its development, some of which were rooted in responses to engagement with Sesse islanders and French missionaries, not in laboratory medicine imported from Europe.

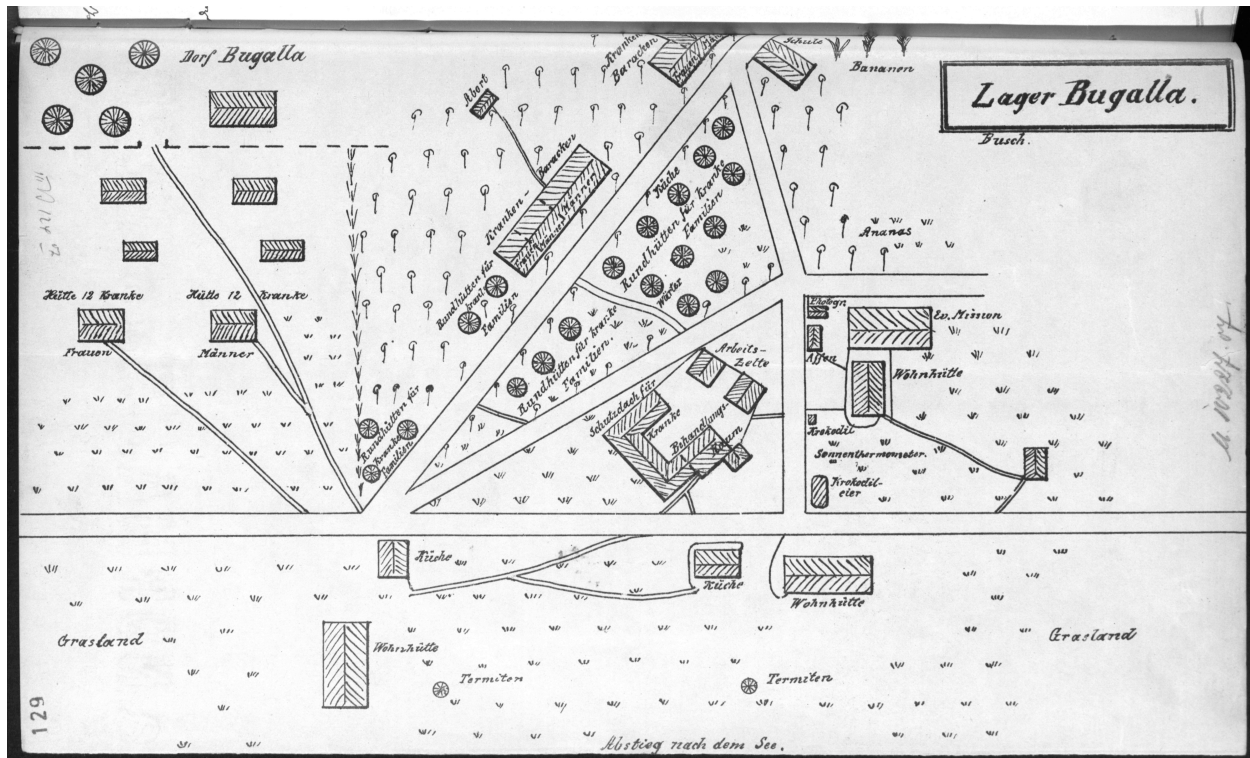
The doctors' first step in creating a laboratory and clinical space was to screen people and then divide and segregate them according to their level of illness. Dividing the sick into early and advanced cases, Koch and the team split up, with two men working among advanced cases in the Bumangi mission hospice and Koch and the remaining two others working with ambulant cases in the old buildings of the Anglican mission at Bugalla. By late October, 250 people stayed at the Bumangi mission, and another 800 were in treatment at Bugalla.³³⁴ This distribution of labor allowed the expedition to specialize tasks and function more efficiently, while also relying on the Catholic mission for assistance with the sickest cases. Dividing people into categories also allowed a rudimentary hospital and laboratory order to take shape, in which patients' vital statistics could be followed and their exposure and response to drugs noted, day by day. Koch referred to the Bugalla site, with mission buildings augmented by open, thatched-roof bandas, as the "camp." Composed of living huts for sick families, barracks and larger huts divided by sex, two "work tents" for laboratory investigations, living huts for the expedition members, several kitchens, and a large, sheltered treatment area, the camp lay close to the lake and surrounded the original Protestant mission. In the large treatment rooms, people would be "examined, registered, injected, and punctured."³³⁵ Treatment rooms, and the

regular process to a European audience. I point up the work of creating a research-oriented laboratory and clinical order to highlight that this process was not necessarily familiar or regularized for Sesse islands, even considering their prior experience with the White Fathers' biomedical practice. See Latour, "Give me a laboratory and I will raise the world," pp. 144-53.

³³⁴ Delévaux to "Pierre-Marie," 10/29/1906, M. Afr. Sese Correspondence (Nyanza Septentrional), Dossier 87, 087461.

³³⁵ Koch, Draft of Bericht über die Tätigkeit der Schlafrankheits-Expedition bis zum 25. November 1906," 11/27/1906, BAB R 86, 2613, p. 2.

doctors' twin laboratory tents, became the focus of activity, around which sick people circulated or waited – often lying on the ground or resting against fences, as depicted in doctors' photographs.



"Bugalla Camp"³³⁶

Another key aspect of the organization of sleeping sickness treatment and atoxyl testing lay in the process of gathering information about the population under scientific purview, which established a baseline for medical statistics. Patients were given numbers, and wooden tags with their number hung from a string around each person's neck.³³⁷ Knowing the personal

³³⁶ Koch, "Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 25. November 1906." GStA PK, 1 HA. Rep. VIII, Nr. 4118, p. 129.

³³⁷ Koch's notes for research at Sesse, and subsequent reports, all use numerical designators for patients to follow a case's progress, see RKI AS/w6/006. Photographs of the Bugalla camp also show people wearing wooden tags are in Koch's Sese Photoalbum, RKI 6105, "6. Schlafkranke im Lager Bugalla" (6105006), "Kranke mit Erkennungsmarke" (6105009), "Junge aus Busoga (Sese Inseln)" (6105010).

histories of the sick – where they lived and their age, livelihood, family structure, and patterns of movement – was fundamental to Koch’s attempt to build an epidemiological understanding of the populations he encountered on the lake. Such a survey or census was an essential tool of nineteenth-century epidemiology, allowing a doctor like Koch to draw conclusions about disease transmission (people living in areas with or without tsetse flies), mobility (sick people traveling in and out of tsetse fly areas), and prevalence (how many people among a population were sick).³³⁸ The process of counting, naming, and locating people was in itself important to the colonial project, providing information on populations, their economies, and political organization. But the specific process of enumerating and registering people, of gathering information, often remains opaque in the historical record. Counting people and inscribing them in medical records is taken as a natural and intuitive part of the medical research process, leaving the labor and social interactions behind patient data vague and unspecified. But this process involved strategies employed by both questioners and answerers and was thick with the potential for error – data was only as reliable as the answers given. At the same time, the simplicity of interacting, of asking and answering questions, was likely judged as so much less complicated than clinical work by researchers that it was not necessary to elaborate on it.

Securing access to the desired “Krankenmaterial,” accessing the bodies and fluids of the Sesse population was also crucial. The ideal material for confirming a diagnosis of sleeping sickness was a person’s cerebro-spinal fluid, drawn in a tap of the spinal column; it was most reliable in all but the earliest stages of infection. Next was glandular fluid, aspirated from the swollen glands on the neck that presented the “telltale” sign of the disease. Most problematic was the peripheral blood, in which trypanosomes were not always visible even when a person was infected. Bringing people into close contact in order to draw blood or spinal fluid was not easy; Koch explained in October 1906 that they had chosen to sample only blood because researchers “would encounter decisive resistance from the natives with spinal taps and tapping

³³⁸ Alfredo Morabia’s introduction to *History of Epidemiologic Methods and Concepts*, (Basel, Switzerland: Birkhauser Verlag, 2004).

the enlarged lymph nodes on the neck."³³⁹ But when blood samples indicated only 3 of 180 people had trypanosomes in their bloodstream, doctors pushed further – nothing remained but to sample lymph. Here, rather than resistance, the team found people willing to undergo the procedure, which involved inserting a syringe into a swollen gland and withdrawing a small amount of fluid. It is possible that Sesse Islanders understood gland punctures and atoxyl “treatment” injections as part of a common therapeutic regime, or perhaps that doctors explained their work in this way. But narratives of research on Sesse suggest a many-layered process of negotiating testing and treatment – a process that involved German doctors, French missionaries, and Sesse villagers. At roughly the same time, Father Delévaux described the mission’s arrangement with the expedition:

...we have the most cordial relationship with the members of the commission. They ask us to use our influence with the natives to encourage them to come to have themselves treated and we have fully succeeded. As rent, for the two doctors who are set up at our place, Mr. Koch has fixed a compensation of 100 Fr. per month for the sick. This sum will allow us to acquire for these unfortunate people a diet that is a little more substantial, which will be a considerable aid for the cure.³⁴⁰

Here, cooperating with the German expedition and, more importantly, encouraging the cooperation of Sesse islanders with whom they interacted, is cast as a means to further the mission’s ongoing role to care for and feed the sick.

Koch does not indicate how much time elapsed between taking blood and taking lymph, but given the number of people being tested, it was certainly several days. The mission’s encouragement could have proven a timely intervention. Koch himself offered another reason for the success of testing with lymph:

³³⁹ Koch, “Draft of Bericht über die Tätigkeit der Expedition zur Erforschung der Schlafkrankheit während ihres Aufenthalts auf den Sese-Inseln bis zum 15. Oktober 1906,” 10/15/1906, BAB R 1001, 5895, p. 4. Original text: “...nach den früheren Erfahrungen die Lumbarpunktion und die Punktion der vergrößerten Halslymphdrüsen bei den Eingeborenen auf den entschiedensten Widerstand stoßen würden.”

³⁴⁰ Delévaux to “Pierre-Marie,” 10/29/1906, M. Afr. Sese Correspondence (Nyanza Septentrional), Dossier 87, 087462. Original text: “...nous avons avec les membres de la Commission le relation le plus cordiale. Ils nous ont demandé d’user de notre influence par les indigènes pour les engager à venir se faire traiter et nous avons pleinement réussi. Comme paiement de loyer pour les deux docteurs qui se sont établis chez nous Mr. Koch fixé une gratification de 100 Fr par mois en faveur des malades. Cette somme nous permettra de procurer à ces malheureux un régime un peu plus substantiel qui sera pour le remède adjuvant considérable.”

The natives had already become aware that one of the most constant characterizations at the beginning of the illness is the swelling of lymph nodes and they therefore found it fine that one would focus on these glands and that under the circumstances a small incision would be made into them. The gland puncture thus gradually became an integrated part of the treatment and we do not encounter the slightest resistance to this procedure. On the contrary, it occurred quite often that the sick themselves asked for it.³⁴¹

Sesse islanders' willingness to have their lymph glands punctured can be viewed not as recognition of the validity of European diagnostic procedures nor of biomedical explanation for illness and death, as the missionaries' and researchers' believed. Rather, it evinces a willingness to integrate new potential tools for addressing death and disease into Sesse nosologies.

Scattered reports linking a Luganda disease name with the presence of swollen cervical glands provides a glimpse into this possibility. A British researcher some years earlier had recounted a connection made by mainland Ganda-speaking patients between swollen glands and the eventual ailing of a person with "mongota," the Ganda name for an illness reported by missionary and British sources.³⁴² The British researcher in question, E.D.W. Greig also mentioned this connection in the context of research; Ganda willingness to allow gland punctures under the rubric of "mongota" was cited as a point that could facilitate ongoing medical research.³⁴³ We can interpret Koch's comments and those of his British contemporary to rely upon the assumption that the disease they called "sleeping sickness" was the same illness that Ganda-speakers called "bamongota" or "mongota."³⁴⁴ Doctors were, in effect, attempting

³⁴¹ Koch, Draft of Bericht über die Tätigkeit der Schlafrankheits-Expedition bis zum 25. November 1906," 11/27/1906, BAB R 86, 2613, p. 5. Original text: "Die Eingeborenen waren selbst schon darauf aufmerksam geworden, daß eine der konstantesten Kennzeichen beim Beginn der Krankheit die Anschwellung der Lymphdrüsen am Halse ist und sie fanden es deswegen ganz in der Ordnung, daß man sich auch mit diesen Drüsen beschäftigte und daß unter Umständen ein kleiner Einschnitt in dieselben gemacht wurde. Die Drüsenpunktion wurde so allmählich ein integrierenden Teil der Behandlung und wir begegnen bei der Ausführung derselben nicht dem geringsten Widerstand. Es kommt im Gegenteil öfters vor, daß die Kranken selbst darum bitten."

³⁴² Greig to Bruce, 4/14/1904, WTI/RST/G27/4.

³⁴⁴ The Bumangi mission's confrères at Villa Maria called the disease "bamongota," after its name in Luganda, noted in correspondence from Father Le Neux, 4/28/1907, M. Afr. AMG-Rome, Villa Maria Correspondence, Dossier 87bis, 087565. I do not presume that "mongota" and "sleeping sickness" were equivalent, nor that names and definitions of disease were consistent among doctors and patients or patients' caretakers. Indeed, the novelty of sleeping sickness as a biomedically defined entity in the early twentieth century, and the shifting consensus around it among European scientists, throws into sharp relief the absurdity of considering the biomedical definition any more stable than "traditional"

to establish a common but superficial nomenclature among Europeans and Africans about what was causing pain and death, albeit one that sought to bring Ganda names and definitions into line with those from European biomedicine, which always dominated. However, we do not know how Sesse or Ganda nosologies associated changes to the body – here, in the form of new points of growth or swelling – with other signs or etiologies of illness, or whether or how cutting into the body and removing liquids had, at the time, utility as a diagnostic or curative measure.³⁴⁵ Mongota's symptoms may have included a wide variety of other corporeal and social signs in addition to the two points of commonality that colonial doctors saw with the disease they defined as sleeping sickness: swollen glands on the neck and a nodding sleep that ended in death. Colonial doctors' conflation of sleeping sickness and mongota were useful. For European doctors, equating mongota with sleeping sickness gave them a point of traction in advocating for particular health interventions, such as giving regular injections or resettling people in a different area, by allowing them to use a Luganda word when talking with people to refer to the illness. We can also understand references to mongota/sleeping sickness cropping up in missionary and researchers' texts as evincing African agency in seeking assistance for a known illness, with its own etiology, that people then deliberately located within biomedical definitions of sleeping sickness. Sesse Islanders' demands for injections or gland punctures from the newly-arrived doctors should be understood, then, following

understandings of what mongota was, where it came from, and how it might be treated. Stacey A. Langwick's article "Devils, Parasites, and Fierce Needles: Healing and the Politics of Translation in Southern Tanzania," *Science, Technology & Human Values* 32 (2007) suggest both a framework and methodology for analyzing biomedical and traditional healing through a close attention to practice and the object of intervention. On translation and innovation within Tswana diagnostics, see Julie Livingston, "Productive Misunderstandings and the Dynamism of Plural Medicine in Mid-century Bechuanaland," *Journal of Southern African Studies* 33, 4 (2007), pp. 801-10. On boundary-crossings around smallpox variolation and vaccination, see Luise White, "Differences in Medicine, Differences in Ethics: Or, When is It Research and When is It Kidnapping or is That Even the Right Question?" in Geissler and Molyneux, eds. *Evidence, Ethos and Experiment*, specifically pp. 445-50 on the pre-WHO eradication campaign era.

³⁴⁵ Smallpox variolation and inoculation presents a potential point of comparison, though the history of variolation in Africa is itself a contested topic. Kodesh, *Beyond the Royal Gaze*, discusses smallpox in pre-colonial Buganda in relation to the Cwezi figure Ndahura, pp. 121-24; on endemic and epidemic smallpox in the colonial period, see Marc H. Dawson, "Socioeconomic Change and Disease: Smallpox in colonial Kenya, 1880-1920," in Feierman and Janzen, eds., *The Social Basis of Health and Healing in sub-Saharan Africa* (Berkeley: University of California Press, 1992), pp. 90-103.

Feierman, as evidence of people trying and selecting from a range of therapies available to them.

Finally, but also centrally, the organizing and ordering of people in the Bugalla camp enabled Koch and his team to conduct experiments on the efficacy of several drugs and chemical dyes in killing trypanosomes in the human body. Injections resulted from cumulative work, following diagnostic tests, screening patients, registering people, and the convergence of doctors, missionaries, and Sesse Islanders. The camp's primary function, as a site of research, was to evaluate potential chemotherapies, particularly the use of the drug atoxyl.

Atoxyl, a compound first promoted as a drug in 1902 and first used for experimental work to kill trypanosomes in 1905, was derived from organic arsenic.³⁴⁶ Familiar with its effects on trypanosomes in animals, and its use by other practitioners at work in Africa, Koch requested a significant amount of the drug when planning the expedition to East Africa.³⁴⁷ At Bugalla, Koch implemented a regimen of doses of atoxyl, injecting the drug in varying quantities, typically between the shoulder blades. After the initial set of injections, patients improved visibly, as the drug killed the trypanosomes attacking their system. The results of initial treatment with atoxyl encouraged the scientists, missionaries, and possibly also the camp's patient-inhabitants – here each had a material improvement that they could associate directly with receiving an injection.³⁴⁸ The flush of enthusiasm for atoxyl led Koch to remark that “more and more patients are streaming in from the Sesse Islands and also from a greater distance on the mainland.” The Ugandan government also reported to the Colonial Office that

³⁴⁶ Steven Riethmiller, “From Atoxyl to Salvarsan: Searching for the Magic Bullet,” *Chemotherapy* 51 (2005), p. 236; Monika Mülders, “Formeln gegen Flagellaten – Der pharmakologische Kampf gegen die afrikanische Trypanosomiasis, 1900 bis 1950,” Unpublished Ph.D. Dissertation, Ruprecht-Karls-Universität Heidelberg, 2003, pp. 75-84.

³⁴⁷ Appendix to “Betrifft Expedition zur Erforschung der Schlafkrankheit. Auf den Erlaß vom 1. Februar 1906,” Max Beck to Bumm (Director, Imperial Health Institute), 2/29/1906, BAB R 86, Akte 2613.

³⁴⁸ Enthusiasm for injections presents its own set of questions, touched upon by Luise White in *Speaking with Vampires: Rumor and History in Colonial Africa* (Berkeley: University of California Press, 2000), p. 99-100. More specifically, on injections and healing in colonial Tanganyika, see Patrick Thomas Malloy, “Holding [Tanganyika] by the Sindano”: Networks of Medicine in Colonial Tanganyika,” Unpublished Dissertation, University of California-Los Angeles (2003). On injections with atoxyl specifically, but also for yaws, see Hunt, *Colonial Lexicon*, pp. 92-97.

“natives suffering from sleeping sickness are flocking to [Koch] in hundreds.”³⁴⁹ His first two reports, from mid-October and late November 1906, reflected Koch’s pleasure with the enthusiastic response his work received on Sesse and the promising results of atoxyl treatments, and voiced his intention to develop a treatment regimen that could be applied to thousands of people. His tone was measured and optimistic:

Obviously, we are not of the opinion that it is already a matter of a definitive healing; for that the observation time is still too short. But it is particularly to be noted, that in all cases, in which the improvement had initially begun, it is also constantly progressing.³⁵⁰

But amidst this optimism, uncertainty also appeared in Koch’s reports. Improvements in severely sick patients could not, Koch reported, be won through use of atoxyl – some people were beyond help. Koch defined those cases as outside the scope of his atoxyl research, a move that betrays some concern for the stability of his statistics linking recovery and atoxyl treatment.³⁵¹ The expedition focused their energies instead on the “very sick” (“Schwerkranke”) and “less sick” (“Leichtkranke”), two categories representing different stages of sleeping sickness, to determine what, if any, treatments could intervene in the progress of the disease at different points.

By the following April, both Koch and the White Fathers observing his work began to equivocate. Although atoxyl seemed to be working, in that trypanosomes were disappearing from bodily fluids tested and glands were less swollen after treatments, it did not lead to an objective and lasting improvement in patient’s health.³⁵² Trypanosomes disappeared from the

³⁴⁹ Koch, “Draft of Bericht über die Tätigkeit der Expedition zur Erforschung der Schlafkrankheit während ihres Aufenthalts auf den Sese-Inseln bis zum 15. Oktober 1906,” 10/15/1906, p. 9. Original text: “Infolgedessen strömen immer mehr Kranke von den Sese-Inseln und auch schon aus größerer Entfernung vom Festlande herbei.” See also Hesketh-Bell to Colonial Office, 11/23/1906, p. 105.

³⁵⁰ Koch, “Draft of Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 25. November 1906,” 11/27/1906, BAB R 86, 2613, p. 6. Original text: “Selbstverständlich sind wir nicht der Meinung, daß es sich dabei schon um definitive Heilungen handelt, dazu ist die Beobachtungzeit doch noch zu kurz. Aber es ist besonders darauf hinzuweisen, daß in allen Fällen, in welchen die Besserung einmal begonnen hat, dieselbe auch beständig fortgeschritten ist.”

³⁵¹ Koch, *ibid.*, p. 9.

³⁵² Koch, “Draft of Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 25. April 1907,” BAB R1001 5896, p. 3.

bloodstream for longer periods, but patients were not being cured. Koch therefore decided to increase the doses of atoxyl injected to try to kill trypanosomes permanently. But this led to resistance to injections among patients, stemming from adverse reactions to the drug and the pain of injections, as well as evidence of persistent blindness as a side effect of long-term atoxyl injections. A priest at Bumangi, describing Koch's continual hope that the proper application of atoxyl could be determined "to kill the microbes without killing the patient and also without causing other complications," noted starkly "it is almost 8 months that certain patients had been treated and by their own admission, the doctors still cannot guarantee a cure for anyone."³⁵³

The failure of atoxyl to deliver long-term results for sleeping sickness likely encouraged Koch to try a wider variety of chemicals on patients at the camp in the expedition's final six months in East Africa. More pragmatically, the team had exhausted its supply of atoxyl and waited for more, and Koch had also been alerted to the possibility of atoxyl resistance in trypanosome research in animals.³⁵⁴ In April 1907, and probably extending into the summer months, the expedition treated people in the Bugalla camp with injections of Afridol blue (Trypanblau or trypan blue) and "Trypanrot" (trypan red). Both Afridol blue and Trypanrot were dyestuffs and benzidine derivatives, and were, like atoxyl, supplied by Paul Ehrlich's laboratory at the Institute for Experimental Therapy.³⁵⁵ People did not tolerate either drug at all, as noted by doctors, nor did dyestuffs have a noticeable effect on trypanosomes in patient's blood or lymph. Experiments with atoxyl and the dyes used as alternatives pointed only to negative conclusions about their efficacy.

³⁵³ Reynés to Vicariat Nyanza Septentrional, 4/10/1907, M. Afr. AMG-Rome, Sese Correspondence, Dossier 87, 087052. Original text: "Si j'ai bien compris les diverse déclarations de M. Koch, je crois qu'il est persuadé qu'il a vraiment le remède, en l' "atoxyl"; reste à trouver la bonne méthode d'application permettant de tuer les microbes sans tuer le malade et sans lui occasioner d'autres complications"; "Voilà bientôt huit mois que certains malades sont traités et de leur propre aveu, les docteurs ne peuvent encore garantir la guérison de personne."

³⁵⁴ Koch, Draft of "Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 25. April 1907," BAB R1001 5896, p. 2.

³⁵⁵ Koch, *ibid.*, p. 8; Mülders, "Formeln gegen Flagellaten," pp. 59-61 (regarding Trypanrot) and pp. 59-60 (regarding Trypanblau); Anthony S. Travis, "Anilines: Historical Background," in Zvi Rappaport, ed., *The Chemistry of Anilines*, (Wiley: West Sussex, 2007), pp. 55-56.

“A medicine as good as quinine”: Atoxyl and the Comparison with Malaria

In the long view, testing atoxyl, though not Koch’s avowed purpose in East Africa, had a strong influence on the expedition’s research agenda, impacting the work they did for the duration of their time in Uganda and its reception among peers and colleagues internationally. Work with the drug had not always been the keystone of Koch’s research agenda, but implementing a set of experimental treatments among people on the Sesse Islands changed its priority for the expedition. Three months after beginning work on Sesse, at which point he also assured A.D.P. Hodges that he held hope only for the success of preventative measures, Koch confessed a complete reversal of this opinion to the director of the Imperial Health Office:

Originally I had assumed, that nothing therapeutic could be done against the disease, and that prophylaxis must be founded upon an avoidance of the possibility for infection and upon combating *Glossina palpalis* [tsetse fly]. That has completely changed. Namely, it has emerged that we have in atoxyl a substance that seems to be a similar specific against sleeping sickness, as quinine is against malaria.³⁵⁶

Citing quinine and malaria was a bold move, considering the dramatic recent history of the identification of malaria’s causative parasite and its mosquito carrier. Malaria had the broadest reach and greatest impact of any comparable disease or field of study in colonial and tropical medicine circles.³⁵⁷ The direct analogy between sleeping sickness and malaria would have had broad currency in tropical medicine, given their basic similarities as insect-borne diseases caused by protozoan parasites. Likewise, modeling sleeping sickness prevention after malaria presented no great leap in logic for tropical medicine practitioners. Separating people from

³⁵⁶ Koch to Bumm (Director, Imperial Health Office), 11/5/1906, BAB R 1001, 5895. Original text: “Ursprünglich hatte ich angenommen, dass therapeutisch gegen die Krankheit kaum etwas auszurichten sei, und dass die Prophylaxis auf eine Vermeidung der Infektionsgelegenheit und auf die Bekämpfung der *Glossina palpalis* begründet werden müsse. Das hat sich nun aber vollständig geändert. Es hat sich nämlich herausgestellt, dass wir im Atoxyl ein Mittel besitzen, das ein ähnliches Spezifikum gegen die Schlafkrankheit zu sein scheint, wie das Chinin gegen die Malaria.”

³⁵⁷ The malaria parasite was identified in 1897 by Alphonse Laveran; the mosquito was established as its carrier by Ronald Ross in 1898. Controversy ensued over Ross’s priority over simultaneous work by Italian scientists, but Ross maintained credit for the discovery. See Randall Packard, *The Making of a Tropical Disease: a Short History of Malaria*, (Baltimore: Johns Hopkins University Press, 2007); David Arnold, ed., *Warm Climates and Western Medicine: the Emergence of Tropical Medicine, 1500-1900*, (Atlanta, GA: Rodopi, 1996); Philip Curtin, *Death by Migration: Europe’s Encounter with the Tropical World in the Nineteenth Century*, (Cambridge: Cambridge University Press, 1989); Douglas Haynes, *Imperial Medicine: Patrick Manson and the Conquest of Tropical Disease*, (Philadelphia: University of Pennsylvania Press, 2001).

carriers by employing varying forms of resettlement or segregation had a precedent in malaria prevention tactics, as did attacking the fly vector in its natural habitat.³⁵⁸ Both were on the colonial docket already in Uganda.³⁵⁹ But asserting that a cure for sleeping sickness had been found – by analogy to quinine, and without expressly calling it a “cure” – was guaranteed to attract attention to Koch’s work. The connection between malaria research and sleeping sickness research, in shaping concepts of the latter disease and its treatment, appears to have been intuitive for tropical medicine practitioners at the time. Such contemporary thinking makes it all the more striking that direct and explicit links between malaria and sleeping sickness research have gone unexplored in historical scholarship. One reason for this is the detour of time and considerable distance involved in the development of Koch’s attachment to malaria as an explanatory model.³⁶⁰

In 1898, Koch had traveled to German New Guinea in the western Pacific, to investigate malaria on agricultural plantations there. From his work in New Guinea emerged the idea that controlling parasitemia – the concentration of parasites living in a patient’s peripheral bloodstream, where they could easily be taken up and transmitted by an insect carrier – was a key to arresting a vector-borne epidemic. This could be done, Koch argued, by treating an entire population, from infants to the elderly, with quinine on a regular regimen lasting two months. Quinine, correctly and persistently employed, could render formerly unhealthy areas healthy and allow doctors to break the cycle of malaria transmission without attacking the mosquito carrier at all; though Koch acknowledged the importance of general improvements in

³⁵⁸ Philip Curtin, “Medical Knowledge and Urban Planning in Tropical Africa,” *American Historical Review* 90, 3 (1985), pp. 594-613; John W. Cell, “Anglo-Indian Medical Theory and the Origins of Segregation in West Africa,” *American Historical Review* 91 (1986), pp. 307-35.

³⁵⁹ Hoppe, *Lords of the Fly*, chapter 3, p. 55-79.

³⁶⁰ Philip Curtin’s seminal article, “Medical knowledge and urban planning in tropical Africa,” *AHR* 90, no. 2 (June 1985), pp. 594-613, folds Koch’s work into that of his British contemporaries, focusing on the formation of malaria prevention policies and the rise of segregation across sub-Saharan Africa. Lenny A. Ureña Valerio’s recent dissertation does not connect Koch’s quinine research with his sleeping sickness work, but does link Koch’s work on malaria in Africa and Europe. See Lenny A. Ureña Valerio, “The Stakes of Empire: Colonial Fantasies, Civilizing Agendas, and Biopolitics in the Prussian-Polish Provinces (1840-1914),” Unpublished Dissertation; University of Michigan, 2010, pp. 196-98.

public health, a wide use of quinine truly enabled people to live in mosquito-ridden areas without incident or harm.³⁶¹ This idea of how to sanitize the human habitat followed a logic at once highly pragmatic and wholly authoritarian: eliminating malaria required killing the causative parasite, but people were easier to control than mosquitoes and destroying mosquito habitats was expensive and complicated. To eradicate malaria, in this model, doctors had to enforce a consistent, long-term program of treatment with quinine to kill parasites in human bodies.³⁶²

The specific connection not just to malaria as a disease but also to quinine as a means to treat it held important parallels for the development of a sleeping sickness treatment program. Beyond the inherent similarities of a vector-borne, parasitic infection lay direct comparisons in the way that the drugs worked against the respective disease: what doses were appropriate and least toxic. Atoxyl, Koch asserted, could be employed “in analogy to quinine,” in successively increasing doses on alternating days. In fact, we see specific points of similarity between Koch’s atoxyl treatment plan and a regimen of treating people with malaria that he developed seven years earlier in German New Guinea: then, patients were treated on two consecutive days, followed by a seven-day pause, then two more “quinine days,” and so on for a total of two months.³⁶³ In October 1906, Koch recommended a typical treatment regimen with atoxyl on two consecutive days, with a 7-day pause, continuing for at least two months. He then argued that relatively higher doses given further apart – every 10-12 days – would be more effective. By early 1907, his regimen used a 10-day pause between consecutive dosage days.³⁶⁴ The

³⁶¹ Koch, “Zweiter Bericht der Malariaexpedition,” Gaffky, ed., *Gesammelte Werke von Robert Koch*, (Leipzig: Thieme, 1912), vol. 2-1, p. 398; Koch, “Zusammenfassende Darstellung der Ergebnisse der Malariaexpedition,” in Gaffky, ed., *Gesammelte Werke von Robert Koch*, (Leipzig: Thieme, 1912), vol. 2-1, p. 426, 428.

³⁶² Philip Curtin, “Medical Knowledge and Urban Planning in Tropical Africa,” pp. 597-99.

³⁶³ Koch, “Dritter Bericht der Malariaexpedition,” Gaffky, ed., *Gesammelte Werke von Robert Koch*, (Leipzig: Thieme, 1912), vol. 2-1, p. 411.

³⁶⁴ Koch, Draft of “Bericht über die Tätigkeit der Expedition zur Erforschung der Schlafkrankheit während ihres Aufenthalts auf den Sese-Inseln bis zum 15. Oktober 1906,” 10/15/1906, BAB R 1001, 5895,

temporary disappearance of trypanosomes following these repeated doses had led Koch to claim that atoxyl could potentially cure the disease.

Quinine and atoxyl differed, however, in how they could be used prophylactically, and here, the issue of sleeping sickness as an endemic or epidemic disease became relevant. Mass quinization of a population was worthwhile when firstly, malaria was endemic, and, secondly, when people without prior exposure entered that endemic area and inevitably fell sick. Koch took pains to distinguish his quinization program from traditional prophylactic use of quinine, asserting that it instead “intends to heal all people sick with malaria.”³⁶⁵ Koch saw this use of quinine in mass quantities and among an entire population not as a prophylaxis to ward off infection, but as a measure to cut off an epidemic and prevent its spread – it was prevention not of a single case of the disease, but of a disease in a population. He would make a similar assertion about atoxyl. When it began to emerge that people treated with atoxyl still relapsed into sleeping sickness, but had lower numbers of trypanosomes in their bloodstream, Koch changed keys from his earlier claims that atoxyl could potentially heal the disease. Instead, he argued that atoxyl could be used for its positive effects in making trypanosomes disappear from the peripheral blood – that it was useful to lower parasitemia in sleeping sickness. Koch began to believe that atoxyl could function, as he had believed quinine could, as a means to interfere with the disease transmission cycle in a population, particularly a population that could come into contact with people without previous exposure to sleeping sickness. In an environment where complete tsetse fly eradication seemed impracticable and

P. 7-8; Koch, Draft of Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 25. April 1907,” BAB R1001 5896, p. 6.

³⁶⁵ Koch, “Zusammenfassende Darstellung der Ergebnisse der Malariaexpedition,” in Gaffky, ed., *Gesammelte Werke von Robert Koch*, (Leipzig: Thieme, 1912), vol. 2-1, p. 428. The article was originally published in the *Deutsche Medizinische Wochenschrift*, 1900, Nr. 49 and 50. Original text: “Diese von mir zuerst in Vorschlag gebrachte und auch zuerst in der Praxis durchgeführte Verfahren zur Bekämpfung der Malaria ist etwas ganz anderes als die sogenannte Chininprophylaxis. ... Die Chininprophylaxis will die Infektion des Menschen überhaupt verhüten, mein Verfahren wendet sich gegen die Parasiten im infizierten Menschen. ...[Es] beabsichtigt alle malariakranken Menschen zu heilen, was nicht allein ausführbar ist.”

people traveled frequently in and out of areas with sleeping sickness, in Koch's evaluation, atoxyl still offered some potential benefit.

But atoxyl was, by all accounts, a problematic drug with significant, harmful side effects. Throughout Koch's research at Bumangi and Bugalla, patients developed abscesses at injection sites, muscle pain, stomach ailments, and were not infrequently blinded. The tenor of Koch's work darkens in consideration of the ethical and moral considerations of its use, explored in detail by Wolfgang Eckart and Christoph Gradmann.³⁶⁶ Gradmann and Eckart's respective close readings of German imperial medicine and Koch's laboratory work point to the inherently troubling aspects of the work of a widely revered figure in German history and science. But in so doing, neither concerns their studies with how Koch's use of atoxyl fit into wider practices within tropical medicine at the time. Deborah Neill's analysis of experimental drugs sent out to French and British doctors by esteemed German chemist Paul Ehrlich captures the importance and dynamism of international scientific connections and provides a comparative perspective on the widespread use of toxic drugs despite African resistance.³⁶⁷ Applying Neill's measured approach to the practices of Koch's contemporaries, his work on Sesse is no less troubling for its moral and ethical failings. But it also fits into common practice, and, demonstrably, into tacitly accepted approaches to research subjects, particularly those drawn from populations subject to the state in one way or another such as prisoners, asylum inmates, and African colonial subjects.³⁶⁸

³⁶⁶ See Gradmann, *Laboratory Disease*; Wolfgang Eckart, "The Colony as Laboratory: German Sleeping Sickness Campaigns in German East Africa and Togo, 1900-1914." *History and Philosophy of the Life Sciences* 24 (2002); Christoph Gradmann, "'It Seemed About Time to Try One of Those Modern Medicines': Animal and Human Experimentation in the Chemotherapy of Sleeping Sickness 1905-1908," in Maio, Giovanni and Volker Roelcke (eds), *Twentieth Century Ethics of Human Subjects Research: Historical Perspectives on Values, Practices, and Regulations*, (Stuttgart: Steiner, 2004).

³⁶⁷ Deborah Neill, "Paul Ehrlich's Colonial Connections: Scientific Networks and Sleeping Sickness Drug Therapy Research, 1900-1914," *Social History of Medicine* vol. 22, no. 1, pp. 70-71.

³⁶⁸ Lenny A. Ureña Valerio, "The Stakes of Empire: Colonial Fantasies, Civilizing Agendas, and Biopolitics in the Prussian-Polish Provinces (1840-1914)," Unpublished Dissertation; University of Michigan, 2010, p. 203, p. 192, note 302. Manuela Bauche's forthcoming dissertation, "Zwischen Metropolen und Peripherien: Malariabekämpfung in Kamerun, Ostafrika und Ostfriesland, ca. 1880-1920," exposes common German approaches to malaria in marginal European populations and in German Cameroon and East Africa from a comparative perspective.

Koch's activities fit with research practices used by other scientists at work on sleeping sickness expeditions. Within a brief period between 1905 and 1910, several European tropical medicine institutions, in cooperation with metropolitan governments, sent expeditions to the African "field"; each worked with the arsenic compounds and chemical dyes that dominated experimental chemotherapies at the time. Viewed in comparative perspective, methodological, theoretical, technical, and ethical continuities surface among researchers, accompanied by a variety of distinctive approaches to preventing sleeping sickness.³⁶⁹ The use of the same drugs and chemicals suggests that theories about the efficacy of particular substances in killing trypanosomes circulated widely, as did information about how and in what amounts these substances should be ideally used. British doctors used trypan red, arsenic, and atoxyl with prisoners in Uganda regularly throughout 1904 and 1905.³⁷⁰ The Liverpool School of Tropical Medicine furnished its doctors at work in West Africa with atoxyl to test its effects beginning in 1905.³⁷¹ Belgian scientists also used atoxyl to treat patients in Belgium and conduct research in the Belgian Congo, in one case making similarly optimistic claims on its efficacy.³⁷² The French sleeping sickness expedition that worked in French Congo from 1906 to 1909 also tested atoxyl.³⁷³ The trypanosome parasite at which the majority of doctors truly aimed, however,

³⁶⁹ For a comparative analysis of sleeping sickness work in German and French colonies in West Africa, see Deborah Joy Neill, "Transnationalism in the Colonies: Cooperation, Rivalry, and Race in German and French Tropical Medicine, 1880-1930," PhD dissertation, University of Toronto, 2005; Neill, "Paul Ehrlich's Colonial Connections," pp. 61-77.

³⁷⁰ On methylene blue, see Letter from Greig to Bruce, 9/10/1903, WTI/RST/G27/2; on using prisoners for sleeping sickness drug experiments, see Greig to Bruce, 6/10/1904, Greig to Bruce, 7/7/1904, WTI/RST/G27/4; Letter from Gray to Bruce, 1/19/1905, WTI/RST/G27/9; Royal Society to Colonial Office, 4/3/1905, CO 885/9/11, p. 1-2; Hayes-Sadler to Colonial Office, 6/13/1905, CO 885/9/11, p. 13; Neill, "Paul Ehrlich's Colonial Connections," pp. 61-77.

³⁷¹ A.H. Milne (Liverpool School of Tropical Medicine) to Colonial Office, 6/9/1906, CO 885.9.7, p. 72-73. See, for example, John L. Todd, "The treatment of human trypanosomiasis by atoxyl," Reprint from Supplement to BMJ, May 5, 1906, p. 1027.

³⁷² George Will (British East Africa Principal Medical Officer) to Colonial Office, 12/22/1907, CO 885/18/7, p. 10.

³⁷³ Gustave Martin, Alexis Leboeuf, and Emile Roubaud, *Rapport de la mission d'études de la maladie du sommeil au Congo Français 1906-08* (Paris: 1909).

seemed impossible to kill permanently in its human hosts. And yet, Koch offered these summary remarks as the expedition neared the end of its research on the Sesse Islands:

It is entirely possible that in the passage of time, other remedies will be found, which are more successful than atoxyl and can replace it. But atoxyl is, though not an infallible remedy, still such a powerful weapon in the battle against sleeping sickness, that one must at present utilize it as such as much as possible.³⁷⁴

Among researchers in the early twentieth century, a persistent awareness of toxicity and adverse side effects accompanied widespread use of experimental chemicals. Indeed, we can view the entire range of experiments done by tropical medicine doctors with potential anti-trypanosomal drugs as a delicate dance on the edge of the human and parasite thresholds to tolerate the drug. People given these new drugs – construed by colonial medical researchers as patients receiving treatment, though no guarantee of healing could be given – suffered severe side effects, and in some cases died as a result of drug treatments and not from their terminal infection with sleeping sickness.³⁷⁵ And yet, in some cases, experiments continued.³⁷⁶ It is important to recognize that at stake here was not only the search for a means to treat and prevent sleeping sickness – the humanitarian light in which doctors and imperial boosters cast the work – but also the experimental development of new drugs with a global medical application. Doctors were well aware of the experimental nature of their work, and must have

³⁷⁴ Koch, Draft of “Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 5. September 1907,” BAB, R 1001, 5896, p. 9. Original text: “Es ist wohl möglich, daß im Laufe der Zeit andere Mittel gefunden werden, welche noch mehr Erfolg haben als das Atoxyl und dann an dessen Stelle treten können. Aber das Atoxyl ist, wenn auch kein unfehlbares Mittel, so doch eine so gewaltige Waffe im Kampfe gegen die Schlafkrankheit, daß man es jetzt schon so viel als irgen möglich dafür ausnutzen muß.”

³⁷⁵ In sleeping sickness research, the most glaring example of toxicity in a new drug was with Ehrlich’s arsenophenylglycin (“Spirarsyl”), used experimentally in East and West Africa in German sleeping sickness campaigns. Mortality rates among patients reached 10%. See minutes of the “Sitzung des Reichsgesundheits-rats (Ausschuß für Schiffs- und Tropenhygiene und Unterausschuß für Cholera)” later the “Sitzung des Reichs-Gesundheitsrats (Unterausschuß für Schlafkrankheit)” for 1909 (BAB R 1001 5876), 1910 (BAB R 1001, 5905), 1911 (BAB R 1001, 5878). Particularly striking examples, among many submitted, of African mortality rates are reported by Dr. Breuer in his quarterly report from Shirati dated 4/3/1911, BAB R 1001 5906 and Dr. Breuer in his report from Kigarama dated 7/31/1910, BAB R 1001, 5904. See Neill, “Ehrlich’s Colonial Connections,” p. 73-73; Riethmiller, “From Atoxyl to Salvarsan,” p. 240; Eckart, “Colony as Laboratory,” p. 75-78.

³⁷⁶ Colonial officer Dr. Scherschmidt’s work in German East Africa and in Togo stands out as a particularly egregious example of persistent experiments despite high related mortality, see Eckart, “Colony as laboratory,” pp. 76-77.

understood that they had a freer hand in conducting their research in Africa than they did in Europe; some were willing to risk their patients lives for a yet-undetermined greater good.³⁷⁷ Colonial medical officers were not uniformly compliant, nor wholly at ease, with the dual brief of prevention and research that would persist in sleeping sickness campaigns. This problem centered on the use of arsenicals that emerged as potential replacements for atoxyl, especially arsacetin and arsenophenyglycin. The latter was particularly controversial, its apparent toxicity spurring several doctors to refuse to administer it on ethical grounds, while other embraced its apparent strength in attacking parasites in the body. Experimentation with different anti-trypanosomal chemicals indicates the potential for strong continuities across colonial administrations in their approaches to their African subjects, extending throughout sub-Saharan Africa, and suggests a fruitful new direction for a comparative examination of colonial medical practice.³⁷⁸

Collaboration, Competition, and Scientific Priority

Work with atoxyl proved to be the most potentially exciting and significant aspect of Koch's work at Sesse, dominating both his reports of his work and coverage of that work in the popular and scientific press. His keen interest in promoting atoxyl as a cure and preventative for sleeping sickness must be understood in the context of his prior successes and failures, particularly since atoxyl work and sleeping sickness research in combination pulled Koch toward parasitology and immunology, less familiar scientific territory. Koch had built a glowing international reputation in the latter half of the nineteenth century in uncovering the pathogens that caused several high-profile diseases (anthrax, cholera, and tuberculosis), but had failed in all work toward the identification of successful, durable drug treatments. Most

³⁷⁷ Hoppe, *Lords of the Fly*, p. 74

³⁷⁸ Shula Marks, "What is colonial about colonial medicine? And what has happened to imperialism and health?" *Social History of Medicine* 10 (1997), pp. 205-219; Geissler and Molyneux's recent volume examines colonial and post-colonial research practices in East Africa specifically, but does not address the German colonial period. Continuities and overlaps in the research priorities and practices of different colonial regimes in the pre-World War I era remains an area for further study. Geissler and Molyneux, eds. *Evidence, Ethos and Experiment* (2011).

prominent and embarrassing – and a lasting tarnish on his reputation – was the debacle involving tuberculin in the early 1890s, which occurred shortly before a period of personal upheaval and the beginning of Koch's long research stints in Africa.³⁷⁹

Koch's focus on atoxyl aimed to launch him to new prominence, distinguishing his work on a cure for sleeping sickness from other colleagues' work. Koch publicized his claims about the utility of atoxyl in fighting sleeping sickness, as a treatment and potential preventive, first informally, in excited reports on his expeditions sent back to the Colonial Section and Imperial Health Office. There is no indication that Koch's initial correspondence about his atoxyl research remained confidential. The diversity of institutions concerned with the expedition in Berlin, exemplified by the convening of advisory committees and drafting of memoranda between 1902 and 1905, meant that a small circle of high-ranking officials was kept informed of Koch's progress. But formal dissemination of research results followed shortly, as reports were released serially to the *German Medical Weekly*. Koch was personally intensely concerned for the primacy of his work, and worked to arrange establishing that primacy in print:

As I gather from the telegrams and newspapers, sleeping sickness and especially its curability by atoxyl will now be worked on in many places, and it is anticipated, that in the near future some findings of these works will be published. In consideration of this, it seems advantageous for the protection of the priority of such successes that are due to the German expedition approaches, to publish the reports of [the expedition] in toto or at least in the most important points, and I would like to humbly ask you, insofar as no thoughts to the contrary prevail, kindly to arrange for the publication of [the reports], ideally in a much-read medical journal. For the necessity of an early publication of the report I would like to bring attention to the circumstance, that the government of Uganda sent three of their doctors here a short time ago, to get to know our facilities, treatment methods and their results, and that they as a consequence have decided to construct a number of stations for the treatment of natives with sleeping sickness with atoxyl. It will be inevitable, that one has similar successes at these stations as us and will report them, and it would really be quite desirable, if these reports come earlier into the public, as ours.³⁸⁰

³⁷⁹ Brock, *Robert Koch*, p. 232-34; Gradmann, *Laboratory Disease*, p. 16; Christoph Gradmann, "Robert Koch and the pressures of scientific research: tuberculosis and tuberculin," *Medical History* 45, 1 (January 2001), pp. 1-32.

³⁸⁰ Koch to Bumm (Director, Imperial Health Office), 11/5/1906, BAB R 1001, 5895. Original text: "Wie ich aus den Telegrammen und den Zeitungen erfahre, wird jetzt an vielen Stellen über Schlafkrankheit und insbesondere über ihre Heilbarkeit durch Atoxyl gearbeitet, und es ist zu erwarten, dass in nächster Zeit manche Ergebnisse diese Arbeiten veröffentlicht werden. Mit Rücksicht hierauf scheint es zur Wahrung der Priorität solcher Erfolge, welche der deutschen Expedition zukommen, zweckmässig zu sein, die Berichte über die Tätigkeit derselben ganz oder wenigstens in den wichtigsten Punkten zu

Here was the flipside of communicating with his British colleagues also at work on the lake; staying in touch with colleagues meant remaining in the competitive game of establishing individual scientific priority. Common interest in a particular trajectory for sleeping sickness work – in this case, the use of atoxyl to treat and prevent the disease – became threatening when it translated to multiple scientists working on the same problem. Whether Koch's suspicions were well-founded or simply overly cautious is difficult to determine, but he was correct in judging that his colleagues in East Africa and in Europe were interested in his research on Sesse.

Reactions to Koch's claims about atoxyl indicate that he remained respected as a historically relevant researcher and thinker – general medical and tropical medicine journals across Europe followed his work throughout 1907. As a prominent scientist, however, he also remained in his colleague's sights. Predictably, rather than drawing praise, his early public endorsement of atoxyl opened him up to stringent criticism from his colleagues in tropical medicine, among those at work at Lake Victoria and further afield. Criticism focused on how quickly Koch announced successful results with atoxyl, with particular emphasis on the possibility of relapses and the need for sufficient time to be confident that a patient was cured. In late 1906, A.D.P. Hodges was on record as being "sanguine as to the results."³⁸¹ By mid-1907, British opinion of atoxyl as a cure had grown bleaker. That July, David Bruce was quoted in the medical press saying that atoxyl was not a useful drug against sleeping sickness, and was

veröffentlichen und ich möchte Sie daher ergebenst bitten, sofern keine Bedenken dagegen obwalten, die Veröffentlichung derselben, am besten in einer vielgelesenen medizinischen Zeitschrift, gefälligst veranlassen zu wollen. Für die Notwendigkeit einer baldigen Publikation des Berichtes möchte ich noch dem Umstand geltend machen, dass die Regierung von Uganda vor einiger Zeit drei von ihren Aerzten hierher geschickt hat, um unsere Einrichtungen, die Behandlungsmethode und deren Erfolge kennen zu lernen, und dass sie infolgedessen beschlossen hat, möglichst bald eine Anzahl von Stationen zur Behandlung der schlafkranken Eingeborenen mit Atoxyl zu errichten. Es wird nicht ausbleiben, dass man auf diesen Stationen ebensolche Erfolge haben und darüber berichten wird, wie wir und es wäre doch recht erwünscht, wenn diese Berichte eher in die Oeffentlichkeit gelangten, als die unsrigen."

³⁸¹ Hesketh-Bell to CO, 11/23/1906, CO 885/9/11, p. 105.

simply a form of arsenic.³⁸² In a report on British sleeping sickness work in the last quarter of 1907, after Koch had left East Africa, A.D.P. Hodges lodged the following judgment:

There is no doubt that the hopes expressed by Prof. Koch and others that Atoxyl would prove a general and permanent cure for cases of Sleeping Sickness must now be abandoned. Personally I have never allowed myself to hope for a cure in more than a limited number of favorable cases. This may, I think, still be hoped for, though the time has not yet arrived when we can say with confidence that any apparent cure will remain permanent.³⁸³

Within the tropical medicine community, opinion began to solidify against atoxyl as a useful measure to treat or prevent sleeping sickness. Koch's atoxyl dosage regimen and its core premise of periodic doses remained contentious within the community of sleeping sickness researchers following his return to Europe. Dr. A. Broden, a researcher at Leopoldville wrote to his former colleague John L. Todd in 1908 of his own recent work in Belgian Congo:

We use Koch's system for a great number of negroes in the 2d stage of trypanosomiasis. We know very well that it is impossible to cure a man in the 2nd stage with atoxyl alone; and we use Koch's system because we will show an [sic] that old man that he had bluffed (!), when he told that whith [sic] his system only 8 per cent of his people dead!!

After a few months, we shall have many cases treated after Koch, and we shall be very happy to publish the results and to send them to Professor Koch!³⁸⁴

Broden's glee at disproving Koch's claims – of unseating a senior researcher from prominence – is palpable, driving home the importance of sleeping sickness research under the auspices of colonial medical service in Africa to make or enhance reputations internationally.³⁸⁵ Barbs also flew in the European press. In an article also notable for its nationalistic critique of Koch's work against his British counterparts, the *Medical Press* proclaimed Koch "the most unfortunate of scientists; he is always making discoveries which are no discoveries," a pointed reference to the

³⁸² Untitled, *East African Standard*, 7/6/1907, RKI AS/W6/019.

³⁸³ A.D.P. Hodges, introduction to "Quarterly report on the progress of segregation camps and medical treatment of sleeping sickness in Uganda. For the Quarter December 1st 1907-February 29th, 1908," by A.C.H. Gray, GStA PK, I. HA Rep. 76 Kultusministerium, VIII B, Nr. 4120.

³⁸⁴ Letter from A. Broden to J.L. Todd, 10/19/1908, looseleaf in Congo Expedition Case book, Vol. 1, letter, Wellcome Library Special Collections, Dutton/Todd MSS, MS 2248/4792.

³⁸⁵ Todd himself had once seen the trypanosome as a way to "make a name" for himself, but both the microorganism and the disease it caused remained a hot topic in tropical medicine. J.L. Todd to brother, 7/8/1903, in B.T. Fialkowski, *John L. Todd 1876-1949. Letters* (Senneville, Quebec, privately printed, 1977), quoted in Maryinez Lyons, *The Colonial Disease*, p. 66.

tuberculin scandal. The parallel to tuberculosis was likely apparent to other scientists, fairly or not, in Koch's rushed insistence on atoxyl as a cure. Editorializing on Koch's poor management of publicizing his work, the article still acknowledged his "genius," but favored British evaluations of atoxyl as no cure for sleeping sickness.³⁸⁶ This assessment of Koch's atoxyl work survives to the present day.

Ideas and Practices of Sleeping Sickness Research & Prevention: the "Thick Drop" method

Koch's work on the Sesse Islands did not secure him a place among the scientists at the cutting edge of sleeping sickness research, rather it opened him up to vigorous criticism, much of it proven accurate in the coming years. But it did shape the subsequent German sleeping sickness campaign, contributing to its practical organization and its theoretical framework. Several techniques and ideas emerged from sleeping sickness work on the Sesse Islands that would have long-ranging effects on the shape of German colonial sleeping sickness program. These developments operated at the micro- and macro-level, consistent with a solidifying consensus about how best to combat sleeping sickness that involved, on the one hand, detailed bacteriological work and, on the other, expansive public health interventions. One innovation was restricted to the laboratory and the microscope: the "thick drop" method of testing blood for trypanosomes. Another element, the sleeping sickness isolation camp, sought to re-order African life, space, and illness in a constrained landscape. Lastly, the Sesse islands work informed German understandings of the epidemiology of sleeping sickness – how the disease traveled, and with whom – and, along with Koch's earlier investigations on Kome Island, of sleeping sickness as a disease with a particular kind of mobility. In their position between Buganda and Buhaya, connected with lake trade routes and regional migration, the Sesse and various migrants who also made the islands their home presented Koch and the expedition with a case that demonstrated the dangers of unmonitored movement; this fit into colonial

³⁸⁶ "Professor Koch and the Sleeping Sickness," *Medical Press*, 6/12/1907, Ross MSS, LSHTM, GB 0809 Ross/107/05/37.

desires to control and manage internal and external migration of African populations, here applied to the design of a public health intervention.

Koch developed what he called the “thick-drop method” to confirm an infection with trypanosomes after a shift in Sesse Islanders’ responses to gland punctures sometime between October 1906 and April 1907. Expedition reports do not give a reason for this shift, noting only:

...the gland puncture was no longer feasible and the lumbar puncture, which one would think of secondarily, cannot be utilized among our patients, because they would have immediately opposed it. We can only employ examination methods here, which the natives obligingly assent to.

Earlier assent to gland-punctures had disappeared in the intervening months, now leaving blood samples as the only option.³⁸⁷ Acknowledging that the team could only undertake research methods that people voluntarily accepted, Koch developed a technique where a thicker drop of blood was stabilized for microscopic examination, allowing a researcher to detect trypanosomes on the first exam, rather than having to search blood samples repeatedly. But examining the blood of suspected sleeping sickness cases never reached the reliability of diagnosis provided by examining lymph or cerebro-spinal fluid. While “thick drops” allowed Koch and the small cadre of proficient laboratory scientists on the expedition to work quickly, the method would not prove as useful when expanded to a wider group of inconsistently trained and sometimes under-equipped colonial medical officers at work in a dispersed field of research stretched to include both Lake Victoria and Lake Tanganyika. Considering the development of the “thick drop” method historically, from a perspective combining the concerns of African history and the history of medicine, Koch’s accommodation of Sesse Islanders’ intolerance for invasive procedures in the context of the camp ceases to be a shrewd move around obstacles to his research. Rather, it provides evidence of the mutual, reciprocal

³⁸⁷ Koch, Draft of “Bericht über der Tätigkeit der Schlafkrankheits-Expedition bis zum 25. April 1907,” BAB R 1001, 5896, p. 4. Original text from 4/25/1907: “...die Drüsenpunktion nicht mehr ausführbar war und die Lumbalpunktion, an welche man in zweiter Linie denken mußte, bei unseren Kranken nicht angewendet werden konnte, weil sie sich derselben sofort widersetzt haben würden. Wir können hier nur solche Untersuchungsmethoden anwenden, welche die Eingeborenen sich gutwillig gefallen lassen.”

impact that interactions between European doctors and African villagers had on the shape of research practices.

Ideas and Practices of Sleeping Sickness Research & Prevention: Sleeping Sickness Camps

The sleeping sickness camp – called variously an isolation camp, collection camp, and concentration camp – was not, in its essence, a great innovation. Isolation hospitals and quarantine stations had been stalwart methods of dealing with epidemics for centuries prior.³⁸⁸ Koch mentioned in a policy meeting after his return to Berlin that he borrowed the concept of the “concentration camp” from its use by the British in Uganda.³⁸⁹ From the first sign of success with atoxyl in November 1906, Koch foresaw the development of “stations” modeled after his camp at Bugalla as a key element in further efforts to prevent sleeping sickness.³⁹⁰ With no firm plan for how long treatment with atoxyl should extend, Koch envisioned a system of camps to allow prolonged treatment with atoxyl and to isolate the sick from disease-carrying flies and from healthy people nearby. The first camp, at Bumangi, had the support of the nearby mission station, which meant that it did not have to be self-sustaining in food production and that support personnel (orderlies and people nursing the sick) could be drawn from the mission community. The camp also sat amid a population suffering from sleeping sickness, where people were also relatively concentrated on the main island of the Sesse archipelago.

In Koch’s plans for the ongoing sleeping sickness campaign, camps constituted permanent sites of treatment and observation. On the German colonial mainland, where

³⁸⁸ See Alison Bashford and Carolyn Strange, eds., *Isolation: Places and Practices of Exclusion* (London: Routledge, 2003); Howard Markel, *Quarantine!: East European Jewish Immigrants and the New York City Epidemics of 1892*, (Baltimore: Johns Hopkins University Press, 1997), p. 197, n. 5.

³⁸⁹ Koch referred to camps as “Konzentrationslager, wie sie die Engländer nennen” in his remarks for the Reichsgesundheitsamt’s Reichsgesundheits-Rat. “Aufzeichnung über die Sitzung des Reichsgesundheitsrats...” 11/18/1907, BAB, R 1001/5876, p. 10. Sleeping sickness camps were also called variously “Isolierstationen” (isolation stations), “Isolationslager” (isolation camps), “Sammlungslager” (collection camps), “Krankenlager” (sick camps), or “Schlafkrankheitslager” by Koch, colonial medical officials, and colonial administrators throughout course of the SKB. British officials in Uganda established several camps on the mainland in 1906. See Hoppe, *Lords of the Fly*, pp. 73-76.

³⁹⁰ Draft of Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 25. November 1906,” 11/27/1906, BAB R 86, 2613, p. 11.

sleeping sickness was not as widespread, camps would have to be stricter places of isolation and control, drawing from a wider population, keeping the sick away from the well and feeding, sheltering, and monitoring the sick. Each camp effectively constituted a new hub for medical treatment, one focused on sleeping sickness but also addressing its attendant secondary infections (and the “complications” from side effects that developed as a result of drug treatments). The camps would also fit into an ongoing research program, allowing doctors to follow cases under their supervision and contribute to a growing body of statistics on the progress of sleeping sickness cases. Unlike the division of patients at Sesse into two stages of illness, the camps would absorb any and all people with trypanosomes identified in their bodies – again, aimed at preventing the wider spread of the epidemic. Though Koch did not demonstrate any awareness of it, the intention to intern people with sleeping sickness would mean coming to terms with their long-term care and provisioning and, in effect, of attracting a proportion of a local population away from villages and family hearths.³⁹¹ The camps, intended by European colonial officials and tropical medicine practitioners as sites of research and treatment, presented the possibility, within African communities, for a re-locating of the sick and their caretakers in one place. What distinguished the German camp system was the emphasis on atoxyl specifically; despite its widespread use by other colonial medical administrations, it would ultimately be used as a form of prophylaxis against subsequent infections. German camps would turn to ambulatory atoxyl dosage regimens, particularly as Koch’s influence on practices in East Africa diminished after 1908.³⁹²

Wider German investigations on the Sesse Islands helped to shape an idea of the epidemic on Lake Victoria as consistently expanding and a phenomenon related directly to local and regional mobility. In particular, Koch’s research connected the kingdom of Kiziba, on the

³⁹¹ Kirk Hoppe notes that British camps had also focused on using the labor of people in their isolation camps to farm and provision people interned there. See Hoppe, *Lords of the Fly*, p. 74.

³⁹² Though he remained involved in metropolitan discussions about sleeping sickness, Koch would not return to Africa after his departure from East Africa in 1907; he died of heart failure in 1910. Broch, *Robert Koch*, p. 266, p. 285.

German East African mainland just north of Bukoba, with the Sesse Islands. Both the Sesse Islands and Kiziba became tributaries of Buganda as Ganda dominance of trade and warfare on the lake solidified in the nineteenth century.³⁹³ The Sesse Islands, situated between Kiziba and Buganda, provided opportunities for fishing, marketing, and farming locally. Ziba communities settled near Bumangi had led Koch to a brief visit to Kiziba and cemented his conviction that travel between the two areas had led to an epidemic of sleeping sickness in Kiziba. Here, Koch made epidemiologically important a pattern of migration, settlement, and exchange that was several generations in the making, drawing conclusions about the prevalence of the disease and the paths it followed after examining people living in several camps on Buninga (on the southern part of the largest of the Sesse Islands), in the late summer of 1907. In one camp of 18 rubber collectors, 15 men were from Kiziba, while a further 80-100 people from Kiziba lived in seven other such camps.³⁹⁴ Men from Kiziba villages on the lake worked as fishermen and canoe builders, traveling frequently to the lake islands, and marketed their catch and other goods at Entebbe, Bukoba, and elsewhere. Trade across the lake in the 1880s, connecting Mwanza and Entebbe, utilized canoes and rowers from both Kiziba and the Sesse Islands.³⁹⁵ Canoes also carried people from Buhaya toward opportunities for work elsewhere, carrying seasonal and more permanent migration. This was evident not only in communities from Kiziba settled on the Sesse Islands, as Koch happened upon, but in the exchange of technologies of boat building and fish trap designs between Buganda and Kiziba, for example, noted by early twentieth century ethnographers in Kiziba.³⁹⁶

Colonial emphasis on the epidemiological importance of local mobility tracked a shift in migration related, in fact, to the mainland sleeping sickness epidemic in Buganda. Seasonal

³⁹³ Reid, *Political Power in Pre-Colonial Buganda*, p. 228-31, pp. 237-40.

³⁹⁴ Koch, Draft of "Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 5. September 1907," BAB R 1001, 5896, p. 3.

³⁹⁵ Gerald R. Hartwig, "The Victoria Nyanza as a Trade Route in the Nineteenth Century," *Journal of African History* vol. 11, no. 4, 1970, p. 549.

³⁹⁶ Hermann Rehse, *Kiziba: Land und Leute*, p. 44.

migration between Kiziba and the lake islands, as well as to Buganda, increased at the turn of the century.³⁹⁷ Movement accelerated at the turn of the century to include work in Buganda and, of particular relevance to the spread of sleeping sickness for German administrators, the farming of abandoned banana plantations on the Ugandan shore near Entebbe. Bukoba district administrator Gudowius linked increasing seasonal migration to the need for cash to pay taxes, and to earnings toward bridewealth, but also indicated that work in Uganda, such as rubber collecting, was typically more dangerous than the Ganda there were willing to take on.³⁹⁸ The camp of rubber collectors Koch used to connect the Uganda epidemic to the German East African mainland may have been among those who had ventured into “dangerous” work – now made more so by the increased chance that men collecting rubber would go into tsetse fly habitats, which could overlap with areas where rubber vines grew. Sleeping sickness had disrupted local labor resources in Buganda after 1903, and people from Bukoba district identified by Gudowius may have moved as migrant laborers into a void around Entebbe.³⁹⁹ Koch’s emphasis, and that of district administrators, on men as the primary seasonal migrants and travelers around Lake Victoria interpreted travel and trade on the lake as a gendered pattern of migration. This understanding of who migrated, and why, would impact ongoing appraisals of which people in a population were likely to represent the most suspicious potential cases of sleeping sickness.

³⁹⁷ Gudowius, “Bericht über die Ausbreitung der Schlafkrankheit im Bezirk Bukoba, die Ursachen ihrer Einschleppung und die Massnahmen, die zur Verhinderung ihrer weiterverbreitung getroffen werden können,” 5/31/1908, BAB R 1001 5898; see also Francis X. Lwamgira, *Amakuru ga Kiziba; The History of Kiziba and its Kings*, Second Edition, 1949. Translated by E.R. Kamuhangire, Makerere College, 1969; Brad Weiss, “A Religion of the Rupee: Materialist Encounters in North-West Tanzania,” *Africa*, 72 (3), 2002; “Marienberg,” *Missionaries of Africa (White Fathers) Rapports Annuels*, no. 1 (1905-06) Archives de Maison Général Rome, pp. 151-54.

³⁹⁸ Gudowius, “Bericht...,” 5/31/1908. These plantations were likely abandoned because of either high mortality from sleeping sickness, or forced relocation of lakeshore communities by the British to stop the epidemic.

³⁹⁹ A.D. Roberts, “Sub-Imperialism of the Baganda,” (1962), p. 449. Roberts does not mention Kiziba as a specific source for migrant labor in Buganda, rather he focuses on immigration within the Uganda Protectorate.

Setting the Terms for the Sleeping Sickness Campaign

While the Sesse Islands work remained important in establishing both ideas about and practices involved in sleeping sickness prevention, Koch's experience proved of limited use in addressing a new set of epidemiological problems at Kiziba and Shirati, both situations where colonial borders and active traffic across them presented a problem of controlling cases brought in from Uganda. Koch's emphasis, in later reports, on the organization of personnel and resources in German East Africa for an ongoing anti-sleeping sickness campaign, and parallel minimization of atoxyl as a magic bullet also, I argue, belie a frustration with the Sesse Island research results.⁴⁰⁰ Kiziba and Shirati, as newly noticed, smaller epidemics without high mortality, presented a different epidemiological and clinical problem than the constantly increasing mortality rates at Bumangi and Bugalla. In winding up his work in East Africa, Koch's focus on ongoing campaign work in German territories also indicates a pragmatic awareness that, if he could not deliver a chemotherapeutic solution to the Imperial Health Office and Colonial Office as a result of his work on Sesse, some further advance in meeting the colony's interests as a result of his work should be evident.

Under leadership of Koch's head assistant, Dr. Friedrich Kleine, the sleeping sickness campaign began at the two locations on each side of Lake Victoria visited by Koch on his final circuit in 1907, Kiziba and Shirati. Personnel hand-picked by Koch led the main sites of research and prevention, oriented around camps modeled after his own at Bugalla. Supplies left behind by Koch provided the material for the camp at Kigarama, in Kiziba, staffed by Robert Kudicke.⁴⁰¹ The campaign's guidelines, shaped by the lessons and failures of research on the Sesse Islands, were defined by Koch's final report and fit into a developing set of standard

⁴⁰⁰ Ehrlich coined the phrase "magic bullet" in the early twentieth century. Riethmiller, "From Atoxyl to Salvarsan," p. 234.

⁴⁰¹ Robert Kudicke to administration in Dar es Salaam, 12/8/1907, BAB R 1001, 5890; Robert Kudicke to Oberstabsarzt dere Schutztruppe, Dar es Salaam, 10/31/1907, including Anlage I, "Verzeichnis der von der Schlafkrankheits-expedition des Herrn Geh. Rat Dr Koch nach hier überstandte Gegenstände und Medikamente" and Anlage II, "Verzeichnis. Ausserdem sind von der Expedition übersandt und hier in Gebrauch genommen," BAB R 1001 5890.

practices to combat sleeping sickness.⁴⁰² His recommendations focused on policies aimed at separating people from the tsetse fly carrier, and, in areas where tsetse flies were widespread, on separating the sick from the well. Specifically, Koch outlined measures for the removal and resettlement of African communities, the use of isolation stations (where people would also be given drugs to treat the disease), and closing colonial borders with regions with sleeping sickness.⁴⁰³ Measures aimed at the disease in the African environment included clearing fly habitats of vegetation and destroying any potential animal reservoirs of trypanosomes.⁴⁰⁴

In short order, the campaign expanded to Lake Tanganyika, where commerce with Belgian Congo and environmental conditions convinced German colonial doctors that safeguards were needed against other endemic sources of sleeping sickness. Koch's first report from East Africa cited the imminent danger of sleeping sickness at Lake Tanganyika, gleaned from reports sent forward by the station doctor at Usumbura, Dr. Leupolt.⁴⁰⁵ Based on this information and the initially dire reports from Mwanza, Koch had argued that German territory at Lake Victoria "is already to a wide extent gripped by [sleeping sickness] and that the epidemic has also already gained a firm footing on the shore of Tanganyika."⁴⁰⁶ How the pursuit of sleeping sickness prevention in German territory at Lake Victoria and Lake Tanganyika fit into the political, social, and economic dynamic of Ziba and Rundi communities will be the subject of chapters six and seven.

⁴⁰² Koch, "Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 5. September 1907," BAB R 1001, 5896.

⁴⁰³ Bethmann-Hollweg (Staatssekretär des Innern) to Kaiser Wilhelm II, Summary Report, 1/23/1908, BAB R 1001, 5897.

⁴⁰⁴ Koch, quoted in "Aufzeichnung über die Sitzung des Reichsgesundheits-rats..." 11/18/1907, BAB, R 1001/5876, p. 10.

⁴⁰⁵ Leupolt, "Bericht über die vom 18/12/05-24/1/06 ausgeführte Reise behufs Feststellung des Vorkommens von Trypanosomiasis und der Glossina palpalis an der Tanganyikaküste des Bezirks Usumbura" (no date; travel ended 1/24/1906), BAB R 86, 2622.

⁴⁰⁶ Koch, "Bericht über die Schlafkrankheits-Expedition während des Aufenthalts in Amani," 6/10/1906, BAB R 68, 2613 and R 1001 5895, p. 1. Original text: "Hiernach konnte es nicht mehr zweifelhaft sein, dass das deutsche Gebiet am Victoria-Nyanza nicht, wie bisher angenommen wurde, von der Schlafkrankheit bis jetzt verschont geblieben, sondern dass es bereits in weitem Umfange davon ergriffen ist und dass die Seuche auch schon am Ufer des Tanganika festen Fuss gefasst hat."

Conclusion

Histories of sleeping sickness, of Koch's career, and of East Africa in the early twentieth century have addressed piecemeal the intertwined processes of disease prevention, colonial governance, and African engagement triggered by the sleeping sickness epidemic at Lake Victoria. The Sesse Islands, which historically occupied an interstitial space economically and politically between dominant Buganda and the kingdoms of Buhaya, have likewise fallen through the gaps between the national and colonial histories of Tanzania and Uganda. But sleeping sickness on Sesse was crucial to the realities of the epidemic for African communities around the lake, as well as for the prevention efforts of the German and British colonial governments and for German research. Here, I have focused on the German expedition's year based on the Sesse Islands to examine the experiences of island communities, scientists, and missionaries to understand how people brought into the orbit of the sleeping sickness expedition facilitated, impeded, or participated in medical research. I highlighted the importance of inter-colonial scientific, religious, and economic circuits around Lake Victoria that drew Sesse Island villagers, the German expedition, Catholic missionaries, and British officials together. I approached research interactions at Sesse as dynamic and contested, in order to shed light on the development of German sleeping sickness prevention programs, particularly the advent of sleeping sickness camps. A cornerstone of the subsequent German anti-sleeping sickness campaign, these camps are best understood as spaces and institutions marked by the research circumstances, political context, and timing of their foundation on the Sesse Islands. As the blueprint for German colonial anti-sleeping sickness measures, Robert Koch and the expedition's work on the Sesse Islands shaped measures implemented in German East Africa in the years to come, both in their design and in the thinking which underpinned them.

The end of Koch's sleeping sickness expedition and the beginning of the German colonial sleeping sickness campaign marks a transition in the history of health and medicine at

Lake Victoria and Lake Tanganyika, as well as in the story this dissertation seeks to tell. In chapters two, three, and four my argument has linked early attention to sleeping sickness, both in metropolitan Europe and in the acutely threatened areas of eastern Africa, to the prevention programs that would dominate German and British colonial approaches to the disease after 1907. It has highlighted the importance of inter-colonial and international communication between scientists at work on sleeping sickness in shaping research agendas and transmitting new techniques and technologies. Chapters six and seven now turn to the history of sleeping sickness in African communities and in daily life between 1907 and 1914, focusing on how medical research and health interventions fit into local politics, economies, and social relations. Chapter six follows Haya communities in Kiziba, on the northwestern shore of Lake Victoria, as sleeping sickness-related colonial interventions expanded; chapter seven explores the dynamic of work and patronage related to sleeping sickness prevention on the Burundian shore of Lake Tanganyika based around Urambi. Chapter six analyzes how sleeping sickness control and prevention measures fit into broader changes in local political and economic relations between kings and commoners, as well as Africans and colonial officials, particularly in the advent of a new group of African medical auxiliaries. Here, and in chapter seven, the story of African engagement with, and impact on, colonial public health is at the center of my analysis.

Chapter Six

Gland-Feelers, Camps, and New Economies of Disease: Sleeping Sickness Research and Prevention in Kiziba, 1903-1914

Introduction

In October of 1907, Robert Kudicke, formerly a member of Robert Koch's sleeping sickness expedition, worked to get the sleeping sickness camp in the northwestern corner of German colonial territory on Lake Victoria up and running. Kudicke, in accordance with the camp's main purpose, focused on examining and diagnosing local cases of sleeping sickness, bringing people into a regimen of injections with atoxyl, and isolating them from their neighbors and families. Doing so, however, meant coming into close contact with people suspected of being sick – measuring body temperatures, palpating glands, perhaps taking blood. This project was often hindered by people leaving their homes at the approach of a European doctor. To find the sick and bring them to the sleeping sickness camp, Kudicke proposed a novel solution:

...in order to treat these [sleeping sickness cases] as soon as possible, I will attempt to have individual villages searched by natives who have been trained in the palpation of glands. The sultan Mutahangarwa has sent me 10 young people for this purpose, whose training I have already begun.⁴⁰⁷

Kudicke called this cohort of men simply "Drüsenfühler," gland-feelers. Growing in number over the coming years, the sleeping sickness campaign's gland-feelers embodied changing relations between Ziba villagers, their king, and German colonial authorities. They fit into a new dynamic of discretionary power that linked royal authority and medical expertise. Here, these medical auxiliaries stand at the center of a new reading of sleeping sickness prevention that foregrounds African mobility and its epidemiological and social importance.⁴⁰⁸ Filling a

⁴⁰⁷ Robert Kudicke, "Bericht über das Schlafkrankenlager Kigarama für die Zeit vom 1.6. bis 1.10.1907 und Vorschläge zur Bekämpfung der Schlafkrankheit in den Sultanaten Kiziba und Bugabu," 10/1/1907, BAB R 86, 2622. Original text: "Um diese [die Schlafkranken] möglichst bald behandeln zu können, will ich versuchen, die einzelnen Dörfer durch Eingeborenen, die in der Palpation von Drüsen unterwiesen sind, absuchen lassen. Der Sultan Mutahangarwa hat mir zu diesem Zweck 10 junge Leute gestellt, deren Unterricht bereits begonnen hat."

⁴⁰⁸ I here draw from Hunt's analysis of auxiliaries as "middle figures" from Nancy Rose Hunt, *A Colonial Lexicon of Birth Ritual, Medicalization, and Mobility in the Congo*, (Duke University Press: Durham, NC,

gap in the abilities of colonial doctors, the cohort of gland-feelers also occupied a new space in the political, social, and economic landscape of Kiziba, mediated by royal power and engaged with the sick and the well.

This chapter addresses sleeping sickness research and prevention programs on northwestern Lake Victoria, specifically in the kingdom of Kiziba and the camp at Kigarama. I focus on Ziba medical auxiliaries who were employed by German doctors to assist with the sleeping sickness campaign: what work these auxiliaries did, how they came to do it, and how they fit into colonial public health and Ziba political and social life. Over the course of the Lake Victoria epidemic, where an estimated 250,000 people died, a relatively smaller proportion of those dead – several thousand – were in German East Africa.⁴⁰⁹ Sleeping sickness spread into Kiziba along trade routes and with seasonal migrants, as well as among fishermen who relied on the lake, and rubber collectors and water carriers who frequented rivers and waterways where tsetse flies also lived.

In Kiziba, the campaign centered on the sleeping sickness camp at Kigarama, a village of several thousand people just south of the Uganda-Tanganyika colonial border. The particularities of the local situation in Kiziba made the trajectory of the campaign at Kigarama distinct from that at other sites on the lake, focusing the energies of colonial and Ziba authorities on people and their movements rather than the *tsetse* fly vector. The sleeping sickness campaign was conceived as, and indeed began as, a top-down, strictly enforced colonial effort to learn and control the extent of the disease. But during the height of activity at

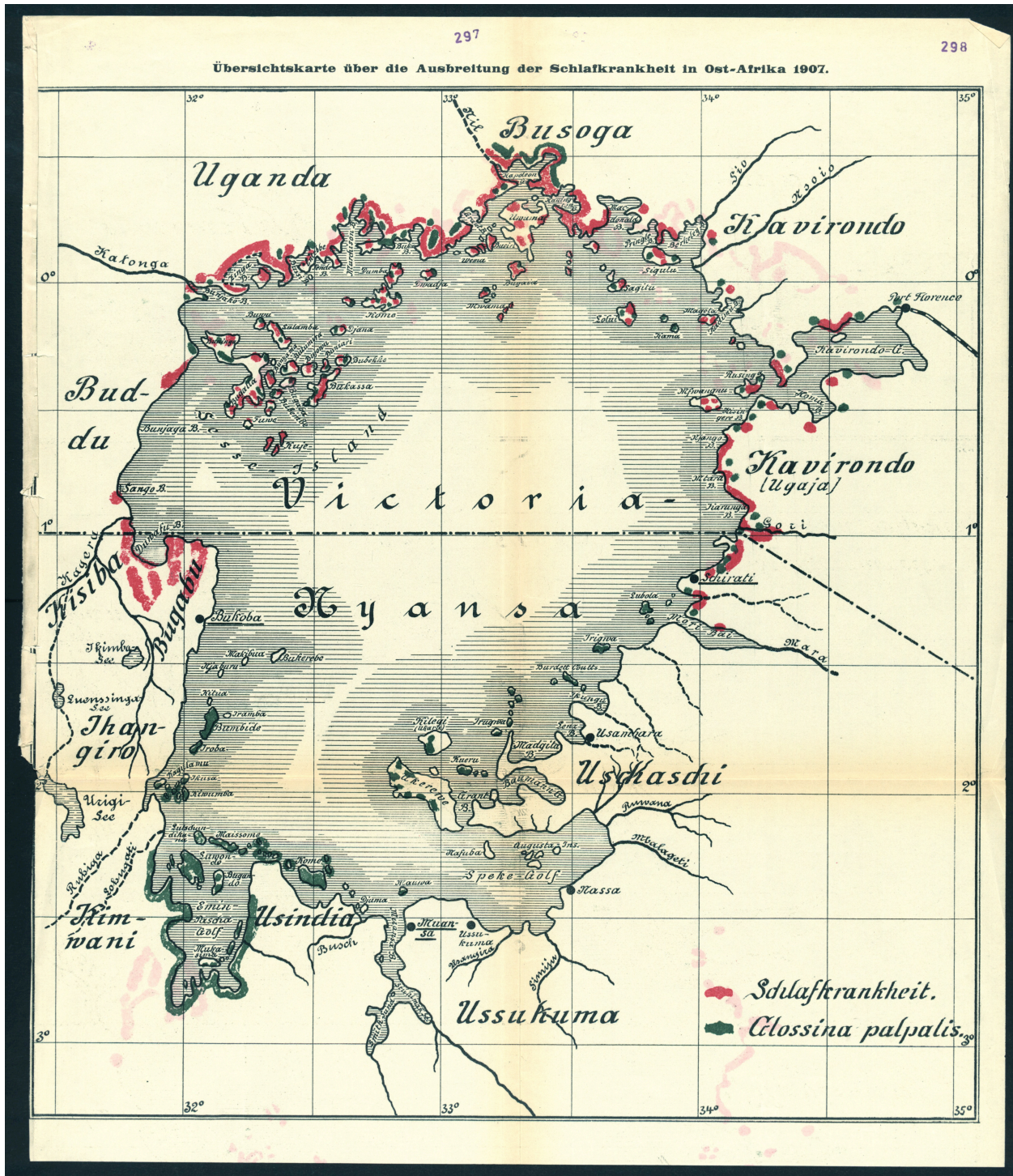
1999), p. 2, 12. On African auxiliaries as a part of colonial research, see Nancy Jacobs, "The Intimate Politics of Ornithology in Colonial Africa," *Comparative Studies in Society and History* 48 (2006); Lyn Schumaker, *Africanizing Anthropology: Fieldwork, Networks, and the Making of Cultural Knowledge in Central Africa*, (Duke University Press: Durham, NC, 2001). Ziba auxiliaries also fit into the broader history of colonial African intermediaries. See Benjamin N. Lawrance, Emily Lynn Osborn, and Richard L. Roberts, *Intermediaries, Interpreters, and Clerks: African Employees in the Making of Colonial Africa* (Madison: University of Wisconsin Press, 2006).

⁴⁰⁹ See Kirk Hoppe, *Lords of the Fly: Sleeping Sickness Control in British East Africa, 1900-1960* (Praeger, Westport: 2003), 27; Brian Langlands, "The Sleeping Sickness Epidemic of Uganda – 1900-1920," Occasional Paper No. 1, Makerere University, Kampala, 1967; Maryinez Lyons, *The Colonial Disease: a Social History of Sleeping Sickness in Northern Zaire, 1900-1940*, (Cambridge University Press, Cambridge: 1992).

Kigarama, and through the kingdom of Kiziba more broadly, research and prevention work contracted and expanded in response to local circumstances. Regional migration, disease ecology, and political relations between the Ziba elites, commoners, the royal court and German administrators necessitated adaptations in both the tools available to German doctors and the tactics by which they chose to employ them, and affected negotiations between colonial doctors and Ziba communities. The campaign involved both the sick and well members of Ziba communities, through intertwined strands of sleeping sickness prevention measures – the employment of medical auxiliaries, incentivizing treatment at sleeping sickness camps, and new attention to travel, migration, and use of Lake Victoria.

In understanding auxiliaries within the social and political mix of royal power, attempted colonial interventions, and local engagement with or avoidance of medical research and prevention, health and disease figure as important forces in local and regional history. Sleeping sickness work connects with European and African activity in forced cash crop cultivation, education, and political conflict. That the work of medical auxiliaries in the Great Lakes region can be dated prior to World War I and within the German colonial administration, establishes the history of medical auxiliary labor in an earlier period and within a different medical and socio-political context than previously emphasized.⁴¹⁰ This study of Kiziba offers a view into the continuity of sleeping sickness prevention measures across colonial administrations in a single region, and perhaps more importantly, sheds light on the widely varying potential points of engagement or avoidance with research and prevention programs available to African communities.

⁴¹⁰ See John Iliffe, *East African Doctors: a History of the Modern Profession* (Cambridge: Cambridge University Press, 1998), especially chapter 1, "Pioneers."



“Overview Map of the Spread of Sleeping Sickness in East Africa, 1907.”⁴¹¹
Kiziba (“Kisiba”) is at middle left.

⁴¹¹ GStA PK HA Rep. 76 Kultusministerium, VIII B, Nr. 4120.

Kigarama and Kiziba were part of a broader story of illness and disease control based on the planned centralized administration of the German anti-sleeping sickness campaign and the movement of people from the Bukoba area to other hubs of trade and transit that predated it. Increasing colonial medical attention to sleeping sickness in the area came as a result of Robert Koch's research on the Sesse Islands in 1906-07, but was also rooted in recognition of the epidemiological importance of long-standing economic networks and African mobility within them that connected communities around the lake.⁴¹² Circulation and movement were key elements in sleeping sickness research and prevention. Colonial officers circulated among the foci of research and administration, accumulating points of reference and experience they applied in their tenure in each new station. Auxiliaries employed in medical work also traveled between the key sites of research, as anti-sleeping sickness programs expanded, and monitored long-standing routes for new reasons. This cohort of men – young Ziba men trained as medical auxiliaries and deployed to find people suspected of having sleeping sickness – created and traced new paths between the sleeping sickness camp and surrounding communities. Their work allows a point of access into the political and economic life of Kiziba and demonstrates the centrality of sleeping sickness to both royal and colonial engagement with Ziba villagers.

Kiziba at the Turn of the Century: Royal Power in Transition

The early twentieth century marked a transition in Ziba politics, as a new king was installed and German colonial authorities became ever more involved in governance. Kiziba was ruled by a divinely invested *mukama* and royal family members, and politics centered on the mukama's court. In 1903, the mukama of Kiziba since 1870, Mutatembwa, died in old age.⁴¹³ His latter years were characterized by a conflict over the throne between two of his sons, Reshebula and Karutasigwa and their supporting factions, between roughly 1898 and 1903. The

⁴¹² Robert Koch, "Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 25. April 1907," BAB R 1001 5896.

⁴¹³ Austen, *Northwest Tanzania*, "Tribes, Chiefdoms, and Rulers," p. 263.

German administration at Bukoba became involved in the succession struggle, as did the White Fathers' missions at Mugana and Kashozi.⁴¹⁴ In 1903, Karutasigwa ultimately prevailed, taking the name Mutahangarwa as mukama, a position he would hold until his own death in 1916. He would move the capital from Bwanja, where his father's court had been, to Gera, a short distance away.⁴¹⁵

Historically, the Haya state, according to Peter Schmidt, "was maintained by a large workforce drawn evenly throughout the territory by political officers of the king."⁴¹⁶ The six Haya kingdoms that survived in the early twentieth century shared a common language and closely-related political traditions and social structures; Kiziba was one of those six kingdoms.⁴¹⁷ As with neighboring kingdoms, Kiziba's political structure was elaborated through clan heads and subchiefs, roles that sometimes overlapped and were linked to specific territories and villages.⁴¹⁸ A subordinate chief or minister was variously known during the German colonial period as *mukungu* (pl. *bakungu*) or as a *katikiro*, roles whose purview and responsibilities appear to have frequently been interchanged or mistaken by sleeping sickness campaign doctors. Administratively, subchiefs were responsible for administration of districts and villages and were likely, in the early twentieth century, village elders.⁴¹⁹ In their monthly and quarterly sleeping sickness campaign reports, German colonial doctors regularly referred to "katikiros," a title generally used to designate a minister or high-status official, to describe African authorities

⁴¹⁴ Iliffe, *Modern History of Tanganyika*, (Cambridge: Cambridge University Press, 1979) p. 105; Austen, *Northwestern Tanzania*, pp. 45-47; Rehse, *Kiziba: Land und Leute*, following Lwamgira, pp. 274-5.

⁴¹⁵ Tibazarwa, "Economic Revolutions in Bahaya History," p. 74.

⁴¹⁶ Schmidt, *Historical Archaeology*, p. 29.

⁴¹⁷ Austen, *Northwest Tanzania*, pp. 9-11; the neighboring kingdoms were Bugabo, Kiamtwara, Kianja, Ihangiro, and Maruku, per Schmidt, *Historical Archaeology*, p. 11.

⁴¹⁸ See Cory and Hartnoll's *Customary Law*, appendices IV, "Clans in Uhaya" and V, "List of Clans," pp. 281-285, and following clan tables, appendix, pp. 1-45.

⁴¹⁹ See I.K. Katoke and P. Rwehumbiza, "The Administrator: Francis Lwamgira," in John Iliffe, ed., *Modern Tanzanians: a Volume of Biographies*, (Nairobi: East Africa Publishing House, 1973), p. 47-48; Rehse, *Kiziba*, p. 105.

in Buhaya at the local or village level.⁴²⁰ Katikiros involved in sleeping sickness research and prevention, understood at the time as representatives of the *mukama*, functioned as intermediaries and administrators at the village level. In terms of the kingdom's defense and military, while the *mukama* did not retain a standing army, he could call on corps of *rugaruga*, his armed retainers, for enforcement and protection.⁴²¹ With the advent of German colonial rule in the area, *rugaruga* from the Haya kings also came into use as ad hoc local troops upon whom the administration in Bukoba could call.

Village life for most Ziba was rural and focused on farming. The layout and organization of villages and farms was linked to the importance of banana cultivation and also reflected the dispersed, yet hierarchical and centralized, political and social structure in Kiziba. Ziba villages were typically made up of a cluster of homes – a traditional circular, domed *msonge* – each surrounded by a banana plantation, a *kibanja*.⁴²² Cultivation and other household tasks, were traditionally strictly gendered, as women, for example, were involved in the daily maintenance of fields, worked common fields outside of villages, and tended vegetable crops, while men cultivated bananas, cleared new fields, and worked as smiths or barkcloth makers.⁴²³ In a territory where swamps and small rivers cut through the land, farms and villages filled in

⁴²⁰ Terminologies of political hierarchy in Buhaya, and specifically in Kiziba, remain tangled for the historian. Richter defines katikiro at once as “subchief, village elder, also minister,” and notes that the office was heritable, “Die Bezirk Bukoba,” p. 89, while Hermann refers to “small katikiros of district chiefs,” who compose a council of ministers, “Die Wasiba und ihr Land,” p. 48; both model Haya political structure strongly after that in Buganda. Haber draws his sketch of the structure of political leadership in the Bukoba District directly with reference to Buganda (with a king and one katikiro); in 1904, he was a ranking official in the government at Dar es Salaam by 1906, and later in the Reichskolonialamt. See Haber, “Die innerpolitischen Verhältnisse im Bezirke Bukoba,” 6/30/1904, BAB, R 1001 1029, pp. 2-3, 8-11. Austen outlines a general hierarchy for the Haya states with the kings (*bakama*) at the top, subchiefs of common birth (*mulaligwa*) and finally appointed parish subchiefs, mostly of royal birth (*bakungu*), Ralph Austen, *Northwest Tanzania Under German and British Rule: Colonial Policy and Tribal Politics, 1889-1939*, (London: Yale University Press, 1968) p. 11; Rehse, for his part, refers only to *mukungu* as village elders, who were as a group subordinate to an *mukungu mkuru*, a district chief, *Kiziba*, p. 2, p. 105.

⁴²¹ Weiss cites the use of *rugaruga* to enforce planting of coffee in *Sacred Trees, Bitter Harvests: Globalizing Coffee in Northwest Tanzania*, (Portsmouth, NH: Heinemann, 2003), p. 51.

⁴²² Rehse, *Kiziba*, p. 2.

⁴²³ Rehse, *Kiziba*, p. 53; Weiss, *Sacred Trees*, pp. 115-125. Weiss points to continuities between early twentieth-century descriptions of cultivation and late-twentieth century practices.

hillsides and plateaus; Kanyigo district, where Kigarama was located, was dominated by a narrow, high-ridged plateau.⁴²⁴ A main path led through the typical village, with side paths branching off toward each home, set back within banana and coffee plants. In the 1890s, Carl Hermann, the German administrator at Bukoba, remarked on the difficulty of navigating paths through dense banana plants to find villages, and of finding the way from house to house, writing "...the houses are scattered about, connected by a tangle of criss-crossing, looping paths, which are bordered by high hedges. Only people of the village themselves, rarely a neighbor, not to mention a foreigner, can find their way and get out again."⁴²⁵ Hermann's description of finding the way through a Haya village belies his own disorientation, but even its exaggerated confusion captures the process of making one's way that other Europeans might have experienced better than the schematic maps accompanying German and British accounts of Kiziba. Densely populated and intensively farmed, the hillsides and fields in Kiziba presented colonial officials with a labyrinthine network of connected villages, punctuated by uncultivated steppes or swampy land. This landscape and village layout allowed people to evade colonial authorities. Several hundred homes and surrounding farms made up the largest Ziba villages, by colonial surveys; how and where the population was distributed, however, remained only estimates until just before World War I.⁴²⁶ With the colonial recognition of sleeping sickness in Kiziba, doctors' unfamiliarity with and their inability to penetrate this landscape of villages and farmland to locate the sick became a major factor in the shape of sleeping sickness campaign interventions.

⁴²⁴ David L. Schoenbrun writes evocatively about this landscape: "south of the mouth of the Kagera River, ridges roll back from a knife-edged lakeshore like earthy waves frozen just before they curled and crashed," *A Green Place, a Good Place*, p. 166.

⁴²⁵ Hermann, "Die Wasiba und ihr Land," p. 47. Original text: "...die Häuser liegen zerstreut, durch ein Gweirr sich kreuzender, verschlungener Pfade, die von hohen Hecken eingefasst sind, verbunden. Nur Leute des Dorfes selbst, kaum der Nachbar, geschweige denn ein Fremder findet sich zurecht und wieder hinaus."

⁴²⁶ Rehse, *Kiziba*, pp. 1-3, estimates the number of homes in each village, and number of villages in Kiziba's districts; he used a rough estimate of three people per home to tally population figures, noting that homes had only been counted for the first time in the preceding few years.

The political economy of land use and labor in Kiziba focused on the demands of the mukama and his district and village subchiefs. A *mukama* was a “receiver of milk” or “milker,” indicating the importance of possessing cattle and controlling their products to his political power and legitimacy.⁴²⁷ Cattle husbandry provided people milk and butter, as well as manure fertilizer for cultivation; the absence of tsetse flies from Kiziba meant that Ziba herds that survived the devastating cattle diseases of the late nineteenth century were not subsequently endangered by trypanosomiasis.⁴²⁸ The royal title, mukama, also connotes the extractive role of the king, and the primacy of royal claims on his subjects’ labor, goods, and harvest.⁴²⁹ Tribute, in the form of “first fruits” of a farm, bananas, grain, livestock, or hides, were brought to the royal court; the mukama also had control of all crafts, such as ironworking and barkcloth production.⁴³⁰ Large, consolidated farms held by clan heads and granted by favor of the king called *nyarubanja* (literally meaning “a large *kibanja*”) were “important sources of patronage, labor, and tribute for their noble estate holders” and to the mukama; ongoing processes of the

⁴²⁷ Kiziba accords with a model of political, social, and economic organization focused on cattle herding and banana cultivation, as explored by David L. Schoenbrun in “Cattle Herds and Banana Gardens: The Historical Geography of the Western Great Lakes Region, ca. AD 800-1500,” *The African Archaeological Review*, 11 (1993), pp. 39-72. With the combined importance of banana cultivation and cattle herding, Kiziba fits less neatly into the rich literature inspired by the “cattle complex” developed by Melville Herskovits in a series of articles in *American Anthropologist* 28 (1926), or, as David M. Anderson more recently termed it, “cow power,” in pastoralist societies in eastern Africa and further afield; see David M. Anderson, “Cow power: livestock and the pastoralist in Africa,” *African Affairs*, 92 (1993), pp. 121–33. Whether Ziba politics could be understood as working within a “milk complex,” as Paul Bjerck argues about southern Africa, is a persuasive possibility, left open to further ethnographic research that might pick up provocative details from turn-of-the-century sources such as Rehse’s *Kiziba: Land und Leute*. See Paul K. Bjerck, “They Poured Themselves into the Milk: Zulu Political Philosophy under Shaka,” *Journal of African History* 47, 1 (2006), p. 18-19.

⁴²⁸ On cattle husbandry, see Austen, p. 10; Priscilla Copeland Reining, “Haya Land Tenure: Landholding and Tenancy,” *Anthropological Quarterly*, vo. 35, no.2, Apr. 1962; on butter, see Weiss, *Sacred Trees*, p. 35. On the ecological disasters of the late nineteenth century in Tanzania, see James Giblin, “The Precolonial Politics of Disease Control,” in Gregory Maddox, James Giblin, and Isaria N. Kimambo, eds., *Custodians of the Land: Ecology and Culture in the History of Tanzania* (Athens, OH: Ohio University Press, 1996), pp. 127-151; Iliffe, *Modern History of Tanganyika*, chapter 5. On trypanosomiasis control and debates over its historical roots, see Giblin, “Trypanosomiasis Control in African History: an Evaded Issue?,” *Journal of African History* 31 (1990), pp. 59-82.

⁴²⁹ Schmidt, *Historical Archaeology: a Structural Approach in an African Culture* (Westport, CT: Greenwood Press, 1978), p. 101; Rehse, *Kiziba*, p. 1.

⁴³⁰ Cory and Hartnoll, *Customary Law of the Haya Tribe*, p. 125; Rehse noted that a family’s “best crops” were taken to the king first, *Kiziba*, p. 54; Schmidt, *Historical Archaeology*, pp. 29-30.

alienation and granting of land by royal fiat connected clients to the king.⁴³¹ Royal claims were exercised in the form of tribute given to the king and his chiefs, but also in the requirement of able-bodied men fulfilled a duty to travel to the king and “work there without payment for one month.... cleaning plantations, erecting buildings, cutting firewood, herding cattle, etc.”⁴³² Haya kings collected taxes from each household in the early twentieth century in cowries, which were gradually replaced by colonial coins.⁴³³ In addition to the distribution of land and patronage through the *nyarubanja* system, predicated on all farms being the king’s possessions, the open steppe that lay between villages also belonged to the king.⁴³⁴

Economic activity in Ziba villages on the lakeshore was diverse, relying on widespread pockets of fertile land for subsistence farming, and also fit in closely to lacustrine trade. Varieties of *ebitoke*, plantain banana, were the staple food crop and were intercropped with *robusta* coffee.⁴³⁵ Coffee, traditionally associated with royal political and cosmological power, had occasionally been traded for cattle in the pre-colonial period; cultivation began to expand in the early twentieth century into cash crop production at the urging of both Haya kings and colonial officials.⁴³⁶ Foraging and production of goods for trade accompanied farming of coffee and

⁴³¹ *Nyarubanja*, literally meaning “a large *kibanja*,” referred to a system of landholding and tenant farming of a group of banana plantations, historically under control of clan heads and chiefs but subject to the favor of the king. Cory and Hartnoll, *Customary Law*, pp. 123-26. Though not the majority of arable land, *nyarubanja* were “important sources of patronage, labor, and tribute for their noble estate holders,” according to Weiss, *Sacred Trees*, p. 111. The *nyarubanja* system -- Weiss, p. 145-46;

⁴³² This duty is called *nsika* by Cory and Hartnoll, *Customary Law*, p. 125; Schmidt refers to the same as *kikale*, *Historical Archaeology*, p. 29.

⁴³³ Rehse, *Kiziba*, p. 80, p. 107; Weiss, *Sacred Trees*, pp. 51-54.

⁴³⁴ Rehse, *Kiziba*, p. 107.

⁴³⁵ Austen, *Northwestern Tanzania*, p. 10.

⁴³⁶ See Weiss, *Sacred Trees*; Brian K. Taylor, *The Western Lacustrine Bantu*, (International African Institute: London, 1962), p. 134; Juhani Koponen, *Development for Exploitation: German Colonial Policies in Mainland Tanzania, 1884-1914*, (Lit Verlag, Hamburg, 1994), p. 436-37. Cory and Hartnoll’s study of Haya customary law, published in 1945, cites an explanation of squatting that overlaps with the transition from coffee as royal prerogative to coffee as cash crop: “About 50 years ago when coffee became recognised as an economic crop the Chiefs took over large areas of land capable of coffee bearing, or deserted banana plantations, and put them under coffee. The work of preparing and planting these areas was done as *nzika* (forced labour) by the Chiefs’ subjects.” Cory and Hartnoll, *Customary Law of the Haya Tribe*, p. 149.

bananas and also took people further afield.⁴³⁷ Ziba traders historically took barkcloth and raffia produced in coastal areas of the lakeshore to Ankole in exchange for salt, and, more widely reportedly trade iron hoes for goats, salt, and ivory.⁴³⁸ In 1904, for instance, two young men set out from Kiziba to Bunyoro to trade their profit from raffia for ivory, instead heading into Buganda to seek work, and eventually found work cutting raffia bark.⁴³⁹ People in the coastal Haya kingdoms were also heavily involved in fishing and trading along the lake; Ziba fishermen likely worked the waters below the mouth of the Kagera, but also traveled to the Sesse Islands and may have marketed their catch in Buganda, as well as closer to home in Bukoba or Kifumbiro.⁴⁴⁰ Hartwig places Kiziba in the Karagwe caravan network, with the Ziba as a “dominant trading people” at a transit point between Unyanyembe and Buganda, continuing from the nineteenth century.⁴⁴¹ While the Karagwe network of caravan trade involved goods from the area carried by Haya traders, caravan roads did not pass directly through Kiziba, and the nature of involvement by the early twentieth century likely remained indirect.⁴⁴²

German civilian rule in the Bukoba Residency brought an increased interest in developing raw materials and exploiting Haya trade and production for the emerging colonial

⁴³⁷ Schoenbrun, *A Green Place*, p. 24-25.

⁴³⁸ Charles M. Good, “Salt, Trade, and Disease: Aspects of Development in Africa’s Great Lakes Region,” *IJAHS* vol. 5, no. 4, (1977), p. 564; see also Kajarero, “Aus meinem Leben,” Bethel Mission Archives M 194, p. 4; Weiss, *Sacred Trees*, p. 166, quoting White Fathers Diary for Bwanja.

⁴³⁹ Kajarero, “Aus meinem Leben,” p. 4.

⁴⁴⁰ Austen notes that the name “Haya” was “originally applied by foreigners to the fishermen of the lake coast,” p. 10, note 6, citing Hans Cory, *Historia ya Wilaya Bukoba*, no date; Roland Oliver et al, *History of East Africa*, Clarendon Press, Oxford, 1963-76.

⁴⁴¹ Hartwig, “The Victoria Nyanza as a Trade Route in the Nineteenth Century,” p. 546.

⁴⁴² The involvement of coastal Haya kingdoms in the historical slave trade, or the presence of slaves from Buhaya in the numbers of those who circulated along the Karagwe and lake routes or who were sent to the coast with Swahili/ Arab caravans in the nineteenth century also remains unclear. Holmes, Good, and Weiss, in their histories of Haya involvement with long-distance trade, acknowledge the presence of slaves into the early twentieth century, but cite the paucity of material on how the slave trade affected the Haya kingdoms on the lakeshore. See Weiss, *Sacred Trees*, p. 165; Good, “Salt, Trade, and Disease,” p. 564; C.F. Holmes, “Zanzibari Influence at the Southern End of Lake Victoria: The Lake Route,” *African Historical Studies*, vol. 4, no. 3 (1971), p. 484-485.

economy.⁴⁴³ The impetus for changing African agriculture and trade was hardly unidirectional, however, and Kiziba provides an excellent example of the give-and-take through which African farming was connected to a global market in the early twentieth century. In this regard, Mutahangarwa looms relatively large – for presiding over a relatively small kingdom – in the historical studies of Tanzania for his interventions.⁴⁴⁴ Around 1905-07, Mutahangarwa asserted a role in managing the kingdom’s economic development, largely by encouraging coffee cultivation and expanding the existing system of tribute. His efforts at encouraging cultivation of robusta coffee as a cash crop moved forward with the force of *rugaruga* and to the benefit of the royal house and its members.⁴⁴⁵ As political and economic institutions were transformed in the context of colonial incursions, chiefship “became something new in its new context,” as chiefs “enforced rules on coffee planting, recruited migrant labor, and employed their clients as laborers for cash cropping.”⁴⁴⁶ Coffee and its cultivation, studied by anthropologist Brad Weiss, underwent shifts in its cosmological, political, and economic meanings in the process of linking Haya coffee to the world market. Coffee, which had never been purely an economic good, the exchange of which had served to link the mukama to his subjects and individuals to one another, was now cultivated more widely and expressly for trade.⁴⁴⁷ In 1905, the power of the king and his chiefs to overcome a popular reluctance to plant more coffee came with the threat of punishment, that “whoever refused to plant coffee would be arrested and detained or beaten.

⁴⁴³ See Gudowius, “Bericht über die Ausbreitung der Schlafkrankheit im Bezirk Bukoba, die Ursachen ihrer Einschleppung und die Massnahmen, die zur Verhinderung ihrer weiterverbreitung getroffen werden können,” 5/31/1908, BAB R 1001, 5898; Haber, “Die innerpolitischen Verhältnisse im Bezirke Bukoba,” 6/30/1904, BAB, R 1001 1029.

⁴⁴⁴ See Iliffe, *Modern History of Tanganyika*, p. 122, 156; Iliffe, *Tanganyika under German Rule*, pp. 171-74; Koponen, *Development for Exploitation*, p. 285, 436-37; Austen, *Northwestern Tanzania*, chapters 5 and 6; Weiss, *Sacred Trees*, chapters 1 and 2.

⁴⁴⁵ See Weiss, *Sacred Trees*, particularly chapter 2, “Coffee, Cowries, and Currencies: Transforming Material Wealth.”

⁴⁴⁶ Steven Feierman, *Peasant Intellectuals: Anthropology and History in Tanzania*, (Madison: University of Wisconsin Press, 1990), p. 15.

⁴⁴⁷ Brad Weiss, *Sacred Trees, Bitter Harvests: Globalizing Coffee in Northwest Tanzania*, (Portsmouth, NH: Heinemann, 2003), p. 40.

So the people planted coffee by force."⁴⁴⁸ Planting of rubber and sisal was also encouraged, and coffee cultivation in particular taken up widely and with profitable outcome for elites.⁴⁴⁹

Recognizing the value of the tributary labor he commanded, Mutahangarwa attempted an open partnership with planter-ethnographer Hermann Rehse and another man, Weber, in 1907, in a proposal to the colonial government that had each party sharing profits equally.⁴⁵⁰ From an administrative and political perspective, Mutahangarwa's relations with German medical officers and provision of labor and supplies for the sleeping sickness camp at Kigarama fit into increasing royal demands for labor in Buhaya more broadly during the early colonial period.⁴⁵¹ Apart from the workers needed to keep the camp running and auxiliaries – likely only a few dozen people at work at any given time – the campaign's demands for local labor in Kiziba proper were relatively small, because bush clearing work was not a priority in the immediate area.⁴⁵² In Urundi, by contrast, where tsetse flies were prevalent and bush clearing was seen as the most successful measure to allow safe passage on roads and at lakeshore landings, labor demands of chiefs, the camp, and the Resident created friction between potential workers and those wishing to requisition their labor.

Added to Ziba agriculture and trade directed around the lake in the late nineteenth and early twentieth centuries was the historical dynamic of regional politics. Ganda expansion and military dominance around the lake in the mid- and late nineteenth century and involvement in

⁴⁴⁸ Francis X. Lwamgira, *Amakuru ga Kiziba: The History of Kiziba and its Kings*, (Second Edition, 1949: translated by E.R. Kamuhangire, Makerere College, 1969) p. 135.

⁴⁴⁹ See also I.K. Katoke and P. Rwehumbiza, "The Administrator: Francis Lwamugira," in John Iliffe, ed., *Modern Tanzanians: a Volume of Biographies*, (East African Publishing House: Nairobi, 1973); Weiss, *Sacred Trees*, p. 134, p. 143, notes the limited economic success of coffee production before World War I.

⁴⁵⁰ Iliffe, *Modern History of Tanganyika*, p. 156.

⁴⁵¹ Weiss, *Sacred Trees*, p. 167; Iliffe, *Tanganyika Under German Rule, 1905-1912*, (Cambridge University Press, Cambridge 1969), 171-174; Iliffe, *Modern History of Tanganyika*, p. 156

⁴⁵² In Kiziba, greater conflicts likely arose between the Bukoba Resident and Mutahangarwa over the building of roads, clearing fields, and cultivation – projects in which both the colonial administration and the mukama were interested – though the cooperative relationship the two parties enjoyed with regard to Ziba labor does not indicate that this troubled Mutahangarwa's reign.

wars between the Haya kingdoms brought Kiziba into a tributary relationship with Buganda.⁴⁵³ While Ziba kings could call on their Ganda allies, as a tributary state, Kiziba was also under threat of war from Buganda. This insecurity was visible in Haya tradition, for example, in ways of categorizing certain durable foodstuffs, consumption of which was connected specifically to times of famine, and which were especially important during periods of Ganda raiding that either destroyed crops or kept cultivators away from the fields.⁴⁵⁴ The period of this tributary relationship overlapped with Ganda predations around the lake, sometimes resulting in slave-raiding, producing captives who fed into Arab and Nyamwezi network on the southern shore of the lake, but which also likely placed some Ziba in servitude in Buganda itself.⁴⁵⁵ After the turn of the twentieth century, internal turmoil in Buganda combined with an ebbing trade in slaves and ivory to decrease the threat of slave-raiding and attacks by Ganda war canoes for people in the coastal Haya kingdoms.⁴⁵⁶ But as an element in the recent history of Kiziba, this experience with slave-raiding – the removal and detainment of people against their will, violently – provides an additional layer of context for the pursuit of sleeping sickness cases by European doctors and the Ziba auxiliaries with whom they worked.

These political and economic factors connected Kiziba with the regional economy of the lake and with political circumstances further afield, and shaped the changing circumstances of

⁴⁵³ Wilhelm Langheld, *Zwanzig Jahre in Deutschen Kolonien*, (Wilhelm Weicher: Berlin, 1909), p. 78.

⁴⁵⁴ Iliffe, *Modern Tanganyika*, p. 105; Rehse, *Kiziba: Land und Leute*, p. 23, p. 52, p. 90. Rehse notes that *ebitakuri*, a type of yam, "...ist die Speise zur Zeit einer Hungersnot; besonders wichtig war dieses Nahrungsmittel, als vor der Zeit der Europaer die im Norden wohnenden *Baganda* von Zeit zu Zeit ihre kriegerische Einfälle in *Kiziba* machten und die meisten Feldfrüchte zerstörten oder die Bewohner vom Ackern abhielten" p. 23. Similarly to his predecessors Hermann and Richter, who also produced semi-ethnographic accounts of Buhaya and Kiziba, Rehse styles German intervention as inaugurating a period of peace in Buhaya and the end of Ganda raids. The withdrawal of Ganda raiding parties and decreasing naval activity on the lake was connected more directly with internal turmoil in Buganda in the 1890s, per Hartwig, "Lake Victoria as a Trade Route," pp. 551-52.

⁴⁵⁵ Reid, *Political Power in Pre-Colonial Buganda*, pp. 234-35.

⁴⁵⁶ Carl Hermann, "Die Wasiba und ihr Land," in *Mitteilungen von Forschungsreisenden und Gelehrten aus den deutschen Schutzgebieten* (1894), p. 45; Hartwig, "Lake Victoria as a Trade Route," pp. 536-37, 543-44, 551-52; Reid, "The Ganda on Lake Victoria," p. 355. On Nyamwezi caravan trade, see Stephen J. Rockel, *Carriers of Culture: Labor on the Road in Nineteenth-Century East Africa*, (Portsmouth, NH: Heinemann, 2006).

Mutahangarwa's reign in Kiziba. Royal power in Kiziba, itself shifting in strength and focus in the early period of colonial rule, played a key role in the dynamic of sleeping sickness research and prevention in the area.⁴⁵⁷ The combined involvement of the Ziba mukama and German administrators had a precedent in Mutahangarwa's personal history. His cooperation with German investigations of an outbreak of plague in 1897, in contrast to the refusal of his rival for the throne, cemented his reputation among the Germans early on, and, among other intrigues in Buhaya, also garnered their support for his control of the kingdom in his subsequent succession struggle with Reshebula.⁴⁵⁸ In the Ziba social context, the king's health and life were cosmologically linked with the health of the kingdom, though available sources make determining the nature of his ability to heal or harm the land, or secure the kingdom's well-being, challenging.⁴⁵⁹ This is especially complex with regard to potentially overlapping phenomena of illness known as *botongo* and *isimagira* from the early twentieth century, remembered in the early twenty-first century as connected to sleeping sickness/*ugonjwa wa malale*. How *botongo* and *isimagira* manifested with respect to individual illness and familial or collective social turmoil in the early twentieth century remains unclear, but wider regional connections may prove illuminating.⁴⁶⁰

⁴⁵⁷ Lwamgira's history asserts that Mutahangarwa reached out to Resident von Steumer for assistance with the sleeping sickness epidemic in 1907. Francis X. Lwamgira, *Amakuru ga Kiziba: The History of Kiziba and its Kings*, p. 137. See also C.M. Tibazarwa, *Economic Revolutions in Bahaya History*, (Braunton, Devon: Merlin Books, 1994), p. 75.

⁴⁵⁸ Austen, *Northwestern Tanzania*, p. 47.

⁴⁵⁹ Weiss, *Sacred Trees*, pp. 36-38; for how concepts of healing and harming the land operated in the precolonial period elsewhere in Tanzania, see Steven Feierman's *Peasant Intellectuals: Anthropology and History in Tanzania* (Madison: University of Wisconsin Press, 1990), particularly chapter 3.

⁴⁶⁰ "Botongo" could be derived from a verb meaning "to weaken," or a related verb meaning "to rot, or to waste away." "Isimagira," derived from a verb connoting a nodding sleep, is another possible reference to the some of sleeping sickness' symptoms. My thanks to Professor Henry Muzale, a linguist at the University of Dar es Salaam, for his help with these and other disease names in Kihaya in August 2008; I have also consulted Fr. Paul Betbeder's *Dictionnaire Kihaya-Francais* (undated), which defines "botongo" as sleeping sickness, and Fr. Alois Mener, *Kleines Ruhaya-Deutsches Wörterbuch* (Trier: Mosella-Verlag, 1914), both held at M.Afr. AGM Rome. Interview with Heslon Lutimba, Kigarama, Tanzania, 8/21/2008; interview with Odilia Kokujwara, Bugombe, Tanzania, 8/22/2008. I hope to address this overlap, particularly as it suggests connections with etiologies and nosologies in Buganda and Buddu, in my ongoing work.

Royal interventions into health and disease have not received attention in historical and anthropological study comparable to coffee cultivation or cooperation with mission education, but appear to have followed a similar pattern in the use of royal power and coordination with colonial authorities. In fact, Mutahangarwa's new interest in increasing coffee cultivation occurred simultaneously with the arrival of sleeping sickness and the arrival of colonial doctors conducting research and coordinating the disease prevention campaign. Contemporary to the expansion of mission education and fundamental changes in the control and purpose of coffee cultivation, sleeping sickness work linked the energies of colonial officials and the mukama, opening a space where daily life changed.

Sleeping Sickness in Kiziba: a Brief Overview

Into this political, social, and economic world came German medical officers and colonial officials concerned with the spread of sleeping sickness in German East Africa. Though my focus in this chapter is primarily on the period of most intensive intervention and engagement between the sleeping sickness campaign and Ziba communities, roughly 1907 to 1911, the story of sleeping sickness as a new problem stretches before and beyond the campaign from 1903 to 1914. In late 1903, German colonial army doctor Oskar Feldmann reported cases of sleeping sickness in the northernmost part of the Bukoba Residency of German East Africa. Feldmann, the same officer who would later be involved in Robert Koch's investigations at Mwanza, was stationed at the time at Bukoba, then still a military post. His explanation of the discovery of cases suggests that a dynamic of collaboration and coercion prevailed in the relations between local leaders and colonial officers and the communities subject to both. The epidemic was also understood in the context of local migration and of inter-connected populations around Lake Victoria. The district's first case originated in Kiziba, one of six ethnic Haya kingdoms in the northern part of the district on the lakeshore. Two cases subsequently found in the kingdom were all "...young men from the north of this district, who went to Uganda to seek work and, after they acquired sleeping sickness there, had returned to their

relatives."⁴⁶¹ Two of the three people were discovered after the mukama, carrying out instructions to search villages for other sick people recently returned from Uganda, discovered two men being hidden by their relatives.⁴⁶² Feldmann instructed the mukama to search his subjects for other cases, compelled the sick to move into isolation in the Bukoba military hospital, examined the residents of the relevant associated areas for signs of disease, and ordered the homes of the sick to be burned.⁴⁶³

By December 1903, the administrator at Bukoba proposed a set of guidelines to limit traffic to and from Uganda, diverting trade through Bukoba and implementing monitoring of traffic on the Kagera and the lakeshore. The work of monitoring crossings of the Kagera River and preventing unsupervised landings on the lakeshore in Kiziba and Bugabu was to be carried out by the "sultans," as the German administration called the kings, of Kiziba, Kianja, and Karagwe.⁴⁶⁴ Burning the homes of the sick had been abandoned as a policy.⁴⁶⁵ Feldmann continued to canvass the district for the *tsetse* fly vector and obvious cases of the disease, surveying the outlying islands and areas to the southwest of the lake in 1904 and 1905. Caravan traffic connecting Bukoba and Buganda with Burundi that traveled through Rusubi, to the southeast of the lake, was also a concern; Feldmann gathered news in Rusubi about the disease's outbreak at Lake Tanganyika.⁴⁶⁶ The cumulative impact of two years' work in the district led Feldmann to a dire assessment of the situation in August 1905:

⁴⁶¹ Oskar Feldmann, undated report (10/1903), BAB R 1001 5833, p. 1. Original text: "...junge Männer aus dem Norden des hiesigen Bezirks, die um Arbeit zu suchen nach Uganda gegangen und, nachdem sie dort die Schlafkrankheit acquirit hatten, zu ihren Angehörigen zurückgekehrt waren."

⁴⁶² Oskar Feldmann, undated report (10/1903), BAB R 1001 5833, p. 1.

⁴⁶³ Ibid. Feldmann referred to a standard practice of burning down the homes of plague victims in his report dated 11/26/1902, BAB R 86, 2622. If Feldmann had sleeping sickness cases transported to Bukoba's station hospital, even periodically, this likely gave him access to a number of people whose cases he could monitor; the three men he brought with him to meet Robert Koch in Mwanza in the summer of 1906 may have been three such cases.

⁴⁶⁴ Göring, undated instructions (sent forward 12/28/1903), BAB R 1001 5895, p. 1.

⁴⁶⁵ Feldmann, report, 8/11/1903, BAB R 1001 5895.

⁴⁶⁶ Feldmann, report, 8/21/1905, BAB R 1001 5895, p. 1.

In any case, in the German territories of the central African lakes, we have to reckon with the possibility of a wider spread of sleeping sickness, and, in light of the sad experiences in the north of Lake Victoria, must immediately equip ourselves for defense.⁴⁶⁷

As the medical officer for Bukoba and its environs – and one of only 3 station doctors in the Lake Victoria littoral – Feldmann was the eyes and ears for the colonial government based several hundred miles away in Dar es Salaam.⁴⁶⁸ The extent of a wider outbreak of sleeping sickness remained unknown, and the threat of such had been a rallying point for metropolitan scientists pushing for an independent German research expedition from 1902 onward, culminating in the German expedition that Robert Koch ultimately led in 1906-07, primarily on the Sesse Islands.⁴⁶⁹ The disease's presence in Kiziba remained vaguely known to colonial officials until the sleeping sickness campaign began in earnest in the late summer of 1907. In the summer of 1907, initial surveys of Kiziba and Bugabu, which lay on either side of Kavindi Bay of Lake Victoria, focused on identifying cases of sleeping sickness and locating the disease's fly carrier. Memories of the disease's history, recorded in memoirs printed several decades later, date the arrival of the disease, called "ugonjwa wa malale" in Swahili and "botongo" in modern Kihaya, to 1906 and connect it with people moving between Kiziba and Buganda:

In 1906 there was a disease on the Island of Isheshe Buganda. The disease was called "Botongo" and whoever had could keep sleeping any time. Dr. Feldmann knew its treatment and was called by the English to the Island to treat the people there. When the Kiziba people went to work in Buganda, they brought the disease with them and

⁴⁶⁷ Feldmann, 8/21/1905, BAB R 1001 5895, p. 2. Original text: "Jedenfalls müssen wir in den deutschen Gebieten der zentralafrikanischen Seen mit der Möglichkeit einer größeren Ausbreitung der Schlafkrankheit rechnen und uns in Hinsicht auf die traurigen Erfahrungen im Norden des Victoria-Nyanza unverzüglich zur Abwehr rüsten."

⁴⁶⁸ In 1905, the German colonial army (*Schutztruppe*) had posted 3 station doctors at Lake Victoria, at Bukoba, Mwanza, and Shirati.

⁴⁶⁹ Together with reports of the disease in Shirati, on the eastern shore of the lake, this notice of the disease's arrival in the area figured in the push by metropolitan scientists for a sleeping sickness research expedition in 1904-05. Regarding the debate about sending an independent German research expedition, see Stuhlmann to Auswärtiges Amt, Kolonial-Abteilung, 2/16/1903, BAB R 86 2622; Wutzdorff to Staatssekretär des Innern, 4/15/1903, BAB R 901, 20871; Dönitz to Preußisches Ministerium etc., 5/29/1903, BAB R 901 20871; "Aufzeichnung über die am 7. April 1905 im Reichsamte des Innern gepflogene kommissarische Beratung über die Entsendung einer wissenschaftlichen Kommission zur Erforschung der Schlafkrankheit," 4/7/1905, BAB R 86, 2613.

whenever they showed signs of it, they would be sent to the island of Isheshe for Dr. Feldmann to treat them.⁴⁷⁰

Lwamgira linked the fortunes of Kiziba to German and British activities – the German Feldmann “called by the English” – and to Ziba circulation in a wider regional network of migration and labor.⁴⁷¹ The Sesse Islands here functioned as a mid-point between Kiziba and Buganda, the latter being the origin of the disease. The “island of Isheshe” is likely Bugala, the archipelago’s largest and the site of Koch’s sleeping sickness camp. As a former minister in Mutahangarwa’s court and prominent figure in – and inscriber of – Ziba history, Lwamgira comments freely on German colonial power, with which he would have been personally familiar. But the exercise of power and motivation to comply with it also remain diffuse and uncertain, as Ziba sick with sleeping sickness “were sent to” the German sleeping sickness camp. As a counterpoint to Lwamgira’s narrative of the arrival of sleeping sickness sufferers in Kiziba, Andrea Kajarero’s story of the disease takes on less of the broader political context and more of the personal history of travel and movement. Kajarero located the onset of the epidemic in 1907-08, when he himself was traveling to and from Buganda in the process of becoming one of the first Haya Protestant readers and came under scrutiny of German medical authorities already in place in Kiziba.⁴⁷²

Return migration from Buganda and the Sesse Islands, and travel on caravans connecting Kiziba with Buganda and the Lake Tanganyika littoral brought people suffering

⁴⁷⁰ Lwamgira, *History of Kiziba and its Kings*, p. 137.

⁴⁷¹ Feldmann was a part of Koch’s team on the Sesse Islands but did not coordinate activity there or in Kiziba subsequently; his prominence in Lwamgira’s narrative suggests that, as a former medical officer in Bukoba, as a familiar figure he stands in for Koch and others in the narrative. Kudicke, who spent more time in Kigarama, is very likely the person referred to only as “the Medical Officer” in other sections of Lwamgira’s history.

⁴⁷² Andrea Kajarero, “Aus meinem Leben,” [manuscript copy] Bethel Mission Archives M 194, p. 9. The Germans, following Swahili-speaking traders and connected communities around the Lakes, referred to the disease as “ugonjwa wa malale.” Informants near Kigarama in the present day equate a disease called “botongo” in Kihaya with the Swahili “ugongjwa wa malale.” Interview with Helson Rutimba, Kigarama, Tanzania, 8/21/2008; interview with Leander Kato, Kigarama, Tanzania, 8/25/2008.

with sleeping sickness into Haya communities, where they were cared for and protected.⁴⁷³ Mortality and morbidity statistics kept at Kigarama indicate that the majority of cases treated were men. Young male members of households who took on seasonal (and sometimes extended) migration to work or farm returned with sleeping sickness, stripping communities of a generation of parents and siblings, and leaving behind women, the elderly, and young children. Others fleeing sickness and death in Uganda, often carrying the disease themselves, returned on their own strength only to decline into wasting and death within months. Their arrival, in turn, presented a danger for further spread from the colonial German perspective, particularly in areas south of Bukoba town where people came into contact with the fly vector.

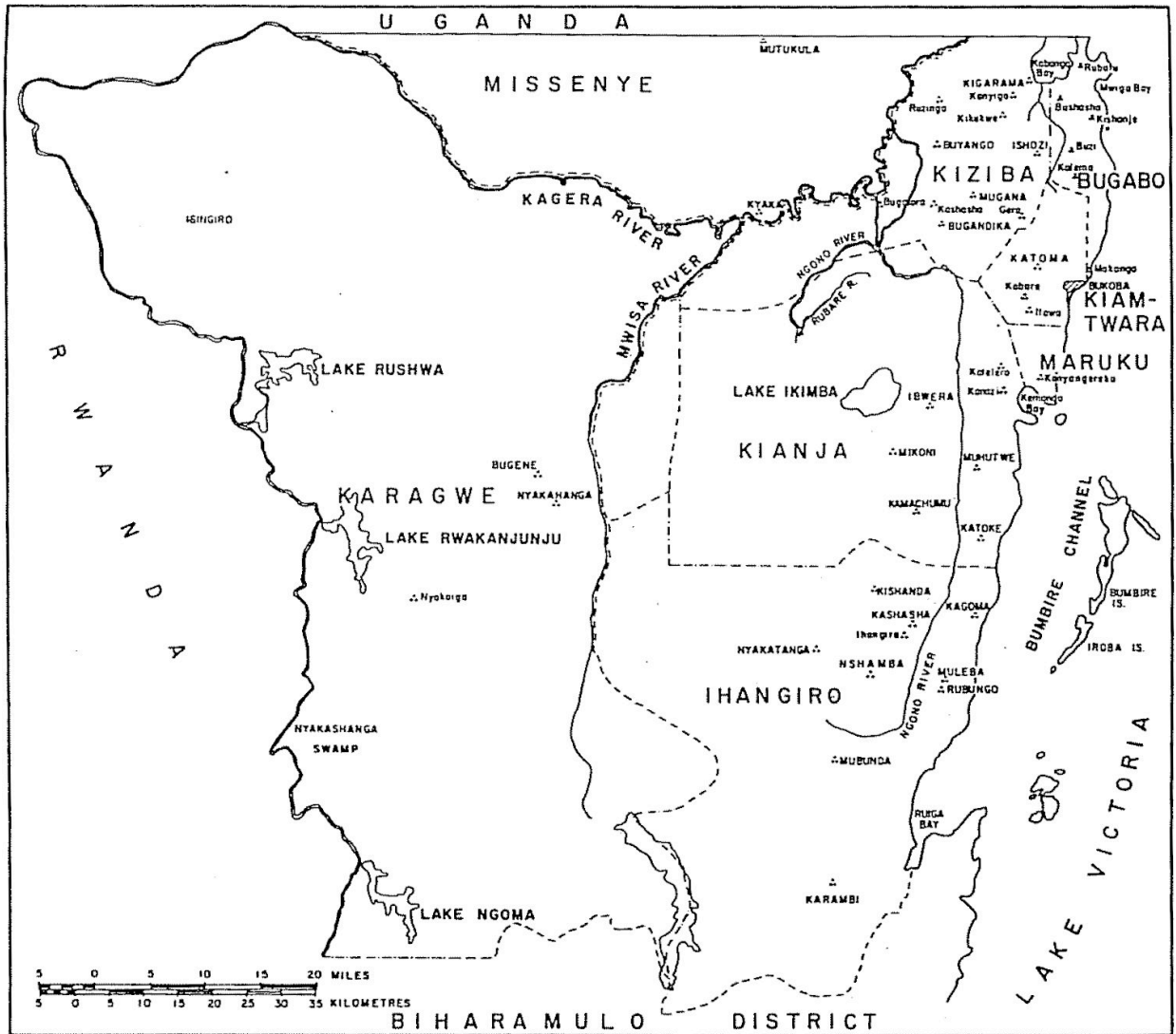
Relatives brought the gravely ill to German doctors, as people on the Sesse Islands and mainland Buganda had, as a last resort.⁴⁷⁴ Doctors' photographs show those who were in advanced stages of sleeping sickness – already unable to walk independently or stay awake – delivered to the camp in makeshift slings or stretchers.⁴⁷⁵ German doctors set up their primary camp near the large village of Kigarama, with another outstation following at Kishanje, across Kavindi Bay in the kingdom of Bugabo.⁴⁷⁶ The ensuing sleeping sickness campaign, led from the camp at Kigarama, accelerated to a peak of activity in 1909, when several hundred people were being treated each month at the chief camp at Kigarama and the smaller camp at Kishanje. Sometime in late 1908 or early 1909, Kigarama transitioned from an isolation station to a dual-purpose space, where ambulant cases were treated on designated days and advanced cases

⁴⁷³ Marshall, Report from Bukoba, 1/3/1909, BAB R 1001, 5903 discusses migration in Buhaya to and from Uganda, describing people as "Sachsengänger," "Saxon wanderers," referring to migrant laborers from East Prussia in the late nineteenth and early twentieth centuries. This comparison may have had wider currency in Germany at the time, and possibly in colonial circles, per P. Müllendorff, "The Development of German West Africa (Kamerun)" (Delivered at the Ordinary General Meeting of the African Society on October 28th, 1902), *Journal of the Royal African Society* 2, 5 (Oct., 1902), p. 73. On "Sachsengänger" in the context of migration in the nineteenth century, see Lars Olsson, "Labor Migration as a Prelude to World War I," *International Migration Review* 30, 4 (Winter, 1996), pp. 876.

⁴⁷⁴ Hoppe, *Lords of the Fly*, p. 74, note 69.

⁴⁷⁵ Photoalbum, Friedrich K. Kleine Nachlass, RKI.

⁴⁷⁶ A smaller, secondary sleeping sickness camp existed at Kishanje in Bugabu; it functioned as an outstation of the Kigarama camp between late 1908 and late 1911. The Kishanje camp lies beyond the scope of my current analysis.



"Traditional Kingdoms of Buhaya"⁴⁷⁷

remained in confinement. Throughout its stage as an internment hospital and a treatment station, people fled from treatment or refused to return once released. As sleeping sickness mortality declined after roughly 1911, colonial and regional level shifted attention away from

⁴⁷⁷Peter Schmidt, *Historical Archaeology*, Figure 1, p. 11.

Kigarama and toward sites at Lake Tanganyika.⁴⁷⁸ By 1913-14, few new cases appeared, and the camp survived only to house a few remaining advanced-stage patients as they died.⁴⁷⁹

The dominant institutions of the sleeping sickness campaign in Kiziba and northern Buhaya were the camp at Kigarama and the medical auxiliaries deployed from it. Changes in the structure and work of the Kigarama camp illustrate the changing relations between doctors, elites, and villagers over the course of the sleeping sickness campaign. The camp's function and its operators' intentions changed over the years, as did its meaning for the doctors who worked there and the people who came and went as its patients. To situate this cohort of auxiliaries amid that transition, I will briefly describe the camp in design, as articulated in policy discussions in the winter of 1907, and the camp in practice, as it developed in 1908.

Robert Koch developed the sleeping sickness camp as a key element in the German sleeping sickness campaign, modeling it after the provisional research and treatment camp he set up at Bugalla on the Sesse Islands in 1906. Intended to isolate the sick, the camp would optimally lie in an area cleared of *tsetse* flies and some distance removed from nearby settlements. A circumscribed, confined space for medical research, the sleeping sickness camp allowed for the segregation of the sick from the well. Internally, its organization of space allowed separation of advanced cases, debilitated by the trypanosome's attack on their central nervous systems and sometimes unable to walk, eat, or be awakened. Advanced cases were distinct from "Leichtkranke" (the "lightly sick" who tested positive for trypanosomes), who could still move around and attend to their own basic needs. The camp had its own kitchens, and huts or barracks to house the sick. Doctors also would live within, or very near to, the camp's boundaries.⁴⁸⁰ Orderlies and house servants came from surrounding communities; Koch

⁴⁷⁸ See "Bericht über die Schlafkrankheit," *Medizinal Berichte für die deutschen Schutzgebiete für das Jahr 1903/04, herausgegeben von der Kolonial-Abteilung des Auswärtigen Amts*, (Ernst Siegfried Mittler und Sohn, Königlich Hofbuchhandlung: Berlin, 1913), pp. 94-100.

⁴⁷⁹ Wittrock, Report for Bukoba, 1/6/1914, BAB R 1001 5911.

⁴⁸⁰ This sketch is based on the plan for the Bugalla camp included in Koch's report, "Bericht über die Tätigkeit der Schlafkrankheits-Expedition bis zum 25. November 1906," GStA PK, 1 HA. Rep. VIII, Nr. 4118, p. 129. Helson Lutimba, on a walk around the site of the Kigarama camp, indicated that doctors'

had relied upon a local Catholic mission to find laborers to build the Bugalla camp on the Sesse Islands, but left no guidelines as to how the extensive labor needs of a camp should ideally be organized in the future. The camp's work revolved around the dosage and monitoring of patients with atoxyl and an armament of other arsenicals and chemical dyes being tested for their efficacy against the trypanosome parasite. It initially existed as a closed space primarily to keep people in treatment for the proscribed length of Koch's atoxyl regimen and ensure consistency in dosage, to concentrate the sick in one location, and to separate the sick from surrounding communities.

The camp in practice held to Koch's design as an internment camp for a matter of a few months before the sleeping sickness campaign shifted to ambulatory treatment. Such a highly constrained laboratory and treatment space as imagined by medical authorities in metropolitan Berlin was, in reality, completely untenable. By the summer of 1908, Friedrich Kleine, the coordinator of the sleeping sickness campaign, recognized the problem of a system of isolation camps as both epidemiological and political:

...it is a thing of impossibility and altogether useless to round up sick people in a half-wild country using force and with soldiers, and to take them against their will out of their homeland to be put into consolidated camps faraway. It could be done once, but rarely for a second time. As soon as the doctor appears with soldiers, the natives, frightened by exaggerated rumors, flee into the wider vicinity. The relatively small number of sick who are caught the first time and forcibly interned and treated cannot play a role in the expansion of the epidemic. The vast majority of lightly-sick [Leichtkranke], in particular, stay without being bothered and carry the epidemic further...we must therefore...forego the use of force, which only serves to gravely hinder our aims.⁴⁸¹

houses were within the camp's outer bounds. Interview with Heslon Lutimba, Kigarama, Tanzania, 8/21/2008.

⁴⁸¹ Kleine, report to Government in Dar es Salaam, 8/30/1908, BAB R 1001, 5898. Original text: "...es ein Ding der Unmöglichkeit und vollkommen nutzlos ist, in einem halbwilden Lande mit Gewalt und mit Askari die erkrankten Einwohner zusammenfangen und gegen ihren Willen aus ihrer eigenen Heimath in ferner gelegene befestigte Lager versetzen zu wollen. Einmal mag es gelingen, zum zweiten Male kaum. Sobald der Arzt mit bewaffneter Macht erscheint, entfliehen die durch abenteuerliche Gerüchte geängstigten Eingeborenen in weiten Umkreise. Die verhältnismässig geringe Zahl Kranker, die beim ersten Mal eingefangen sind und zwangsweise interniert und behandelt werden, kann bei der Ausdehnung der Seuche eine Rolle nicht spielen. Insbesondere die Leichtkranken bleiben in überwiegender Mehrheit unbehelligt und tragen die Seuche weiter. Wie dies für den Schiratibezirk am Viktoria See zutraf, so is es noch allen von mir eingezogenen Erkundigen und eigener Beobachtung auch durchaus am Tanganika der Fall ... müssen wir deshalb ... auf die Anwendung von Gewalt verzichten, die nur geeignet ist, unsere Absichten ernstlich zu hindern."

Kleine here identified that the central challenge of the campaign – finding, diagnosing, and treating the sick – was cast in sharper relief by the failures in the current approach to local African populations, which led to flight and hidden cases of the disease. Here, Kleine responded primarily to problems with flight and force that had recently come to light in the Tanganyika campaign, comparable to the better-established work at Shirati on Lake Victoria. In glaring example, at the Shirati “isolation camp,” within a month, a quarter of the total people interned had fled the camp. Kleine reported their flight, detached, noting that “...100 removed themselves from treatment by unauthorized withdrawal. It is obvious that actual epidemic control will be hindered by this.”⁴⁸² Though camps like the one at Kigarama were the backbone of the German sleeping sickness campaign, the necessity of interning the sick suited neither the long-term goals nor the campaign’s dual brief of both disease research and prevention of the epidemic. Following Kleine’s report to the administration in Dar es Salaam, the tenor of reports coming in from sleeping sickness research sites on Tanganyika and Victoria alike changed, emphasizing the management of “ambulatory” treatment.⁴⁸³ In 1909, the system of camps as sites of isolation, treatment, and internment for all positive cases gave way to a reworking of each site geared toward an ambulatory system of monitoring and dosage of atoxyl and other drugs. It still combined laboratory work, treatment with drugs aimed at killing or suppressing the trypanosome parasite, and the confinement of advanced or difficult cases of sleeping sickness. But how best to reach the population, and both examine and treat people, remained a point of debate at the administrative level.⁴⁸⁴

⁴⁸² Kleine, Report, 3/31/1908, BAB R 1001 5897, p. 1. Original text: “...100 der Behandlung durch eigemächtiges Entfernen entzogen hatten. Es liegt auf der Hand, dass hierdurch eine eigentliche Seuchenbekämpfung verhindert wird.”

⁴⁸³ See, for instance, Feldmann, Charts for Lake Tanganyika campaign dated 1/21/1909 and 1/31/1909, BAB R 1001, 5900; Breuer, chart for Niansa (Nyanza-Lac) camp, 7/1/1909, BAB R 1001, 5902; Breuer, Report for Usumbura, 10/28/1909, BAB R 1001, 5903.

⁴⁸⁴ While on home leave, Dr. Kudicke was queried in the Imperial Health Council’s special meeting on sleeping sickness about treating people at home in Kiziba, because area was fly-free. He responded “that would be impractical in Kiziba, because first the homes of the sick lay hours apart from one another, the paths would be bad, and besides, it could hardly be accomplished, that all of the sick would be in place,

In its phase as a center for ambulatory dosage with atoxyl from mid-1908 onward, the Kigarama camp operated primarily to treat and monitor people on given days, between which they were ostensibly free to return to their homes. After completing a set course of injections, stretching 6 to 10 weeks, people were supposed to return for re-screening for trypanosomes. The camp still housed advanced cases, particularly those considered dangerous or those at the end of life. The doctors who rotated through the camp approached their work, particularly work testing experimental drugs, with varying degrees of enthusiasm and fidelity; many understood their work as contributing to a body of knowledge located ultimately in European institutions, while others argued that the local implications of what went on at the camp should shape new policies and ongoing work. All work at the camp depended on finding people with trypanosomes in their bodies – the presence of which classified them as sick to colonial doctors, regardless of an individual's sense of his or her own health. In Kiziba, Dr. Robert Kudicke, a 30-year-old doctor with several years of colonial medical experience in East Africa, fresh off a period of work alongside bacteriologist Robert Koch, directed the intensive effort to find suspected cases.

Situating the Sleeping Sickness Camp at Kigarama

Large numbers of the sick and a proximity to a good landing on the lakeshore, a village of several thousand people, and a good elevation made Kigarama ideal for work on sleeping sickness, from the German perspective. Locating and building the sleeping sickness camp at Kigarama appeared a rational and pragmatic choice for colonial doctors, but involved a complicated array of considerations. Where and how the camp was built, how it functioned, and how its priorities developed each reflected the distinctive epidemiological and political circumstances in Kiziba. The camp's foundation required the combined energies of Ziba

with the attending physician visited them." Original text: "das sei in Kisiba undurchführbar, da erstens die Wohnungen der Kranken stundenweit auseinanderlägen, die Wege schlecht wären und außerdem es kaum erreicht werden können, daß alle Kranken gerade zur Stelle seien, wenn der Behandelnde sie besuche." Kudicke, quoted in "Aufzeichnung über die Sitzung des Reichs-Gesundheitsrats (Unterausschuß für Schlafkrankheit)," 4/5/1909, BAB R 1001 5876, p. 11.

political leaders and German doctors, whose work collaboratively brought the camp into being, though we cannot presume that each did so for agreed-upon reasons.

German doctors combined an understanding of connections between Kiziba and the Buganda/Sesse epidemic with a basic belief that the tsetse fly vector was not prevalent in Kiziba, bringing them to a focus on locating and treating existing cases; their goal was the containment of the disease locally, preventing its spread into areas to the south. The terrain in Kiziba, though it harbored undiscovered cases of sleeping sickness, also presented (to colonial eyes) a limited set of fords, crossroads, and landings that afforded the opportunity to cut off the epidemic's spread.

Scientifically, Kigarama was an appropriate site for research and prevention, particularly as the campaign transitioned from a focus on internment of the sick to a focus on diagnosis and preventive treatment. A key factor in both the design of treatment regimens and prevention measures was the assertion that in Bukoba district, the *tsetse* fly vector was absent from areas hit hardest by the disease – in this case, Kiziba and the neighboring lakeshore kingdom of Bugabu. In a 1907 report, Kudicke emphasized, "...*Glossina palpalis* has been found neither in Kiziba nor in Bugabu."⁴⁸⁵ Kiziba and Bugabu were therefore not actually "sources" or foci of the infection, but rather "a stage on the path of the disease, and therefore it is essential to impede further introductions [of the disease], and also to prevent the possibility of carrying the disease into other territories."⁴⁸⁶ Further, Kudicke concluded that the disease came to the area primarily from Uganda and near Lake Tanganyika, in the latter case via caravan routes that had recently seen an increase in traffic. According to German surveys of the land and population, the disease was entirely brought in by returning migrants and travelers passing through. In initial appraisals of the epidemic in Kiziba and Bugabu, the high number of positives cases,

⁴⁸⁵ Kudicke, report, 10/1/1907, p. 1. Original text: "...die *Glossina palpalis* ist weder in Kiziba noch in Bugabu gefunden worden."

⁴⁸⁶ Kudicke, report, 10/1/1907, p. 4. Original text: "...eine Etappe auf dem Zuge der Krankheit, und deswegen ist es erforderlich, weitere Einschleppungen zu verhindern, und auch der Möglichkeit der Verschleppung in andere Gebiete vorzubeugen."

particularly advanced ones, overshadowed work to find the fly. That the possibility for re-infection was low without tsetse flies nearby meant that Kigarama was considered well suited for work on potential drug therapies for the disease; the majority of cases were given atoxyl, an arsenical used to varying degrees by the British, French, German, and Belgian colonial states to treat sleeping sickness.⁴⁸⁷

Politically, Kigarama was also a desirable site for German energies, because of Mutahangarwa's cooperative involvement in its establishment and its potential to focus on and solve a discreet health problem for the African population. But we should also understand the establishment of the Kigarama camp as politically expedient for the king, weighing social and political factors internal to Kiziba in balance with a developing relationship with colonial authority. The camp at Kigarama quickly took shape on land made available to German doctors by Mutahangarwa.⁴⁸⁸ After notifying German authorities when the disease "increased" in the area in 1907, the king assisted with the location and building of the camp, which was enlarged with the mediation of the Resident over time.⁴⁸⁹ Robert Koch described the king's "helpful" people building a shelter for a microscopy workroom – laborers very likely organized

⁴⁸⁷ Ullrich, report, 7/31/1910, BAB R 1001 5904. On the use of atoxyl in Germany/German colonies, see Wolfgang Eckart, *Medizin und Kolonialimperialismus Deutschland 1884-1845*, (Schöningh: Paderborn, 1997); Christoph Gradmann, *Krankheit im Labor: Robert Koch und die medizinische Bakteriologie*, (Göttingen: Wallstein Verlag, 2005); Wolfgang Eckart, "The Colony as Laboratory: German Sleeping Sickness Campaigns in German East Africa and Togo, 1900-1914." *History and Philosophy of the Life Sciences* 24 (2002); Christoph Gradmann, "'It Seemed About Time to Try One of Those Modern Medicines': Animal and Human Experimentation in the Chemotherapy of Sleeping Sickness 1905-1908," in Maio, Giovanni and Volker Roelcke (eds), *Twentieth Century Ethics of Human Subjects Research: Historical Perspectives on Values, Practices, and Regulations*, (Stuttgart: Steiner, 2004); Deborah Neill, "Paul Ehrlich's Colonial Connections: Scientific Networks and Sleeping Sickness Drug Therapy Research, 1900-1914," *Social History of Medicine* vol. 22, no. 1.

⁴⁸⁸ Medical reports do not indicate whether Mutahangarwa or any other Ziba landholder was compensated for the land where the camp was built; Heslon Lutimba, a former teacher who lived on a farm adjacent to the camp in his old age, remembered that the land for the camp was given by the king in a 2008 interview. This account fits both with historical information about the mukama's control over land and its disposal, but also reflects a close association between the camp, Mutahangarwa, and German colonial authority. Interview with Heslon Lutimba, 8/21/2008, Kigarama, Tanzania.

⁴⁸⁹ Lwamgira, "History," p. 137. Kudicke reported to his superiors in the SKB that the camp was enlarged by a "a few farms" arranged through the mediation of the resident later in 1908, suggesting that provisions for the camp were an ongoing subject of engagement between the mukama and the German administration at Bukoba. Kudicke, "Bericht über die Schlafkrankheitsbekämpfung im Bezirk Bukoba von 1.I.08 bis 31.3.08," 5/13/1908, BAB R 1001, 5897, p. 3. Original text: "Das Lager ist durch Vermittlung der Residenten um einige Schamben vergrößert worden."

by the king – as well as a number of round huts to house the sick in July 1907.⁴⁹⁰ By October 1907, Kudicke reported that the temporary huts built by the king were gradually being replaced by larger, more permanent structures and that “the collection of sleeping sickness cases has thus far occurred in essence with the help of the native authorities.”⁴⁹¹ Large numbers of people came to the Kigarama camp in late 1907 and into 1908. Relatives of the sick who settled near the camp to help with their care also worked, alongside those patients well enough to work, on building huts and clearing paths within the camp, for which they were paid a small wage.⁴⁹² People living in the camp – by doctors’ descriptions, generally very advanced cases – were given food and shelter in open bandas; those well enough to work farmed small plots adjacent to the camps to produce food for themselves and camp inhabitants.⁴⁹³ Doctors manning sleeping sickness camps also used material incentives – sleeping mats, food, tobacco – to encourage people to come and be tested for the disease.⁴⁹⁴ Amid an epidemic that would have impacted individual households as well as wider networks of social support, potentially affecting access to food and crafted goods such as mats, the camp was an alternative source for some essentials. It provided a new point of access to both cash – which German authorities began to demand for the payment of hut taxes – and material resources, that did not, because of the explicit involvement of Mutahangarwa, lay wholly outside of the purview of royal patronage and control.

This process of orienting and organizing labor is remembered as occurring under the auspices of Mutahangarwa, although both the king and colonial doctors were responsible for

⁴⁹⁰ Koch, “Bericht über das Vorkommen des Schlafkrankheit in den Bezirken Bukoba und Shirati,” 7/6/1907, BAB R 1001, 5896.

⁴⁹¹ Kudicke, report, 10/1/1907, BAB R 86, 2622, p. 2. Original text: “Die Sammlung der Schlafkranken ist bisher im wesentlichen mit Hilfe der eingeborenen Gewalten erfolgt.”

⁴⁹² Wage of 2-10 Heller per day, per Kudicke, 10/1/1907, BAB R 86, 2622.

⁴⁹³ Kudicke, report, 5/13/1908, BAB R 1101, 5897.

⁴⁹⁴ On provisions provided at the camp, see Kudicke, Report, 5/13/1908, BB R 1001, 5897. Elsewhere, Feldmann included food, blankets, clothing, and sleeping mats in his report on the 1908 budget for the Tanganyika campaign; Feldmann, Report, 4/1/1908, BAB R 1001, 5897.

organizing the initial effort to search for the sick, in contemporary accounts. The camp was located at some distance from the palace at Gera, but Kigarama was a village associated with the mukama's *babito* clan, as well as prominent clans whose history pre-dated the *babito*.⁴⁹⁵ It was, then, a place of historical political significance in its affiliation with powerful clans. This overlap in the geography of political power in Kiziba and the siting of the sleeping sickness camp may have meant that Mutahangarwa could claim responsibility with bringing new European tools to bear on the illness that struck travelers and migrants to Uganda in the kingdom, while also keeping German doctors at arm's length from the seat of his authority. Alternately, giving land near Kigarama to a site specifically oriented toward colonial medicine and the new epidemic of sleeping sickness could have served to marginalize clans other than Mutahangarwa's own.

German authorities, following Koch, designed Kigarama and other sleeping sickness camps as sites for the isolation and confinement of the sick. But the camp was not totally isolated from the wider population – settlements arose on its periphery, a pattern encouraged by the doctors leading it. Homes and gardens tended by the relatives of the sick sprang up on land set aside for that purpose just south of the camp, separated only by a berm or wall from the camp proper.⁴⁹⁶ In demarcating a permanent space for researching and treating sleeping sickness, colonial medical officers ultimately brought in not only the sick, but also their relatives and families, as potential contributors to the camp's livelihood. Colonial Office budgeting kept

⁴⁹⁵ Clans with their clan village at Kigarama included the clans of the king (*babito*), of first-arrivers (*bahinda*), of court jesters (*bakurwa*), of "priests" (*bashamula*), and of the former "rulers" (*babiki*). Cory and Hartnoll, *Customary Law*, appendix V, "List of Clans," p. 2 (regarding *babito*), p. 8 (regarding *bahinda* clan), p. 15 (regarding *bakurwa*, court jesters), p. 38 (regarding *bashamula*, priests of Kiziba, and *babiki*, "once the rulers"). On links between *bahinda* and *bakuma*, Cory and Hartnoll, *Customary Law*, appendix III, "Tribal Structure," p. 255, p. 258-60. Cory notes of the *babiki*, "this is a very old established clan," p. 38. More extensive research in Kiziba, particularly an exploration of clan village and shrine geography, as well as the pre-colonial history of Ziba clans, would be necessary to determine how and if the sleeping sickness camp fit into a landscape of clan shrines. Kigarama could fit into a similar geography of clan shrines and public healing as Neil Kodesh has located for Buganda in *Beyond the Royal Gaze*, though on a much smaller scale.

⁴⁹⁶ Raised ground at the perimeter of the camp still remains at Kigarama today, though it is unclear from archival and oral sources whether it was enclosed by a permanent wall, barbed wire, or a fence. Interview at former camp location, Heslon Lutimba, Kigarama, Tanzania, 8/21/2008.

the costs of providing shelter and food for the sick under tight constraints. Provisions for settling relatives nearby and providing land for cultivation became part of an effort to make Kigarama self-sustaining, particularly in terms of housing and feeding the sick.⁴⁹⁷ In camp charts, the majority of patients in advanced stages of the disease were initially men; land adjacent to the camp was likely occupied by wives or younger female relatives growing vegetables and cooking for their sick relations, likely in addition to responsibilities for cultivating family plots at home. The possibility of small-scale cultivation at the camp was designed to encourage the sick to settle in for or regularly attend a long course of treatment with atoxyl, decreasing the possibility of flight and ensuring compliance with the dosage regimen. The camp's location west of Kigarama village, toward the lake suggests that it may have been the "open steppe" at the king's disposal mentioned by Rehse.⁴⁹⁸ In this case, providing small plots for families of the sick near the camp may have brought new land into cultivation that had not been worked before, but land that was not the *kibanja* or estate of a single clan or family. It also may have provided an opportunity for people without claim to specific pieces of land – women or younger men in a family – to gain access to land not otherwise under cultivation.

From a research standpoint, the camp furnished much-needed information on disease morbidity, complications and secondary infections, mortality rates, and experimental drugs' side effects. During the initial period of research on sleeping sickness, tropical medicine practitioners eagerly pursued information on the disease; preliminary reports and case studies

⁴⁹⁷ Kudicke first suggests providing land for banana and vegetable cultivation in his report from Kigarama for the third quarter of 1907, (sent forward in October 1907), BAB R 86, 2622; Kudicke, report for the third quarter of 1908 indicates that bananas were being grown at the camp, 12/18/1908, BAB R 1001, 5899. Schutztruppe official Emil Steudel's summary report for 1911-12 discusses the sick settled with their relatives in huts around the camp at Kigarama, cultivating bananas nearby; Emil Steudel, "Auszug aus dem Bericht des Generaloberarztes Professor Dr. Steudel über seine von August 1911 bis Januar 1912 ausgeführte Dienstreise nach Deutsch-Ostafrika," p. 70, BAB R 1001, 5892.

⁴⁹⁸ Rehse, *Kiziba*, p. 107.

from colonial doctors circulated in medical, bacteriological, and tropical medicine journals.⁴⁹⁹ Keeping people in one place, at the camp, provided doctors with the chance to monitor and observe patients' responses to atoxyl and other drugs. Their results became part of a corpus of literature on sleeping sickness, mediated by Dr. Friedrich Kleine, the campaign's coordinator, as well as by medical advisors in the Colonial Office. The doctors and sanitation officers resident in and near the camp also offered another entrance for local labor. The camp also required orderlies, guards, and political authorities – the Germans' "katikiros" – as well as a number of unspecified helpers in the laboratories, clinics, and homes of the doctors.⁵⁰⁰ Local men also came to work at the camp as laundrymen and cooks for the European staff there.⁵⁰¹

With research at the forefront of doctors' reports and metropolitan interests, we cannot lose sight of the potential novelty of a place like Kigarama in the context of life in Kiziba and of the organization and intention of the colony more broadly. The camp was located near the large village of Kigarama in the most populous district, Kanyigo, of the kingdom.⁵⁰² Kigarama itself sat along an overland route to Uganda, but also near a frequently-used landing on the lake, and was likely home to a sizable local market. Travelers coming and going, and bustling activity, were likely nothing new for people living in the village and in the countryside. The camp provided an alternate hub of activity from the village nearby, one that centered around illness, as identified by colonial doctors, and treatment, as understood by the same. With its offer of wages, a small store selling meat, and perhaps also a small market nearby, the camp

⁴⁹⁹ Journals circulated to German doctors in East Africa were geographically and disciplinarily diverse, including German-language journals of bacteriology, tropical hygiene, and medicine, as well as excerpts and articles from British generalist medical and tropical medicine journals. French and Belgian research results were also included in French, German, and English-language form.

⁵⁰⁰ Kudicke, report, 10/1/1907, BAB R 86, 2622. Kudicke lists the camp as being staffed by "colored personnel" including 2 katikiros, 2 fly-catchers (with 1 on furlough), and 4 orderlies.

⁵⁰¹ Interview, Heslon Lutimba, Kigarama, Tanzania, 8/21/2008.

⁵⁰² Hermann Rehse, *Kiziba: Land und Leute* (Stuttgart: Strecker & Schröder, 1910), p. 1, 2.

constituted a new, colonially defined space for commerce and income.⁵⁰³ The camp's space was physically bounded on its perimeter by a fence, with colonial doctors' houses inside that were made of different material (brick) than the traditional Haya *msonge* made of wood and grass.

The cleared and open space of the camp not only looked different than the homes set among banana groves that made up Kigarama village and that dotted the hills around it, but it also re-sited one way of potentially contending with sickness and death. The camp presented another option for those who might have sought healing in the homes of relatives, at ancestral shrines, in missionary clinics, or from traditional healers, though never displacing these completely.⁵⁰⁴ The camp's laboratory rooms and open-air treatment *bandas* represented the most permanent biomedical presence people in Kiziba had yet seen, save the hospital at Bukoba and, perhaps, basic medical care offered by the White Fathers at Kashozi (Marienberg) mission some distance away. The material goods that the camp offered must have gone hand-in-hand with a recognition in the community that the newly-arrived German doctors promised a drug that would heal the disease, also providing food to people debilitated by the disease. German biomedical therapies fit within a range of treatments and cures available to the sick and their families.⁵⁰⁵ The nature of traditional healing practice in Kiziba before World War I was haphazardly documented, and memory of Ziba healers involved in treating a new disease in 1906-07 seems to have faded in accordance with the disease posing only a temporary threat to the community's health. Further, the outbreak of sleeping sickness occurred almost

⁵⁰³ Kudicke, Report, 5/13/1908, BAB R 1001, 5897. In May 1908, Kudicke reported that a small store sold meat, and that a market was planned; mention of an colonially-recognized market does not appear in subsequent reports.

⁵⁰⁴ Here, I follow Feierman and Janzen in their separate works and introductory essay to their co-edited volume *The Social Basis of Health and Healing in Africa*, (Berkeley: University of California Press, 1992); Steven Feierman, "Struggles for Control: The Social Roots of Health and Healing in Modern Africa," *African Studies Review*, vol. 28, no. 2/3 (Jun.-Sep. 1985); John M. Janzen, "Therapy Management: Concept, Reality, Process," *Medical Anthropology Quarterly*, vol.1, iss. 1 (March 1987). Neil Kodesh's work also speaks to the portability and multiple valences that healing sites held for the Lake Victoria region specifically in *Beyond the Royal Gaze: Clanship and Public Healing in Buganda*, (Charlottesville: University of Virginia Press, 2010).

⁵⁰⁵ I follow Steven Feierman's analysis of flexible approaches to different healing resources throughout African history from Feierman, "Struggles for Control: the Social Roots of Health and Healing in Modern Africa," *African Studies Review*, vol. 28, no 2/3, 1985, p. 73-147.

contemporaneously with Hermann Rehse's early ethnography of Kiziba, which may account for an odd lacunae in his treatment of diseases and treatments with respect to sleeping sickness – no name in Kihaya for the disease is recorded, nor are names used elsewhere noted. Rehse's study also lacks any specific note on the treatment of symptoms of sleepiness or wasting by Ziba healers.⁵⁰⁶ This absence is not consistent in colonial medical reports, however. Traditional healers, *mbandwa* in Kihaya, remained a shadowy presence alongside German medical interventions to doctors at the Kigarama camp. From the outset of the campaign in Kiziba and neighboring Buddu, German doctors identified traditional healers as the camp's competition, asserting that communities with a powerful *mbandwa* posed greater resistance to the implementation of anti-sleeping sickness measures.⁵⁰⁷ More generally, healers marshaled a wide array of botanical and mineral extracts and mixtures for their curative power, and applied their knowledge to physical manifestations of social or personal imbalances. Ziba people in the early years of a local European biomedical resource, which the camp constituted, likely utilized treatments provided by traditional healers alongside, or in sequence with, medicine or treatments from German doctors and were willing to employ both.

With the deployment of gland-feelers beginning in late 1907, the camp became a place that people could be brought to, following compulsory removal from their homes by gland-feelers and katikiros or being delivered by relatives, or that people came to of their own accord. Colonial doctors' reports and the Kigarama statistics charts indicate that people chose to enter and leave the camp's purview during the first two years it existed. I read statistics from Kigarama that indicate an ebb and flow of admissions and people "removing themselves from

⁵⁰⁶ Rehse notes that sleeping sickness had not been known in Kiziba in years past, but does record names and treatments for plague, smallpox, and various fevers and coughs; the latter illnesses, which he grouped together, could have been related to *botongo* or *isimagira*, but this is not clear. Rehse, *Kiziba: Land und Leute*, pp. 137-141.

⁵⁰⁷ Robert Kudicke, "Report about the sleeping sickness campaign in Bukoba district from 1 May to 31 July 1908," 7/31/1908, BAB R 1001, 5898, p. 5.

treatment” as evidence of a flexible and pragmatic approach to seeking healing and care.⁵⁰⁸ The camp was neither viewed consistently as a site of healing, nor as a site where harm would always occur. Coming and going from the camp to receive injections, food, or other medical care, remained one choice among many for Ziba coping with illness. The problem of flight from the camp, or refusal to continue atoxyl injections, has been explored as a cursory, or intuitive, aspect of the functioning of sleeping sickness camps, when addressed at all.⁵⁰⁹ The doctors staffing the Kigarama camp did not restrict their work to sleeping sickness, especially in the later years of the campaign and as fewer new cases of sleeping sickness appeared; from 1911, Kudicke operated a sort of polyclinic that also treated syphilis and some minor ailments.⁵¹⁰

While still emphasizing “ambulatory” treatment of sleeping sickness patients, relations had been established and work begun by doctors leading the Kigarama camp in late 1907 that did not rely upon armed soldiers to find patients, based instead on the employment of African auxiliaries and the use of local authority as intermediaries. Subordinate chiefs were a key link in a chain of information about sleeping sickness and encouraging both voluntary individual admission as well as bringing of the sick by their relations. Added to this were efforts coordinated by Kudicke and other colonial medical officers that directly involved Ziba auxiliaries, hired with the help of Mutahangarwa to assist with efforts to find the sick. The creation of an auxiliary role in the sleeping sickness campaign for people trained as gland-feelers created a situation where selected men, the king and his subordinate chiefs, and colonial doctors were brought into a tight orbit around suspected cases of sleeping sickness. Specialized training and wages, as well as a premium for each positive case identified, and a specific brief to

⁵⁰⁸ German doctors most commonly used the phrase “sich der Behandlung entziehen”, but also sometimes noted cases of flight as simply “anderweitig,” – “otherwise” – as compared to cases noted as released, healed, or dead.

⁵⁰⁹ See Hoppe, *Lords of the Fly*, p. 75, discusses “deserters” from the British camps in Uganda.

⁵¹⁰ Emil Steudel, “Auszug aus dem Bericht des Generaloberarztes Professor Dr. Steudel über seine von August 1911 bis Januar 1912 ausgeführte Dienstreise nach Deutsch-Ostafrika,” 4/27/1912, BAB R 1001 5892, p. 13.

fan out from the camp into the villages and countryside, set this group of auxiliaries apart from other people hired to work in the camp or for colonial doctors.

Gland-Feelers: Local Auxiliaries at Work

Employment of African auxiliaries began as an attempt to mend gaps in colonial knowledge about the local situation in Kiziba, which included a lack of language skills in local dialects, scant awareness of crossing points of rivers and swamps, and only basic information on the size, location, and distribution of the local population.⁵¹¹ Gland-feelers, exclusively men, were trained to find potential cases by identifying swelling of the cervical lymph glands, understood to be a sign of infection specifically with sleeping sickness.⁵¹² Within 8 months, Kudicke reported 23 “Drüsenfühler” at work near Kigarama and 85 new cases at the sleeping sickness camp, with a total in late May 1908 of 591. The majority of the new cases were found by the auxiliaries that he himself had trained:

By far the most newly admitted [cases] have been found by Africans trained in gland palpation. In the field of action of the sleeping sickness camp 23 such assistants are working and with the following assignment: every hut will be searched individually. A representative of the katikiro should if possible be at each examination. The gland-feelers note the names of all people with swollen neck and armpit glands. Only people with at least bean-sized glands will be sent, with the help of the katikiro, to Kigarama...⁵¹³

Kudicke trained the “Drüsenfühlern” in the palpation of glands as a means to survey a population for sleeping sickness, relying on both visual recognition of the right glands, as well

⁵¹¹ Kleine reports that Kudicke requested a “Kisuaheli kundiger Sanitätsoffizier,” (a Swahili-capable sanitation officer) to help him staff the camp at Kigarama. Kleine, “Schlafkrankheit,” 3/31/1908, BAB R 1001, 5897.

⁵¹² Swollen cervical glands were known at the time as Winterbottom’s sign. Frank Hawking, “African Trypanosomiasis” in George W. Hunter III, J. Clyde Swartzwelder, and David F. Clyde, *Tropical Medicine* (Philadelphia: 1976), 430.

⁵¹³ Kudicke, Report for Kigarama first quarter of 1908, 5/31/1908, BAB R 1001, 5897, p. 1. Original text: “Weitaus die meisten neuen Aufgenommenen sind durch die in der Drüsenpalpation ausgebildeten Farbigen aufgefunden worden. In Aktionsbereich des Schlafkrankenlagers arbeiten 23 solcher Hilfsarbeiter und zwar nach folgenden Anweisung: Jede Hütte wird einzeln durchsucht. Ein Vertreter des Katikiros soll wenn möglich, bei den Untersuchungen zugegen sein. Die Drüsenfühler notieren die Namen aller Leute mit geschwollenen Nacken-und Achseldrüsen. Nur Leute mit wenigstens bohngrossen Drüsen werden mit Hilfe des Katikiros nach Kigarama (für Kiamtwara und Bumbide nach Bukoba) gesandt.”

as detection of enlarged glands through examination. In addition to identifying those suspected of being sick, they were intended to work along with katikiros – likely village elders – to bring the sick to the camp at Kigarama. Their work functioned as the first survey of sleeping sickness in Kiziba.

Gland-feelers also possessed other skills, educational and political, that positioned them between colonial doctors and Ziba villagers. They were literate – able to note the names of the sick – and therefore able to create a record for both scientific and administrative reference. The young men who came to work as gland-feelers may have been members of an age-set group called a *muteko*, composed of young men selected by local political leaders to serve at the mukama's palace. Arriving at the palace between ages ten and twelve, the young men learned "the arts of war" but were also responsible for pasturing cattle, cleaning out cattle enclosures, cutting grass, and other general maintenance work.⁵¹⁴ Promising young men remained at the court for several years after the standard three years of service, suggesting that gland-feelers (whom the Kudicke referred to as "young men", and not "boys") would have been older than 16, but were likely younger than Kudicke's own age of 30.⁵¹⁵ At home and in wider society, responsibilities differed for young men and young women, though perhaps not as sharply as German appraisals might indicate. Rehse asserted that young women helped with cooking and keeping courtyards clear, while young men spliced rope together, fished, hunted, and brought "taxes" to the royal court.⁵¹⁶ The original German phrase "trägt die Steuer an den Königshof" literally means "carries taxes to the king's court," but, given contemporary and historical analyses, leaves some ambivalence as to what the exact relationship between young men and

⁵¹⁴ Schmidt, *Historical Archaeology*, p. 29. Schmidt conducted fieldwork in Buhaya in 1969 and 1970, speaking with elderly men who had been young during the late nineteenth century. Austen, *Northwestern Tanzania*, p. 11, p. 144, following Cory and Hartnoll, *Customary Law*, pp. 271-72. See also Lesley Stevens, "Religious Change in a Haya Village, Tanzania," *Journal of Religion in Africa* 21, 1 (Feb. 1991), p. 8.

⁵¹⁵ Cory and Hartnoll, *Customary Law*, p. 271.

⁵¹⁶ Rehse, *Kiziba*, p. 115. Original text: "Während das Mädchen der Mutter beim Kochen hilft und den Hofplatz von Gras säubert, flicht der Knabe Stricke, angelt, jagt und trägt die Steuer an den Königshof."

the palace might have been. Young men might have simply carried tax or tribute from a family or clan farm to the court, in the form of a tax in cowries and first fruits of the harvest; but it is likely that a responsibility to travel regularly to the court, wherever it might have been located, also served to socialize Ziba boys and orient them in the political hierarchy. Though Rehse does not indicate that boys “carrying the taxes” spent an extended period of time at the court, Schmidt’s informants’ discussion of their *muteko* indicates that contact with the court was an important marker of generational identity and status. “Bringing taxes” may have involved a period of personal service at the court as well.

Setting this system of training and service in regional perspective, the Ziba system of *muteko* was likely comparable to the training and socialization of young men as pages at the Ganda court.⁵¹⁷ In Buganda in the nineteenth century, boys (aged between 10 and 14) were sent to the Ganda court to serve the *kabaka* (king) in the corps of palace pages, trained by and working for politically powerful men with the hope of garnering their own advancement as a reward for loyalty and capability. The Ziba court, similarly centralized under the authority of the mukama, functioned similarly as a means for training in statecraft and military service, and perhaps also upward social mobility. Young men available to Mutahangarwa to call upon for service, having grown up at the court, were likely sons of his chiefs or young blood relations from within his extended descent-group or clan.⁵¹⁸

The history of mission education in Kiziba, coupled with Mutahangarwa's interest in literacy, suggests that these men, as a cohort, may have had the combined training of mission schools and age-set groups. After securing the throne, Mutahangarwa had engaged with both Catholic and Protestant missionaries after 1905, counting among his subjects both Catholic catechists and Protestant readers educated and converted in the tumultuous decades prior. The

⁵¹⁷ For a description of young men sent as pages to the Ganda court drawn from late-colonial ethnographic research, see Lloyd A. Fallers assisted by S.B.K. Musoke, “Social Mobility, Traditional and Modern,” in Fallers, ed., *The King’s Men: Leadership and Status in Buganda on the Eve of Independence* (East African Institute for Social Research/Oxford University Press, 1964), pp. 170-1; pages were an important aspect of Ganda military and political structures, per Reid, “Ganda Imperialism,” p. 349-50.

⁵¹⁸ Rehse, *Kiziba*, p. 110.

Catholic mission at Mugana, near the royal seat at Gera, gained increasing traction with the new king after 1905, an expanding relationship visible in increasing literacy through attendance of mission schools.⁵¹⁹ Gland-feelers' training by Kudicke was likely specific to the medical nature of their work. As a group, then, the gland-feelers held a social and political role not absolutely secure – it was subject to the favor of the king – but different to many of the people they encountered by virtue of their close association with the king and perhaps also their affiliation with the colonial regime. As these men were deployed by Kudicke from the camp, the imprimatur of Ziba royal authority and attendant elevated social status must have accompanied them.

Gland-feelers operated within a system that offered incentives for cooperation with colonial medical authorities, but that also commodified the sick, or suspected cases, through this reward. Kudicke, who originated the role and parameters of gland-feelers as auxiliaries at Kigarama in early 1908, attached a specific economic incentive to the discovery of proven sleeping sickness cases. For their work, German doctors paid gland-feelers a monthly wage, as well as premium per case identified. Wages and premiums shifted over the course of the campaign, varying from 3 to 5 rupees as a base wage, with additional money for each positive and confirmed case.⁵²⁰ A reward of 1 rupee per positive case was provided in late 1908, increasing in 1909 to “a reward of 3 Rupees...guaranteed to the gland-feelers for each sick person.”⁵²¹ By comparison, a hut tax of 4 Rupees was in place for roughly the same time period. Further, a base wage of 5 Rupees offered in 1908 – not including the premium paid per positive

⁵¹⁹ Iliffe, *Tanganyika under German Rule*, p. 174; Iliffe, *Modern History of Tanganyika*, p. 122.

⁵²⁰ 1 Rupee per positive case mentioned in Bumm Correspondence, 12/28/1908, BAB R1001, 5876; Steudel report from 11/4/1908 meeting, 11/4/1908, BAB R 1001, 5876; 5 Rupie base plus ½ to 1 rupie per case identified in Gudowius, 5/31/1908, BAB R 1001 5898; 3 rupees per positive case mentioned in Ullrich, Report for Kigarama and Kishanje for 1 October to 31 December 1909, 12/31/1909, BAB R 1001 5903, p. 5. Winterfeld letter to Kudicke, Feldmann, 11/25/1907, BAB R 1001, 5896, indicates that porters, servers, and fly-catchers were to be paid 10 Heller for 4 months; total budget for Lake Victoria campaign was 5250 rupees.

⁵²¹ Ullrich, Report for Kigarama and Kishanje for 1 October to 31 December 1909, 12/31/1909, BAB R 1001 5903, p. 5. Original text: “Die Belohnung von 3 Rupie war den Drüsenfühlern für jeden einzelnen Kranken zugesichert worden.”

case – nearly matched the 6-8 Rupee indemnity offered for a farm by the Germans to people forced to relocate out of *tsetse* fly areas and abandon their farms.⁵²²

To do the work of finding suspected cases of sleeping sickness required acquiring a combination of basic diagnostic skills developed in the course of tropical medicine research on sleeping sickness – palpating glands, evaluating a person’s appearance for characteristic swelling of the face or hands or for the lethargy that gave the disease its name. The process of touch – of literally getting a hold of someone – was a fraught one.⁵²³ Both colonial and African narratives of sleeping sickness investigations in the early twentieth century emphasize the importance of close proximity, of touch, to identifying people who may have been sick. Gland-feelers’ work did violence to ways that people might usually interact with each other. Even as Lwamgira, for instance, framed interventions into sleeping sickness as evidence of the king’s care for his people and a positive good for the kingdom, he described the process of auxiliaries and doctors identifying the sick a coercive and threatening interaction:

The Medical Officer sent young men all over the villages to go and press the necks of the people to see those who had signs of Botongo disease. If they found any, they would send the person to Kigarama for treatment.

They captured a lot of people, but when some saw how the Doctor pierced their shoulders injecting them, they feared and migrated to other areas. The doctor continued capturing people and taking them to Kigarama and those who did not have it, were not affected.⁵²⁴

Young men, here, compelled people from throughout Kiziba to go to Kigarama, as they and the doctor “captured” the suspected sick. Ethnographic studies of Kiziba indicate a strongly gendered and hierarchical social structure historically; the gland-feelers’ work to palpate the necks and armpits of any and all people suspected of being sick may, then, have been a form of contact that was even more unusual.⁵²⁵ German reports refer to katikiros and gland-feelers

⁵²² Ullrich, report, 4/16/1910, BAB R 1001 5904.

⁵²³ Luise White explores the meanings and implications of medical workers’ attempts to control Ugandan bodies for smallpox vaccination in “Differences in Medicine, Differences in Ethics,” pp. 445-61.

⁵²⁴ Lwamgira, *History of Kiziba and its Kings*, p. 138.

⁵²⁵ Rehse, *Kiziba*, pp. 110-13, 115-16.

working together in villages to identify the sick and bring them to the Kigarama camp, a pairing that would have simultaneously signaled to villagers that sleeping sickness concerned the coercive force of the king and the colonial government.

As the campaign went on, visible glands, as opposed to the verified presence of trypanosome parasites in blood, lymph, or spinal fluid – all of which had to be made visible through extraction from the body and with the use of a microscope – had become the default for detection in rounds of examination in villages. Andrea Kajarero's narrative of flight and discovery points to the importance of different methods of identifying symptoms of sleeping sickness, particularly detecting swollen cervical lymph glands as a means of recognizing the sick.

The government built a hospital at Kigarama to heal the sickness. The doctor paid particular attention to people who had just returned from Uganda. He took blood smears from their fingers and pressed their throats. When he found an egg, they had to stay in the hospital and they got medicine. Many died from this sickness. The people were very afraid of it. This happened in 1907-1908.⁵²⁶

Here, the presence of a special node in the neck, before finding a micro-organism in a blood smear, could lead to a person's confinement in the camp. Swollen cervical glands were known historically to European doctors as "Winterbottom's sign," and German colonial medical officers considered them, at the time, to be a reliable way of diagnosing the disease.⁵²⁷ Visual recognition and then palpation of glands was far easier than drawing blood, though both were less reliable methods of screening for sleeping sickness than performing a spinal puncture or extracting lymphatic fluid from the glands. But attention to swollen glands was the method most widely used, because, though microscopy aided processes of diagnosis, the tools and methods available changed unpredictably, according to shipment of supplies or the

⁵²⁶ Andrea Kajarero, "Aus meinem Leben," (1955-56?), Bethel Mission Archives, M 194, p. 9-10. Original text: "Die Regierung baute ein Krankenhaus in Kigarama, um die Krankheit zu heilen. Der Arzt wandte den Leuten besonders Aufmerksamkeit zu, die gerade von Uganda zurückgekommen waren. Er nahm Blutabstriche von ihren Fingern und drückte ihre Kehlen. Wenn er Eier fand, mussten sie im Krankenhause bleiben und bekamen Arznei. Viele starben an dieser Krankheit. Die Leute fürchteten sich sehr davor. Dies geschah 1907 - 1908."

⁵²⁷ See C. Burri and R. Brun. "Human African Trypanosomiasis," in Gordon C. Cook and Alimuddin I. Zumla, eds., *Manson's Tropical Diseases* (Saunders, London, 2003).

circumstances of an examination. Amid a belief that the majority of people in lakeshore communities such as those in Kiziba were likely infected with sleeping sickness, the crudest method prevailed in identifying potential cases. This imperfect method also allowed colonial doctors to direct the energies of auxiliaries toward local communities.

The work of gland-feelers involved the rudiments of epidemiological research, documenting cases in a population and establishing site-specific records. However, neither the diagnostic methods of tropical medicine nor the conceptual underpinnings of epidemiology were standardized in the early twentieth century.⁵²⁸ Finding the right glands with the right level of swelling, for example, was not straightforward, indicated by the informal diagnostic standards in circulation within the sleeping sickness campaign. German doctors in the field in East Africa referred to a scale of gland size based on common items, to best approximate when swollen glands were dangerous or suspicious, or, by contrast, when swelling might be too widespread to be noteworthy. Apart from "bean-sized" swelling that Kudicke instructed Kigarama gland-feelers to attend to, other doctors referred to a wide variety of items - peas, cherries, hazelnuts, pigeon's eggs - to gauge the standards by which they diagnosed the sick and explain these to their colleagues and superiors.⁵²⁹ What exactly these different grades of inflammation meant for a person's health was also not precisely known. Despite having had gland-feelers at work in and around Kiziba for nearly a year, and having used glands as a basic measure of infection with sleeping sickness, Robert Kudicke wrote in December 1908 that "individual observations indicate that gland-swelling to the extent which we consider typical develops comparatively late."⁵³⁰ Swollen glands, then, could not serve as early sign of disease,

⁵²⁸ Olga Amsterdamska, "Demarcating Epidemiology," *Science, Technology, & Human Values*, vol. 30, no.1, p. 17-51.

⁵²⁹ Drs. Scherschmidt and Lurz used this variety of objects to gauge and compare swollen cervical glands. See Scherschmidt, report, 1/4/1910, BAB R 1001 5904; Scherschmidt, report, 1/1/1914, BAB R 1001 5911; Lurz, reports of 7/1/1913, BAB R 1001 5910, and of 10/1/1913, BAB R 1001 5911.

⁵³⁰ Robert Kudicke, "Bericht über die Schlafkrankenlager Kigarama und Kishanje 1. August bis 30. November 1908," (no date; sent forward to colonial government 12/1908) BAB R 1001 5899, p. 3. Original text: "Wie schon früher berichtet, sprechen einzelne Beobachtungen dafür, dass die Drüsenanschwellung sich verhältnismässig spät zu dem Grade entwickelt, den wir also typisch bezeichnen."

isolated to initial infections with the trypanosome parasite, but instead potentially indicated a number of stages of illness. Even so, putting such measures into practice for finding the sick, particularly when diagnosis carried with it the serious consequence of being brought into the purview of colonial medicine – removal from one’s home, internment, injections – depended on flexible and ephemeral judgments. A resulting decision on whether a person was healthy or possibly sick depended itself on the possibilities or limitations of the circumstances of examination. Referring to the monitoring of a major river crossing, Kudicke indicated that he had revised his initial instructions to the gland-feeler posted there, such that “in order to avoid aggravating the population, the gland-feeler there was ordered to send only people with significant gland-swelling to Kigarama for examination.” Still, he insisted that, “the natural possibility therein, that [we] will overlook the beginning stages of the disease, can, I believe, be accepted without concern.”⁵³¹ Here, judgments and processes of separating certainties from uncertainties intertwined. Evaluative standards and scientific thresholds of the sleeping sickness campaign – even with the tools of microscopy and bacteriology available in the field – were, when probed, not standardized or reliable. This uncertainty shaped the role that gland-feelers played in the campaign, German doctors’ considerations of their success or failure, and communities’ reactions to their work in the countryside.

As part of their brief to find potential sleeping sickness cases, gland-feelers were conceived as part of a system of observation, monitoring, and reporting that paid particular attention to mobility through Kiziba and northern Buhaya. The work in finding the sick, initially directed toward a systematic search through villages in Kiziba, quickly expanded to include posting auxiliaries at transit points, primarily swamp and river crossings and landings on Lake Victoria. Their presence added medical surveillance to established attention to migration and trade at key points in the area, but also brought new points of surveillance to

⁵³¹ Kudicke, Report, (no date, 12/1908), BAB R 1001 5899, p. 2. Original text: “Um Belästigung der Bevölkerung zu vermeiden, ist der dortige Drüsenfühler angewiesen, nur Leute mit erheblichen Drüsenanschwellungen zur Untersuchung nach Kigarama zu senden.” Original text: “Die dabei naturgemäss bestehende Möglichkeit, dass Anfangsstadium der Krankheit übersehen werden, kann, wie ich glaube, ruhig in den Kauf genommen werden.”

well-traveled paths. The ferry at Kifumbiro was the primary crossing of the Kagera River between British Uganda and German Tanganyika, and a major camp for caravans on the Karagwe route; it was a bustling point of interaction for colonial officials, travelers, porters, and people marketing their goods, but also a point of concern for the two colonial administrations.⁵³² At Kifumbiro, colonial medical officers confronted the reality that sleeping sickness cases in the Bukoba Residency were once again not a stable entity to be discovered *in situ*, but rather elements of a constant flow of people in and out of Kiziba and neighboring Karagwe. A gland-feeler was posted at Kifumbiro starting in the summer of 1908, and resulted in the detection of a number of suspected cases among people resident in Buddu (a kingdom west of Kiziba also cut in pieces by the colonial border) traveling via Kifumbiro.⁵³³ This Drüsenfühler was posted along with two *rugaruga* – armed men on the king’s retainer, another cohort of men also affiliated with both royal and colonial power – to “assist” with the transport of the sick to Kigarama. Different than the gland-feelers’ initial aim around Kigarama, this man was not guaranteed to know the travelers who passed him, nor even to speak the same language or dialect; here, his auxiliary role was focused on training to detect the signs of sleeping sickness and ability to direct *rugaruga* to detain travelers.⁵³⁴

Local travel and regional migration became epidemiologically important for the prevention of sleeping sickness as the German campaign wore on. Doctors wanted “färbigen Hülfsarbeiter” – African assistants at work in specific villages, referred to separately from

⁵³² Early cooperative work in East Africa regarding sleeping sickness (and previous work on plague) brought German and British doctors together in Kifumbiro. Feldmann, Report, 11/26/1902, BAB R 86, 2622. On Kifumbiro, see Carl Hermann, “Die Wasiba und Ihr Land,” *Mitteilungen von Forschungsreisenden und Gelehrten aus den deutschen Schutzgebieten* (1894), p. 55.

⁵³³ Kudicke, report, 7/31/1908, BAB R 1001 5898, p. 1.

⁵³⁴ The Belgian colonial sleeping sickness campaign in Uele (in the north-eastern corner of the current Democratic Republic of the Congo) relied heavily on a network of African auxiliaries posted on the perimeter of the region between 1910 and 1914, per Maryinez Lyons, “Sleeping sickness epidemics and public health in the Belgian Congo,” in David Arnold, ed., *Imperial Medicine and Indigenous Societies*, pp. 115-16.

katikiros – “to pay special attention to people who have relocated from other areas.”⁵³⁵ The ferry at Kifumbiro and lakeshore landings in Kiziba, as well as overland routes along the Tanganyika-Uganda border, offered many established points of crossing. New controls also appeared on well-known paths and crossings, intended to isolate the epidemic in Kiziba and protect the southern areas of Bukoba district. Rugaruga and a gland-feeler were posted on the road crossing the swamp between Nyungwe and Kikongoro, which effectively connected Kigarama with areas in the district to the south and east.⁵³⁶ People with sleeping sickness would be “known” to the gland-feeler stationed there, Kudicke wrote, and the men posted had been instructed to let such people pass the checkpoint only when they possessed a permit issued by a sleeping sickness camp.⁵³⁷ Such passes were intended to keep people diagnosed with sleeping sickness – but who were still well enough to travel – from traveling into the “strongly threatened” southern parts of the district during gaps in their treatment regimen, and “from disappearing there altogether.”⁵³⁸ Kiziba functioned as the first line of defense for Bukoba district on the whole, with controls in the northern parts of the district protecting the remainder from the threat of sleeping sickness posed by travelers to and from Uganda. Stopped in Kiziba, these travelers would not be able to proceed through the district along established routes to the southern lake, or further on to routes toward Lake Tanganyika – areas of transit to the south and west where there were *tsetse* flies. Rugaruga and gland-feelers posted on the roads out of Kiziba could check outgoing travelers, and keep the disease from spreading to areas where *tsetse* flies could then transmit the disease and touch off new foci of the epidemic.

⁵³⁵ Kudicke, report, 7/31/1908, BAB R 1001 5898, p. 1.

⁵³⁶ Kudicke first mentions the possibility of posting rugaruga and an auxiliary at Nyungwe in his report “Bericht über die Bekämpfung der Schlafkrankheit im Bezirk Bukoba 1. Mai bis 31. Juli 1908,” 7/31/1908, BAB R 1001 5898. Kudicke including a post at Nyungwe/Kikongoro in his quarterly report for the last quarter of 1910, Kudicke, Report, 1/16/1911, BAB R 1001 5906.

⁵³⁷ Kudicke, report, no date (12/1908), BAB R 1001 5899.

⁵³⁸ Kudicke, report, no date (12/1908), BAB R 1001 5899, p. 2. Original text: “Es war dies erforderlich, um zu verhindern, dass etwa Kranke die Behandlungspausen zu Ausflügen in den stark gefährdeten Süden des Bezirks benutzen oder gar dauernd dorthin verschwanden.”

Attendant to auxiliaries' work of searching for and identifying the sick was work of implicit and explicit translation of disease etiology and colonial disease prevention practices – the project of educating Africans about the nature of the disease, how it was transmitted, and the means of preventing it. The process of education, or “instruction” by German doctors, extended to the work of African medical auxiliaries. In 1909, the doctor supervising Kigarama, staff doctor Ernst Marshall wrote:

On the occasion of examinations in individual villages, special instruction(s) were undertaken about the nature of sleeping sickness, its infectiousness; about the necessity of required measures such as clear-cutting the wooded coasts, prohibition of fishing on coastal strips where bushes exist or to operate fishing vessels on the distantly-located coasts of Mwanza, Shirati, and Kisumu pp., and the necessity of bringing people found sick into specific camps.⁵³⁹

Auxiliaries worked in a social and epistemological space between colonial doctors and Ziba communities, where claims of knowledge and authority overlapped. German doctors referred often to their efforts to impress the seriousness of the disease upon the population, and of corresponding efforts to educate the population personally and through Ziba political leaders.⁵⁴⁰ Doctors elsewhere cast the disease's seriousness in terms of imminent death if the sleeping sickness spread further. German efforts to connect death and illness with sleeping sickness as they understood it biomedically may or may not have called forth different action in Ziba communities. But the recognition that many people returning from Uganda or Sesse were ailing similarly, and dying similarly, may have allowed people to make use of explanations of sickening and dying that colonial doctors and their auxiliaries put forward, as well as German claims on new ways to heal and cure. Doctors intended for auxiliaries, but gland-feelers in particular, to allow for better communication with local communities and a more thorough

⁵³⁹ Ernst Marshall, Report, 1/3/1909, BAB R 1001, 5903, p. 119L. Original text: “Gelegentlich der Untersuchungen wurden in den Einzelnen Ortschaften Belehrungen vorgenommen über das Wesen der Schlafkrankheit, ihre Uebertragbarkeit, über die Notwendigkeit erforderlicher Massnahmen als Freischlagen der bewaldeten Küsten, Verbot an buschbestandenen Küstenstrichen zu angeln oder an den fern gelegenen Küsten von Muansa, Shirati, Kisumu pp. Fischerei zu treiben und die Notwendigkeit, krank befundene Leute in besondere Lager zu verbringen.”

⁵⁴⁰ See, for instance Marshall, Report, 1/3/1909, BAB R 1001 5903, p. 119L.

explanation of sleeping sickness and the administration's preventive measures against it.⁵⁴¹ European doctors conceived the auxiliaries' work as a solution to the problem of flight from examination, as a less jarring presence. With initial attempts to examine the residents of a village often met with flight or refusal to be examined, Kudicke hoped that these auxiliaries could work to earn the trust of the population in Kiziba in a way that European doctors themselves were incapable of doing.⁵⁴²

German reports record a cooperative relationship that enabled further access to the local population, as Dr. Georg Ullrich reported in late 1909:

At my encouragement Sultan Mutahangarwa of Kiziba allowed the whole sultanate to be searched by the former gland-feelers of the Kigarama camp for [people with sleeping sickness] or rather suspected cases.⁵⁴³

But this situation did not continue untroubled. Ullrich's report also indicated that several things had come to pass by late 1909: gland-feelers had been withdrawn from regular searches of villages in Kiziba, undiscovered or new cases of sleeping sickness were still believed to exist in the area, and the camp doctor at Kigarama maintained a working relationship with the king. In the period between the advent of gland-feelers in late 1907 and the beginning of the epidemic's wane in late 1910, employment of these auxiliaries fluctuated. Shifting patterns of deployment into Ziba communities indicate that gland-feelers' work led to changes in these communities' relations with both colonial and African authorities.

The men who worked as gland-feelers functioned as emissaries of the sleeping sickness campaign, but were also connected to royal power of the Ziba king. Their discretionary power likely registered at multiple levels in local communities. It is not clear whether, or how, the gland-feelers' embodiment of both royal and colonial authority might have been visible to

⁵⁴¹ Kudicke, report, 7/31/1908, BAB R 1001, 5898.

⁵⁴² Kudicke, Report, 5/13/1908, BAB R 1001 5897.

⁵⁴³ Ullrich, Report for Kigarama and Kishanje for 1 October to 31 December 1909, 12/31/1909, BAB R 1001 5903, p. 5. Original text: "Auf meine Anregung liess Sultan Mutahangarwa von Kiziba durch die früheren Drüsenfühler des Lagers Kigarama das ganze Sultanat nach Schlafkranken oder vielmehr Verdächtigen absuchen."

villagers – the men may have known personally and so recognized individually as being in the employ of the camp or close to the king, or could have worn clothing or carried objects that signaled this. It is likely that they were given clothing or materials by the camp – paper and a writing instrument, to note the names of the sick, but also perhaps shoes, a hat, or a uniform.⁵⁴⁴ Their appearance and work in the villages ultimately led to problems similar to the arrival of a European doctor. While initially successful in some parts of Kiziba, Drüsenfühler touched off unrest and triggered flight in other areas. In Kiziba, flight intertwined with the deployment and withdrawal of Drüsenfühler, linking the activity of communities, auxiliaries, and doctors. Ullrich, stationed at Kigarama in 1909, reported to the government, “due to the constant presence of gland-feelers in the area, an anxiety among the population has occurred and a partial migration of whole families in the Kahigi sultanate and over the British border was the consequence.”⁵⁴⁵ Attempts to examine the population with African auxiliaries here resulted in even more extensive, less predictable movements of African communities along the Uganda border, into and out of fields of German surveillance and territorial claims. Such movement was not limited to these particular borderlands.

Gland-feelers were deployed from and then recalled back to the camp at Kigarama beginning in 1909, indicating that colonial doctors sent them out into communities as much as possible when they remained within range of oversight by sanitation officers and doctors working at the camp. The campaign coordinator initially planned in 1908 to restrict Drüsenfühler to areas where their work could be easily checked by colonial medical officers, writing that he had “refrained from sending gland-feelers [into Buddu] due to the all-too-great

⁵⁴⁴ Providing uniforms or clothing for people employed as fly-catchers (a suit, boots, and leggings) or for people doing bush-clearing work (shirt and pants) were proposals mooted at different times by the SKB and German colonial government. Records are limited to the planning of the Tanganyika campaign. Oskar Feldmann allowed for fly-catchers’ clothing in his 1908 budget for the Tanganyika campaign; 4/1/1908, BAB R 1001, 5897; Governor Schnee (on tour) to Dar es Salaam, 1/24/1913, including correspondence from Sanitation-Sergeant Sacher, (10/19/1912) and Dr. Penschke (11/6/1912), BAB R 1001 5910.

⁵⁴⁵ Ullrich, Report, 7/1/1909, p. 16. Original text: “Andererseits hat durch die ständige Anwesenheit der Drüsenfühler eine Beunruhigung der Bevölkerung stattgefunden und eine Auswanderung zum Teil ganzer Familien in das Sultanat Kahigi und über die britische Grenze war die Folge.”

distance and the thereby increasing difficulty of supervision.”⁵⁴⁶ How these auxiliaries should proceed without direct supervision was less clear, and reveals a difficulty in reconciling the goals of the sleeping sickness campaign with its available resources, manpower, and circumstances. In 1909, the doctor supervising Kigarama noted that, despite a 3 Rupee reward per case, a month's work by six gland-feelers in the area yielded only one case of sleeping sickness.⁵⁴⁷ Doctors' expectations that sleeping sickness could yet be found in local communities and that higher incentives would lead auxiliaries to pursue any hidden cases with greater vigor ran up against the practicalities of not being able to make exhaustive surveys of populations in the first place. But rather than understand this decrease in cases reported as a change in the epidemic, German doctors attributed a lack of new cases to a failure on the part of auxiliaries working in the villages. This linked to reports of gland-feelers as a disruptive element in a community, as well as to overtly racist appraisals of African “indolence,” as well as sneers about African “apathy” toward the disease.⁵⁴⁸

Added to the problem of manpower and resources was the impact that gland-feelers' presence had in Ziba communities. Auxiliaries' searches alongside armed men or village leaders made the coercive side of sleeping sickness prevention clear. Reports also indicate that doctors perceived the problems caused by the presence of Drüsenfühler in a community to be due to unscrupulous use of their position – vague references to extortion appear in 1909 – rather than their direct relation to treatment and isolation measures associated with the sleeping

⁵⁴⁶ Kleine, report, 12/18/1908, BAB R 1001 5889 p. 4. Original text: “Von der Entsendung von Drüsenfühlern habe ich wegen der allzu grossen Entfernung und der damit wachsenden Schwierigkeit der Kontrolle Abstand genommen.”

⁵⁴⁷ Ullrich, Report for Kigarama and Kishanje for 1 October to 31 December 1909, 12/31/1909, BAB R 1001 5903, p. 5. Original text: “Die Belohnung von 3 Rupie war den Drüsenfühlern für jeden einzelnen Kranken zugesichert worden. Trotz einmonatlicher Arbeit von 6 Drüsenfühlern wurde nur ein einziger Schlafkranker aufgefunden.”

⁵⁴⁸ See Friedrich Kleine, “Schlafkrankheit; Bericht über die Schlafkrankheitsbekämpfung im Jahre 1911/12,” *Medizinal Berichte über die Deutschen Schutzgebiete für das Jahr 1911/12*, p. 95; Göring, Report to Government at Dar es Salaam, 4/25/1908, BAB R 1001 5897.

sickness campaign.⁵⁴⁹ But perceptions of Drüsenfühler in local communities noted in colonial records, even allowing for the unreliability of colonial reporting of African motivations, reflected fear and rejection of campaign measures wholesale in several local communities, regardless of the race of the representative of the campaign or the language in which its measures were explained.

Sleeping sickness research and prevention work also had the potential to unsettle relationships between communities and the Ziba king. Mutahangarwa's support for campaign measures connected him equally to their perceived benefits and difficulties. When the use of experimental drugs at Kigarama in mid- to late 1909 yielded increasingly damaging side effects, including blindness and infection but also death, both the sleeping sickness campaign and Mutahangarwa and local subchiefs lost traction with the population. Sleeping sickness was, after all, ultimately fatal, even with drugs used by German doctors and other tropical medicine practitioners, and the small improvements in a patient's condition gave way to recurring and worsening symptoms within months. Unlike the initial, somewhat positive impact of atoxyl on a patient's acute symptoms, relapses did not respond to as well to its use, and sometimes deteriorated rapidly. Kigarama and German doctors' activities there became associated with wasting and death rather than healing and stability. More and more people left the camp, or refused to come for pre-arranged "injection days". When a new treatment was promoted by the doctors, people did come to take advantage of it in significant numbers; when that treatment, specifically in the case of atoxyl, proved not to cure people, and also made some outwardly sicker and more infirm than before, people withdrew. Neither African authorities nor colonial doctors could answer claims that people died at Kigarama, that injections that had once seemed to restore health now did not. As a consequence, Robert Kudicke reported:

I have the impression that, from the side of Sultan Mutahangarwa and his katikiros, the sleeping sickness campaign's measures do not find the same support as before. From discussions with katikiros I have gathered that those with sleeping sickness living in the villages have managed to emancipate themselves from the authority of the katikiros

⁵⁴⁹ Ullrich, report, 7/1/09, BAB R 1001, 5903.

more than is good, so that it is no wonder, if the interest of the latter to further increase the number of this fractious element is only slight.⁵⁵⁰

Kudicke's sense of the sleeping sickness campaign's fortunes shifting sharply in late 1910 may indeed have related to increasing tension between village elders and people who had been treated with atoxyl at the sleeping sickness camps. This tension could have resulted from the "emancipation" from traditional authority that came as a consequence of direct and sustained interactions with colonial doctors, or the access to wages or small plots of land possible at the camp. If people treated at the camp were those who had previously lived elsewhere during periods of seasonal migration, but whose mobility was now restricted by German regulations, these men might also have been a restive element, anxious to pursue trade, farming, rubber collecting, or fishing that kept them in motion.

But elsewhere, Kudicke recognized that the unraveling of perceived trust, and stable relations with Ziba communities, had to do with the healing effects that camp doctors claimed that injections would have, and the growing realization that people were not being cured of sleeping sickness. As fear of sleeping sickness was intimately tied to the camp at Kigarama, the camp itself was the root of further uneasiness. Removal from one's own home to the camp was seen as being taken "out of the world," one colonial doctor reported.⁵⁵¹ The prolonged use of atoxyl, even in advanced cases who longer seemed to be improved by its use, presented a serious problem; the use of other experimental drugs only exacerbated matters. As a result, Kudicke believed that the "trust of the population in the outcomes of treatment [was] gravely shaken," leading to a general "discrediting" of the camp.⁵⁵²

⁵⁵⁰ Kudicke, Report, 10/25/1910, BAB R 1001, 5905. Original text: "Ich habe den Eindruck, als wenn auch von seiten des Sultans Mutahangarwa und seiner Katikiros die Massnahmen der Schlafkrankheitsbekämpfung nicht mehr die gleiche Unterstützung finden wie früher. Aus Unterhaltungen mit Katikiros habe ich entnommen, dass die in den Dörfern belassenen Schalfkranken es verstanden haben, sich von der Autorität der Katikiros mehr zu emanzipieren als gut ist, sodass es nicht Wunder nehmen kann, wenn das Interesse der Letzteren, die Zahl dieser widerspenstigen Elemente weiter zu vermehren, nur ein geringes ist."

⁵⁵¹ Marshall, report, 1/3/1909, p. 119L.

⁵⁵² Kudicke, report, 10/25/1910, BAB R 1001, 5905. Original text: "...das Vertrauen der Bevölkerung in die Erfolge der Behandlung erheblich erschüttert ist;" "...die Discrediting des Lagers."

Elites and Commoners Policing the Sick

Neither German doctors nor the Ziba king Mutahangarwa held sole power to instruct and compel Ziba communities to be examined for sleeping sickness, to send people to go to receive injections at the camp, or to deploy auxiliaries to search among the population for potential cases. Underpinning the tangle of historical memory about African and/or colonial agency in sleeping sickness treatment are ideas about who could claim to have helped the population – to have ultimately arrested the disease.

One means of expressing that claim of responsibility for people's health was through control of the labor of gland-feelers and auxiliaries. Oral history interviews conducted in Kigarama in 2008 indicate that the king and the sleeping sickness camp were tightly connected in local histories of the German colonial period. One informant asserted that the king organized labor associated with the sleeping sickness campaign in addition to building the camp at Kigarama, and that the king's instructions or demands accounted for the large numbers of people who went to the camp.⁵⁵³ Read alongside a memoir that narrates the search for the sick, this story also indicates that the inhabitants of one's village played a key role in compelling people to go to the sleeping sickness camp at Kigarama. Kajarero described going to Kigarama because of the watchfulness of people from his natal village:

The villagers from Ruzinga knew that Andrea Kajarero and Peter Musenya had just come from Uganda and therefore forced them to go to Kigarama to the hospital. The doctor pressed their necks, but he found no eggs. He took blood samples and said, "Go back home, but you must return in seven days." But they returned to Ruzinga, they were afraid, and decided to go to Uganda. In this manner, they came to Uganda and began their confirmation classes.⁵⁵⁴

⁵⁵³ Interview with Bernard Mutekanga, Kashozi, Tanzania, 8/19/2008.

⁵⁵⁴ Andrea Kajarero, "Aus meinem Leben," (1955-56?), Bethel Mission Archives, M 194, p. 9-10. Original text: "Die Dorfbewohner von Ruzinga wussten, dass Andrea Kajarero und Petero Musenya gerade aus Uganda bekommen waren und zwangen sie deshalb, ins Krankenhaus nach Kigarama zu gehen. Der Arzt drückte ihre Kehlen, aber er fand keine Eier. Er nahm Blutabstriche und sagte: "Geht nach Hause zurück, aber ihr müsst nach sieben Tagen wiederkommen." Aber also sie nach Ruzinga zurückkamen, fürchteten sie sich, und so beschlossen sie, nach Uganda zu gehen. Auf diese Weise kamen sie nach Uganda und begannen mit der Konfirmandenklasse."

Kajarero's memoir describes how the movement of people between Buganda, Sesse, and areas in Buhaya after the onset of sleeping sickness followed religious as well as economic connections. Patterns of labor migration that German administrators identified as new and cash-driven in fact overlay networks of religious affinity between Protestant and Catholic missions on either side of the colonial border that also encouraged travel between mission communities. Missionary diaries and correspondence provide a general picture of mobility across the border, documenting the arrival and departure of catechists and readers from their missions.⁵⁵⁵ Migration of Catholic and Protestant converts from Buganda overlapped with connections born of trade and tribute, connecting the kingdoms of Kiziba, Bugabu, and Karagwe with those of Buganda, Masaka, Ankole, and traversing the border dividing the kingdom of Buddu. Porters, traders, and students of religion traveled common pathways linking Kiziba and Buganda, and Buganda with other societies on the lakeshore. Rather than go to the camp for examination, Kajarero and his companion went instead to Uganda – escaping German colonial medical scrutiny on themselves and their families, and, importantly for his life history as a Protestant, putting themselves into closer proximity to Protestant communities and missions there. Connections with missionaries and readers in Uganda were vital in the years prior to the foundation of a Protestant mission in Kiziba.⁵⁵⁶

Kajarero's memoir suggests a collective monitoring of newly-arrived migrants and traveling or returning family members, as the inhabitants of Ruzinga compelled the two travelers to go to Kigarama for examination. Certainly fear of the disease, and knowledge that the Germans offered one possible treatment at the camp, could have led villagers in Ruzinga to encourage Kajarero and Musenya to go to Kigarama. Here, the experience of “voluntarily” going to Kigarama for examination – touted by colonial officials as evidence of the trust and

⁵⁵⁵ The White Fathers' diaries for Mugana, Kashozi, and Kanabulemu are of particular relevance to the region (Archives of the Provicincial, DSM; Archives of the Maison Général, Rome). Travel by Protestant readers is best documented in the memoirs of the early Lutheran church readers in the area, such as Andrea Kajarero, given that the German-based Bethel Mission did not gain a foothold in the area until 1910.

⁵⁵⁶ Iliffe, *Tanganyika under German Rule*, p. 173, citing Kajarero, *Aus meinem Leben*.

support of local communities – occurred not entirely freely, but at the insistence of people in their natal village. German surveillance and prevention measures relied not only upon a pretense of strict control of communities by colonial authorities, but also on the enforcement of colonial rules by local authorities, and, less formally, by communities fearful of both the disease and of the colonial response to any perceived defiance of new rules for caring for the sick or moving about the area.

How villagers in Ruzinga understood the potential consequences of not complying with these rules, particularly as they might have resonated within a family or village, is unclear. But they likely fit into local experience with the battles of colonial incursions, and rubrics of individual and collective punishment meted out by the German administration. Only a few years before the German campaign officially began, the homes and possessions of sick people in Kiziba had been burned down upon discovery of illness or death by the former Bukoba district medical officer, Oskar Feldmann.⁵⁵⁷ Now, as sleeping sickness fit into the broader business of governance, the Bukoba administrator Gudowius integrated punishment for resistance to sleeping sickness control rules into both royal power and colonial punishment. In May 1908, he asserted that the responsibility to oversee their subjects and those subjects' travel lay with the chiefs, but then suggested that travelers be required to notify authorities, and infractions could be punished with small fines or detention. For repeated offenses, a 50 Rupee fine, "Kettenhaft" up to 3 months, and 25 lashes were considered "sufficient."⁵⁵⁸ While medical reports do not confirm that Gudowius's proposals for punishing non-compliance with sleeping sickness prevention regulations became a reality, the German administration did use fines, imprisonment, and beatings as punishments elsewhere in German East Africa.⁵⁵⁹

⁵⁵⁷ Oskar Feldmann, undated report (10/1903), BAB R 1001 5833, p. 1.

⁵⁵⁸ Gudowius, report, 5/31/1908, R 1001 5898, p. 37. "Kettenhaft" refers to a period of being shackled or manacled.

⁵⁵⁹ Iliffe, *Modern History of Tanganyika*, p. 150; Koponen, *Development for Exploitation*, pp. 359-66.

Kajarero's description of travel across the border corresponded with Kigarama camp doctor Kudicke's directive that "...in order to be able to monitor any other immigrants, [I] would recommend delegating to the sultans and their katikiros that they from time to time inform us whether foreigners have settled in particular villages."⁵⁶⁰ The campaign relied heavily on village leaders to monitor life in the countryside, and notify colonial authorities about people traveling in from other areas, particularly when possibilities for evading established crossings were so readily available.⁵⁶¹ But interestingly, while Kudicke acknowledged here and elsewhere that travel brought the disease to the area, he equates immigrants with "Fremde," foreigners or non-natives. In acknowledging that migration occurred and posed a problem for control of the epidemic, Kudicke and the campaign leadership also acknowledged the permeability of the German East Africa-Uganda territorial borders. This categorization of people arriving from Uganda as "immigrants" or "foreigners/non-natives" reduced the fluidity and complexity of Ziba mobility to fit into more stable categories of residence and non-residence, by which travelers could be identified and flagged as potential carriers of sleeping sickness by colonial authorities. Travelers to Kiziba, as seasonal migrants or religious students, among many other possibilities, were more often returnees than immigrants settling in a new area. Statistics for people admitted to Kigarama regularly indicated the ethnicity or provenance of new patients, information that contributed to a rudimentary understanding of local migration as it was relevant to the epidemic.⁵⁶²

⁵⁶⁰ Kudicke, 10/1/1907, p. 5. Original text: "...um sonstige Einwanderer kontrollieren [sic] zu können, würde ich empfohlen, den Sultanen und ihren Katikiros aufzugeben, dass sie von Zeit zu Zeit Meldung machen, ob Fremde sich in den einzelnen Dörfern niedergelassen haben."

⁵⁶¹ Kudicke, report, 7/31/1908, BAB R 1001, 5898.

⁵⁶² Kigarama Chart for October 1908, 11/9/1908, notes 3 new patients: "2 Personen aus Kisiba, 1 Person aus Mkerewe [sic] (Früher Askari in Usumbura)," that is, two persons from Kiziba and one "Mkerewe" who had earlier served as an askari in Usumbura. BAB R 1001, 5901. Quarterly reports typically note the place of origin of new patients admitted into treatment, identifying individuals by the kingdom, island, or British territory from which they came. See Kudicke, "Bericht über die Schlafkrankenlager Kigarama und Kishanje 1. August bis 30. November 1908," 12/18/1908, BAB R 1001, 5899, p. 1.

Such statistical information, and associated reports from the initial period of research, indicates that German scientists had difficulty differentiating between the various travelers, migrants, and caravan porters in transit through Kiziba. A few months into the campaign, Kudicke noted:

...unfortunately it is extraordinarily difficult to find out the names of Uganda-travelers with certainty and as a result currently not possible to limit examination to these [people] and their relatives. For the same reason I also have little hope that, through blood examinations of those whom I have identified as Uganda-travelers, to detect [cases of sleeping sickness] faster than now.⁵⁶³

The process of fixing people in place – whether where they lived, or where they had been living – fit into the goal of a comprehensive knowledge of population, residence, and movement that was key to the formation of an epidemiological overview of Kiziba. But this effort to better know the local population and its movement and whereabouts also fit into simultaneous efforts by the colonial administration to collect a hut tax and organize corvée labor.⁵⁶⁴ Sleeping sickness research did not always represent the first experience of people in Kiziba with the colonial state, nor were the interests of scientists and administrators in lock-step as the sleeping sickness campaign moved forward. But in serving its ultimate goal of epidemiological knowledge, sleeping sickness research also fit into broader trends of compiling and organizing information to enable the extraction of tax and tariff profits, intervention into land management and agricultural practice, for instance, which were essential aspects of the German imperial project. Still, Andrea Kajarero's experience of a community effectively policing its own members' mobility also indicates that measures both internal and external to a village could be evaded. Neither the power of the *mukama* over his subjects, nor that of a subchief over villagers, and certainly not the combined energies of colonial scientists and administrators, was so absolute as to prohibit flight in such circumstances. Kudicke's comment on the difficulty of learning names of travelers – essential for medical records and an understanding of the

⁵⁶³ Robert Kudicke, "Bericht über die Schlafkrankenlager Kigarama und Kishanje 1. August bis 30. November 1908," (no date; 12/1908) BAB R 1001 5899, p. 3.

⁵⁶⁴ Koponen, *Development for Exploitation*, pp. 339-341, p. 398.

epidemic – indicates the effectiveness of simple acts of misinformation in avoiding detection or dodging surveillance. With no meaningful or reliable way to narrow the field of examination for potential cases, however, the search for the sick had to expand to include entire villages, communities, and kingdoms.

After Kiziba: Auxiliaries Abroad

With the ebb and flow of searching through villages and either finding suspected cases, or just finding trace of people in flight from examination, deployment of gland-feelers changed. Camp doctors continued to provide monetary or material incentives for bringing forward the sick, or to people who themselves came to the camp. Simultaneous with the withdrawal of auxiliaries from the territory of Buddu due to the unrest they caused, for instance, the doctor at Kigarama opted instead to offer a premium to people who brought in their relatives, and to people who submitted themselves for treatment.⁵⁶⁵

Medical auxiliaries who focused on detecting physical symptoms of sleeping sickness continued to be deployed alongside police to monitor lakeshore landings as well as river and swamp crossings near Kigarama, providing additional presence for the sleeping sickness campaign in 1910 and 1911.⁵⁶⁶ They were employed periodically alongside doctors surveying areas of possible new infection, but worked through the outbreak of World War 1 primarily as additional coverage at ferries and crossings where African troops or police were already stationed.⁵⁶⁷ In areas where the sick were known to be, as in Kiziba and Buddu, colonial officials searched villages with the help of katikiros. As the epidemic appeared to ebb in 1913, doctors searched independently for the sick using the rolls created by hut tax collectors. These tax rolls were novel, including information on names and residency that had eluded doctors operating in the area only a few years prior.

⁵⁶⁵ Ullrich, quarterly report from Kigarama and Kishanje, 7/1/1909, BAB R 1001 5903, p. 17.

⁵⁶⁶ Kajarero describes crossing the Kagera River, "Aus meinem Leben," dated 1910, ch. IV, p. 1-2.

⁵⁶⁷ Grothusen, report, 10/8/1911, BAB R 1001 5908.

One of the final instances of Drüsenfühler working in Kiziba before the outbreak of the war suggests that their local knowledge, or familiarity with the population, had become a liability. The doctor supervising Kigarama in 1913 noted that posting of former askari from outside of the district was preferred to posting local men, who might be more susceptible to the influence of relatives, or bribes.⁵⁶⁸ However, when met with the approval of their superiors, this work also provided a track for upward professional – and literal – mobility, as Drüsenfühler who proved reliable were employed at Shirati, on the eastern shore of Lake Victoria, and later in campaign activity in districts in northern Urundi on the Lake Tanganyika coast.⁵⁶⁹ As professional medical auxiliaries, they had, as other African intermediaries of colonial rule would also do across the continent, “acquired skills, knowledge, and situated authority with which they furthered their own strategies of accumulation.”⁵⁷⁰ Gland-feelers became less useful as men with an association with Mutahangarwa’s court, for their dual embodiment of royal and colonial medical authority, and more useful for their practiced skills in detecting the right kind of swollen glands, creating proper records of the sick, and canvassing a population. In this way, they fit into a literature on intermediaries and interpreters in the early years of colonial administration in Africa, in parallel to their relevance for our understanding of age-set groups and royal power in the Great Lakes region.

Conclusion

This chapter introduced a newly-trained cohort of African medical auxiliaries as a key component in the sleeping sickness campaign at Lake Victoria. The advent of auxiliaries deployed as surveyors of the population surrounding the Kigarama camp demonstrated both

⁵⁶⁸ Wittrock, report, 7/5/1913, BAB R 1001, 5911.

⁵⁶⁹ Kudicke, report, 5/13/1908; Eckard, report, 10/1/1911, BAB R 1001 5908. See also Friedrich Kleine, *Ein deutscher Tropenarzt*, Hannover: Schmorl & von Seefeld Nachf., 1949, p. 59.

⁵⁷⁰ Benjamin N. Lawrance, Emily Lynn Osborn, and Richard L. Roberts, “Introduction,” to *Intermediaries, Interpreters, and Clerks: African Employees in the Making of Colonial Africa* (Madison: University of Wisconsin Press, 2006), p. 5.

German colonial doctors' need for local intermediaries and the extent to which these intermediaries fit into broader changes in the social and economic connections between Ziba elites, villagers on the lakeshore, and German colonial authorities. Carried out by auxiliaries who searched villages for people with "tell-tale" signs of the disease, and by colonial doctors running the camp and touring Bukoba district, sleeping sickness research and prevention work represented a new response to a threat to the health of the Ziba kingdom on the part of the king Mutahangarwa. German colonial officials and doctors, involved along with the king in addressing the epidemic, fit into other colonial and royal interventions into daily life such as cash crop cultivation and mission education. The work of gland-feelers or Ziba medical auxiliaries, manifested these new relations between colonizers, kings, and the Ziba population as they searched for the sick in farms and across the countryside; they also played a role in monitoring the comings and goings of travelers to and from the Haya kingdoms on the lake and overland.

Developing ideas about infectious disease epidemiology and the design and implementation of disease prevention campaigns shaped scientists' appraisals of seasonal migration and African uses of the lake, as well as their definitions of a "local" origin of disease and of "native" residents. Each of these elements factored into a categorization of the epidemic on the western lakeshore as imported from Uganda, a key to German understandings of the disease dating from Robert Koch's first expeditions in 1904-05. For doctors posted at Kigarama, controlling the epidemic's spread after 1908 became a matter of finding the sick, policing the transit routes into and out of the area to the north and south, and integrating positive cases of sleeping sickness into a regimen of treatment with atoxyl. In a development specific to sleeping sickness prevention, auxiliaries employed in medical work also traveled between the key sites of research as anti-sleeping sickness programs expanded, following long-standing routes for new reasons. Colonial officers circulated among the foci of research and administration, accumulating points of reference and experience they applied in their tenure in each new station. How the work of initial research and prevention measures at Lake Victoria was taken

up at Lake Tanganyika, under very different epidemiological and political circumstances, is the subject of the next chapter.

Chapter Seven

Old Paths, New Travelers: Ziba Auxiliaries at Lake Tanganyika

In 1911, sleeping sickness had begun to ebb in Kiziba, where fewer tsetse flies kept the disease spreading from beyond people who had returned home from Buganda and the Sesse Islands. At Kigarama, Robert Kudicke supervised mainly people who were near death, but also ran a “polyclinic” where people came for treatments for various ailments. Treatments for syphilis were common, a matter of concern for German officials that would later be taken as an ominous sign for the economic productivity and population health of Buhaya by the British.⁵⁷¹ The gland-feelers who circulated through Ziba villages in the campaign’s initial years had been scaled back. Auxiliaries checking people for telltale signs of sleeping sickness now worked at river crossings and on paths between the northern and southern areas of the Bukoba residency. Their trace in Bukoba appears to fade from the colonial record.

But Ziba auxiliaries did not simply cease their work of surveying people for sleeping sickness and blend back into their villages and homes. They became a new and different kind of colonial functionary as “Bukoba boys” deployed by German doctors to examine Rundi populations on the shores of Lake Tanganyika, where epidemic sleeping sickness still raged in 1911. As experts in the preferred German method of surveillance for sleeping sickness, their value to the campaign came neither from their familiarity with dialects of Kirundi and the lay of the land, nor their connection to local political authority. They slipped into the stream of sleeping sickness work, as a report on their arrival and work in July 1911 noted:

In the Urambi district, the systematic searching of the area for people with sleeping sickness could be begun. Gland-feelers (Bukoba boys) were sent around, accompanied by a nyampara of the respective chieftaincy and an askari. The initially-feared resistance of the population thankfully appeared nowhere. The people came, if they were told by a

⁵⁷¹ Birgitta Larsson, *Conversion to Greater Freedom?: Women, Church and Social Change in North-Western Tanzania under Colonial Rule*, (Stockholm: Almqvist & Wiksell International, 1991); Kaijage, *AIDS Control*, p. 281.

gland-feeler that they were probably sick with sleeping sickness, without compulsion to the camp.⁵⁷²

These gland-feelers, distinct from Rundi auxiliaries who were drawn from local villages in the years prior, were almost certainly members of the same cohort of Ziba men trained by Robert Kudicke at the Kigarama camp, the only base for gland-feelers in the Bukoba district. Here, in the Imbo region of colonial Urundi, Ziba gland-feelers worked alongside Rundi village elders searching for the sick in villages around the sleeping sickness camp at Urambi. They superseded local men deployed briefly as “Krankensucher” – literally, “searchers for the sick” – and, for a time, provided a key component of anti-sleeping sickness measures in the Urundi Residency.

Gland-feelers were new travelers on old routes connecting Burundi and Buhaya, the Lake Victoria basin and the Lake Tanganyika valley, and also on the paths connecting Rundi villages scattered along the Tanganyika lakeshore. They were certainly not the first Ziba to travel to Lake Tanganyika, nor likely a totally unfamiliar or unintelligible presence in Rundi villages. In historical perspective, they are instructive figures, allowing us to analyze new contexts for local and regional mobility, how sleeping sickness and subsequent prevention campaigns altered travel and migration, and, at the simplest level, who was traveling, why, and what social change may have occurred as a result.

The relatively small scale of public health work in Kiziba, and the rigorous work of historians and anthropologists studying [greater] Buhaya in the late nineteenth and early twentieth centuries, allows a fair degree of detail in understanding how political considerations, economic change, and health converged in the process of sleeping sickness research and prevention. The state of the field is quite different with regard to coastal Burundi, where

⁵⁷² Bruno Eckard, “Vierteljahresbericht über die Schlafkrankheitsbekämpfung an der Urundiküste,” 10/1/1911, BAB R 1001 5908, p. 2-3. Original text: “In Urambi-Bezirk konnte...mit der der systematischen Absuchung der Gegend auf Schlafkranke begonnen werden. Es wurden hier Drüsenfühler (Bukobaboys), begleitet von einem Nyampara der betr. Mtualeschaft und von einem Askari herumgeschickt. Ein Anfangs befürchteter Widerstand der Bevölkerung zeigte sich erfreulicher Weise nirgends. Die Leute kamen, wenn ihnen von Drüsenfühler gesagt wurde, dass sie wahrscheinlich schlafkrank wären, ohne Zwang zum Lager.”

attention to the experience of twentieth-century ethnic conflict and political violence, and the search to understand its roots during colonial rule, dominate the field.⁵⁷³ Studies of health and empire are wholly lacking in English-language literature.⁵⁷⁴ Documentation of the sleeping sickness campaign's measures provides a new source for understanding the daily life of communities on this stretch of the shore of Lake Tanganyika. Studying the campaign sheds light on the nature of broader German colonial interventions among Rundi and Bwari villages, and on the changing political and economic circumstances that people contended with as those interventions expanded in the early twentieth century.

Lakeland Burundi: the Imbo

The German sleeping sickness campaign concentrated not on the central highlands of Urundi, where the king's power was secure, but on the coastal plain Lake Tanganyika in an area known as the Imbo. The Imbo was a region apart from the rest of the Urundi kingdom, composed of the narrow swath of the Rift Valley running along Lake Tanganyika's eastern shore, northward

⁵⁷³ The works of René Lemarchand and Jean-Pierre Chrétien have dominated the Francophone historiography of Burundian history for a generation, focusing more recently on the history of ethnic conflict. See René Lemarchand, *Dynamics of Violence in Central Africa*, (Philadelphia: University of Pennsylvania Press, 2009), *Burundi: Ethnic Conflict and Genocide* (New York, NY: Cambridge University Press, 1996), *Burundi: Ethnocide as discourse and practice* (Cambridge University Press: Cambridge, 1994), and *Rwanda and Burundi* (Praeger: New York, 1970); Jean-Pierre Chrétien and Jean-François Dupaquier, *Burundi 1972, au bord des génocides*, (Paris: Karthala, 2007), Chrétien and Richard Banégas, eds., *The Recurring Great Lakes Crisis: Identity, Violence and Power* (London: Hurst & Co., 2008). A historically-minded treatment of the politics of ethnic conflict is provided by Peter Uvin in "Ethnicity and Power in Burundi and Rwanda: Different Paths to Mass Violence," *Comparative Politics* 31, No. 3 (1999), pp. 253-271. Several bodies of work piece together a long view of Burundian history, dating from the pre-colonial period, examples of which are David Schoenbrun, *A Green Place, a Good Place*, (Portsmouth, NH: Heinemann, 1998); David Newbury, "Precolonial Burundi and Rwanda: Local Loyalties, Regional Royalties," *International Journal of African Historical Studies*, 34, no. 2 (2011), pp. 255-313; Michele Wagner, "Trade and Commercial Attitudes in Burundi Before the Nineteenth Century," *IJAHS* 26, no. 1 (1993), pp. 149-166. Chrétien, drawing on an extensive body of work in French, seeks a holistic regional history that also attends to ethnicity and violence in both Rwanda and Burundi in *The Great Lakes of Africa: Two Thousand Years of History*, translated by Scott Strauss (New York: Zone Books, 2003).

⁵⁷⁴ Jean-Pierre Chrétien's chapter "La crise écologique de la plain due lac Tanganyika entre 1890 et 1916," in *Burundi: l'Histoire retrouvée, 25 ans de meetier d'historien en Afrique* (Karthala: Paris, 1993) provides a comprehensive treatment of the histories of ecology and health in the Imbo region, but no comparable work in English has been published.

up the Ruzisi River valley.⁵⁷⁵ Historically an agriculturally and topographically distinct region from the mountainous highlands, the low-lying, flat Imbo region's relationship with central Urundi changed in the early twentieth century. The chiefs who ruled Imbo communities retained a loose affiliation with the Rundi monarchy in the central highlands, but this connection had slackened since the late nineteenth century due to the combined effects of power struggles late in *mwami* (king) Mwezi Kisabo's rule and after his death, the ecological crises of cattle diseases and other epidemics, and aggressive German interventions into Rundi politics.⁵⁷⁶

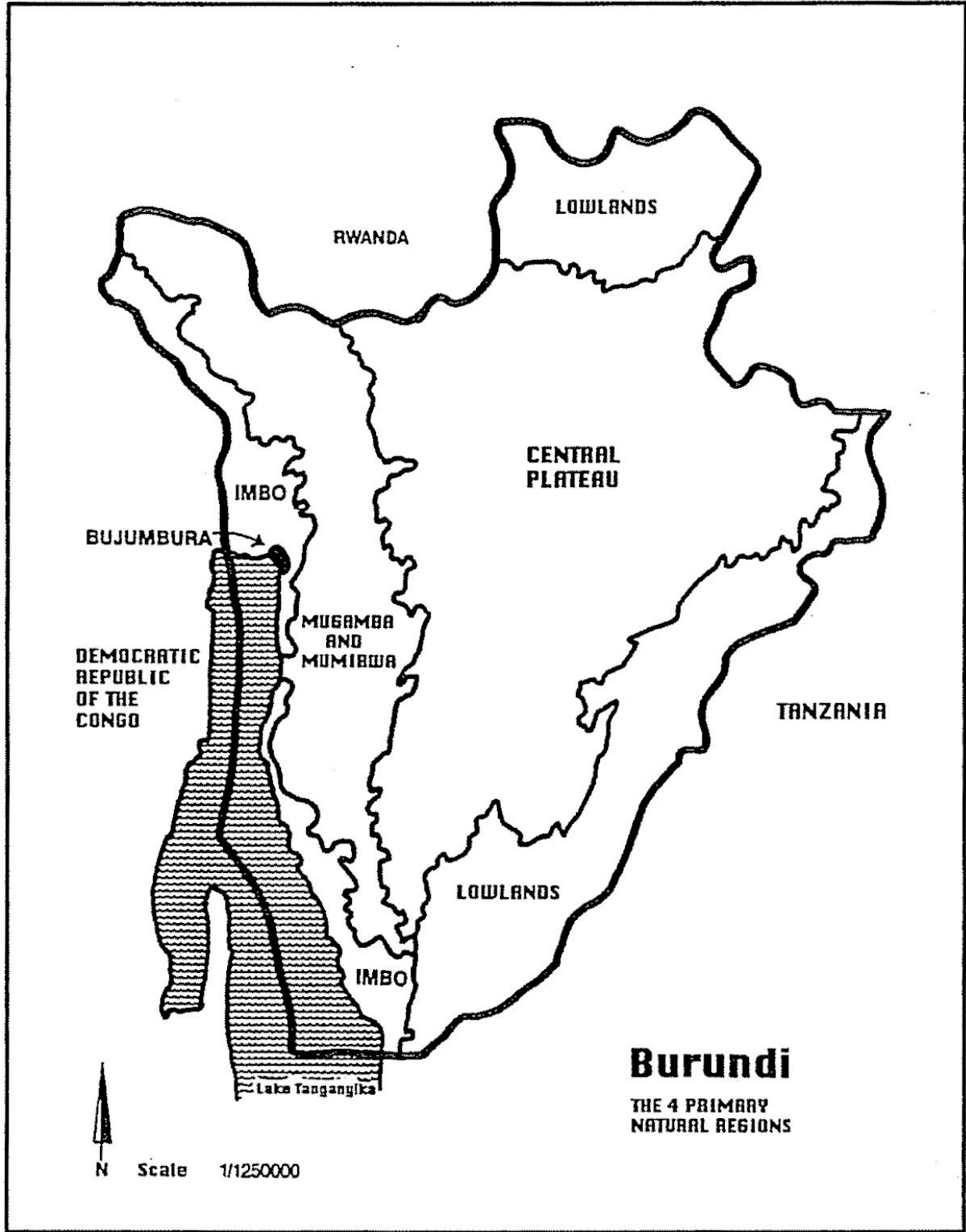
The distinctiveness of upland and "lakeland" Rundi was also inscribed in histories of royal power, where the Imbo region was a dangerous counterpoint to the safe, salubrious highlands. This difference surfaces forcefully in narratives of the political upheaval of the late nineteenth and early twentieth century. Tradition held that the *mwami* would not survive a descent from the highlands, where the royal court at Gitega was located, to the Imbo; this tradition was bolstered by Mwezi Kisabo's death in 1908 following a visit to Usumbura, but also contradicted by his numerous visits to the German station there previously.⁵⁷⁷ Amid the intrigue and power struggles between Mwezi Kisabo and two insurgent chiefs, Maconco and Kilima, at the turn of the century, oral traditions analyzed by Chrétien tell of Maconco fleeing the wrath of the *mwami* to the Imbo, to the west.⁵⁷⁸ This narrative underscores the relative remove of the Imbo from Gitega, as its distance from the highlands offered some refuge for the rebellious Maconco. Going down to the plains removed Maconco from danger for a time, implying that the lowlands may have been home to chiefs with a lesser sense of obligation to

⁵⁷⁵ Chrétien, in *The Great Lakes of Africa*, refers to the Imbo depression (p. 189) and the "Imbo plains" (p. 223); Sommers, *Fear in Bongoland*, p. 8.

⁵⁷⁶ Chrétien, *The Great Lakes of Africa*, pp. 249-251; Lemarchand, *Rwanda and Burundi*, pp. 53-56; William Roger Louis, *Ruanda-Urundi*, specifically chapters XII and XIII provide a detailed history of the colonial politics of early twentieth-century Burundi.

⁵⁷⁷ Jean-Pierre Chrétien, *Burundi, l'histoire retrouvée*, p. 122.

⁵⁷⁸ Chrétien, *Burundi: l'histoire retrouvée*, pp. 109-110.



"Burundi: the Four Primary Natural Regions"⁵⁷⁹

⁵⁷⁹ Marc Sommers, *Fear in Bongoland*, map 2.2, p. 54.

the king, who might have sheltered Maconco, as compared to chiefs close by Mwezi Kisabo's capital.⁵⁸⁰

The Tanganyika littoral's distance from the central highlands manifested in trade, foodways, and farming. People in the Imbo grew and ate cassava and yams as staple crops, in historical accounts and more recent stories, where people in the highlands ate maize.⁵⁸¹ The region depended on the lake, and lakeland Rundi used distinctive fishing techniques to net fish that were dried for local consumption and trade further afield, and navigated the lakeshore with canoes punted between ports and villages stretching from Ujiji around the lakeshore to Uvira in the Belgian Congo.⁵⁸² Trade in palm kernels was also an active part of the regional economy. The Imbo was home to the three largest stands of oil palms that the Germans had identified in the early twentieth century, and trade in palm kernels flourished, connecting people with markets at Ujiji and Usumbura, as well as with traders across the lake in the colonial Belgian Congo.⁵⁸³

The region's separateness from the cool central highlands combined with the German focus on this particular area's vulnerability to epidemic sleeping sickness suggests that, particularly for our purposes, Imbo history cannot be readily folded into a broader social and

⁵⁸⁰ Louis argues for a similar division of political power at the time, with Mutaga controlling the central highlands, but his rivals solidifying their independence in surrounding areas, and the Tanganyika littoral chiefs functioning as "semi-independent" and giving a "token submission" to the mwami. Louis, *Ruanda-Urundi*, p. 134.

⁵⁸¹ Marc Sommers, *Fear in Bongoland: Burundi Refugees in Urban Tanzania*, (New York: Berghahn Books, 2001), p. 54; Meyer, *Die Barundi*, p. 53.

⁵⁸² Meyer, *Die Barundi*, pp. 38-39, pp. 73-74.

⁵⁸³ Managing oil palm forests, particularly when they were found to harbor tsetse flies, became one of the most contentious aspects of the SKB's work, both in their dealings with the Urundi Resident and their efforts to control the agricultural lives of Rundi people on the Imbo. After the SKB doctor posted at Kiguena complained that movement to and through oil palm stands was hindering the campaign's work in a reported dated 4/25/1911, the Resident restricted trade and collection of palm kernels in a decree in 1911. Wittrock to Urundi Resident, 4/25/1911, BAB R 155F 81454; von Stegmann, "Bekanntmachung" (Usumbura), 5/2/1911, BAB R 1001 5907. Concern about the Mtara forest, near the northeastern edge of Lake Tanganyika, led the German East African governor, Rechenberg, to call for a commission to investigate in 1911, Rechenberg to Urundi Resident, 7/28/1911, BAB R 155F 81545. The Resident, the acting head of the SKB, Dr. Max Taute, and the chief medical officer of the Schutztruppe, Dr. Hugo Meixner, would ultimately comprise the desired commission; they did not tour the region until late spring 1914; Max Taute and Hugo Meixner, Report, 5/12/1914, BAB R 86 2632.

political history of Urundi at the time.⁵⁸⁴ As a peripheral area to centers of Rundi political power – in which colonial administrators and ethnographers were primarily interested – historical written studies on the region are limited. The reports of German doctors in the sleeping sickness camps scattered along the Tanganyika lakeshore provide a rich, if flawed, counterpoint to German administrators and travelers, and Francophone missionaries who produced anthropological and political studies of upland Rundi culture, politics, and society.⁵⁸⁵

The Imbo region takes on the greatest prominence in Burundian colonial history, however, with regard to sleeping sickness. It constituted the primary area of the epidemic's outbreak and was also the main area of colonial concern. Sleeping sickness had its greatest impact in colonial Burundi on people in Imbo. In areas along the Rusizi River and Tanganyika littoral, tsetse flies flourished. Here, Rundi communities lived alongside people who had emigrated from the Bwari peninsula and areas further west in the Belgian Congo. Some of these migrants arrived with both early and advanced-stage cases of sleeping sickness, in all age ranges of both genders. This was particularly true near Rumonge and Kigwena, towns opposite the Bwari peninsula, which jutted out toward the eastern shore to make one of the lake's narrowest points, where crossings were easier than elsewhere.

Despite the distance between lakeland Rundi and their upland countrymen, a common political structure prevailed, linking communities throughout the kingdom of Urundi to one another and to the mwami. Similarly to Kiziba and other Interlacustrine kingdoms, the mwami

⁵⁸⁴ The designation of "Imbo" has persisted as a cultural identity for people from the coastal lowland region near Lake Tanganyika among Burundian refugees in urban Tanzania. See Marc Sommers, *Fear in Bongoland*, pp. 53-56. This Imbo identity remains fraught in the context of ethnic conflict in Burundi since 1972, the consequences of which for internal tensions among Burundian Hutu refugees are explored in depth by Sommers.

⁵⁸⁵ White Fathers missionary J.M.M. van der Burgt produced a Kirundi-French dictionary, as well as an annotated dictionary with ethnographic information, that German administrators relied upon heavily. See J.M.M. van der Burgt, *Dictionnaire Français-Kirundi*, (Bois-le-Duc, Holland, Société "l'Illustration Catholique," 1903); van der Burgt, *Un Grand Peuple de l'Afrique Equatoriale: Éléments d'une Monographie sur l'Urundi et les Warundi*, (Bois-le-Duc, Holland, Société "l'Illustration Catholique," 1903); Hans Meyer, *Die Barundi: eine völkerkundliche Studie aus Deutsch-Ostafrika* (Leipzig: Otto Speyer, 1916).

traditionally held sway as an absolute ruler, controlling land, people, and, importantly, cattle.⁵⁸⁶ In 1908, when the sleeping sickness campaign began, Rundi politics were in turmoil in the wake of the death of Mwezi Kisabo, presenting a complex and diverse group of players and rivals for power in the kingdom.⁵⁸⁷ This tension meant that political relationships were shifting at the same time that the sleeping sickness campaign (SKB, after the German *Schlafkrankheitsbekämpfung*) began in the Imbo. The new, young mwami Mutaga IV and his regent attempted to rule a territory of some 28,000 square kilometers, unable to control fractious and powerful chiefs whose loyalty was essential to the kingdom's survival as one entity. Social and political structure within Rundi society functioned within a hierarchy of power linked to clan, lineage, and land. Power fell to "great chiefs," typically close relatives of the king who might also be clan elders, whose estates were dispersed parcels of land scattered around the

⁵⁸⁶ The pre-colonial, colonial, and ongoing importance of cattle husbandry for political, economic, and social life in the Great Lakes region is difficult to underestimate, though scholars continue to debate its chronology and its ethnic dimensions. Building on Herskovits' seminal 1926 articles on the "cattle complex," two strands of work on cattle and East African society have since emerged: one focusing on the Interlacustrine kingdoms and smaller chiefdoms of the Great Lakes region (western Uganda and Tanzania, Burundi, and Rwanda) and the other on transhumant societies on the savannah grasslands in modern Kenya and Tanzania. On the Interlacustrine kingdoms, see, for instance, David Schoenbrun's defining work on the pre-colonial period in regional and comparative perspective, *A Green Place, a Good Place*, and his articles "Cattle Herds and Banana Gardens: The Historical Geography of the Western Great Lakes Region, ca. A.D. 800-1500," *African Archaeological Review* 11 (1993), pp. 39-72; and "We Are What We Eat: Ancient Agriculture between the Great Lakes," *Journal of African History* 34, No. 1 (1993), pp. 1-31. As examples of histories at the level of kingdoms or subregions see Peter Robertshaw and David Taylor, "Climate Change and the Rise of Political Complexity in Western Uganda," *Journal of African History* 41, No. 1 (2000), pp. 1-28; Shane Doyle, *Crisis and Decline in Bunyoro: Population and Environment in western Uganda, 1860-1955* (Athens, OH: Ohio University Press, 2006); David Newbury, *The Land Beyond the Mists: essays on identity and authority in precolonial Congo and Rwanda*, (Athens: Ohio University Press, 2009). Key studies of pastoralist societies in the East African savannah include, among others, Bethwell A. Ogot, *History of the southern Luo* (Nairobi: East African Publishing House, 1967); Dorothy L. Hodgson, *Once Intrepid Warriors: gender, ethnicity, and the cultural politics of Maasai development*, (Bloomington: Indiana University Press, 2001); Thomas Spear and Richard Waller, eds., *Being Maasai: ethnicity & identity in East Africa*, (London: James Currey, 1993); Sharon Hutchinson, "The Cattle of Money and the Cattle of Girls among the Nuer, 1930-83," *American Ethnologist* 19, No. 2 (1992), pp. 294-316. David M. Anderson, "Cow power: livestock and the pastoralist in Africa," *African Affairs*, 92 (1993), pp. 121-33, provides a review of further literature on pastoralism, including Spear and Waller. Dorothy Hodgson's edited volume *Rethinking Pastoralism in Africa: Gender, Culture, and the Myth of the Patrilineal Pastoralist* (Oxford: James Currey, 2000) brings together studies from sub-Saharan Africa that address the importance of women's social, political, and economic roles in pastoralist societies.

⁵⁸⁷ William Roger Louis, *Ruanda-Urundi: 1884-1919*, (Oxford: Clarendon Press, 1963), pp. 128-139.

territory.⁵⁸⁸ Paralleling these clan elders were chiefs governing regions of the kingdom (which the Germans called provinces), which were then divided into chiefdoms ruled by *batwale*, subchiefs (sing. *watwale*). These titles and positions were heritable, but could also be conferred, along with land, at the king's discretion. Farmers gave tribute to chiefs and to the king in the form of first fruits.⁵⁸⁹ Patron-client relations between noble and peasant subjects and the mwami cohered around three "obligations": land, livestock, and war readiness. The result, interpreted by an early twentieth-century German official and amateur ethnographer, was an extensive system of patrons and clients centered on the control of people, land, and cattle:

These great feudal lords or great-batwale divide up their territory further among their followers into many small fiefs, who then divide these further, so that the entire country is covered by a giant net of lieges to the king.⁵⁹⁰

German ethnographer Hans Meyer's resort to a language of feudalism – casting Rundi political organization as a parallel to an antiquated, though familiar, European politics – captured colonial dismissiveness of the elaborate political and social structures that he and others confronted in the process of conquest and rule as outmoded and pre-modern.⁵⁹¹ Meyer also overdetermined the rigidity of political life.

Meyer's sense of a "giant net" of people connected to the king ruling a large territory is, however, apt. In the case of Imbo chiefs, men in power were connected to the king but lived at some distance at the highlands. Ndugu, a powerful chief near Rumangu with whom camp

⁵⁸⁸ Meyer, *Die Barundi*, p 88-90. Meyer's description of Rundi political organization in the early twentieth century bears similarities to the dispersed and connected clan sites and shrines discussed by Kodesh in *Beyond the Royal Gaze*. This suggests the profits of a de-centered analysis, not explicitly focused on the monarchy, of historical Rundi clan structure and their relation to governance, and perhaps healing, in pre-colonial Burundi.

⁵⁸⁹ van der Burgt, *Un Grand Peuple de l'Afrique Equatoriale*, p. 4.

⁵⁹⁰ Meyer, *Die Barundi*, p. 89. Original text: "Diese große Lehnsleute oder Groß-Batwale teilen ihr Gebiet wieder in viele kleineren Lehen an ihre Gefolgschaft auf, und diese wieder weiter, so daß das ganze Land von einem riesigen Netz von Lehnsleuten des Königs überzogen ist."

⁵⁹¹ Liisa Malkki addresses the context and ongoing debate over the characterization of Burundi as a feudal state in *Purity and Exile: Violence, Memory, and National Cosmology among Hutu Refugees in Tanzania* (Chicago: University of Chicago Press, 1995) pp. 20-30.

doctors negotiated directly, was the grandson of the recently-dead mwami Mwezi Kisabo.⁵⁹² The “giant net” provided model of centralized political authority with a wide reach that, in theory, served German aims at indirect rule well.⁵⁹³ But we can also take this dispersed net of patrons and clients to suggest that rulers at a distance from the court likely had a good deal of autonomy to engage with travelers, traders, and later the colonial officials who came into their territory. Politically, they functioned as “semi-independent chiefdoms” on the eve of colonization, a situation recognized by doctors staffing sleeping sickness camps in the Imbo after 1908.⁵⁹⁴ In 1911, for instance, the doctor leading the Kigwena camp requested that a representative of mwami Mutaga be sent down to the area to bring local rulers into line with the campaign’s needs; Kigwena itself lay at the outer southwestern limits of the mwami’s historical influence, and, arguably, was linked ever more loosely to traditional centers of royal power under Mutaga’s intrigue-filled reign.⁵⁹⁵ Even as he pressed for some political intervention, the doctor in question noted its likely futility, remarking that the people of the area “simply don’t know obedience.”⁵⁹⁶ The chief in question moved a second residence near to the camp in the coming months, which the camp doctor attributed to the influence of the Urundi Resident, but which could have meshed with seasonal mobility or a ritualized changing of the chief’s residence.⁵⁹⁷

The chiefdoms of the Urundi coast presented, then, a complex political and economic dynamic. Dispersed sources of political power among the Rundi population, a diverse and powerful community of traders connected with the western, Congolese shore of the lake, and

⁵⁹² Meyer, *Die Barundi*, pp. 171-72.

⁵⁹³ Chrétien, *The Great Lakes of Africa*, pp. 251-260; Louis, *Ruanda-Urundi*, p. 134.

⁵⁹⁴ René Lemarchand, *Burundi: Ethnocide as discourse and practice* (Cambridge University Press: Cambridge, 1994), p. 37.

⁵⁹⁵ Louis, *Ruanda-Urundi*, pp. 131-134.

⁵⁹⁶ Wittrock, report, 1/3/1911, BAB R 1001 5906.

⁵⁹⁷ Here, I take the mobility of royal residences in Kiziba as a point of context, per Weiss, *Sacred Trees*, pp. 42-43.

removal of some distance from the nearest district administrators and their supporting troops meant that camp doctors worked independently within economic, social, and political considerations that they often understood poorly. The campaign's expansion and contraction into and out of new camps and "flying" treatment stations made for a fluid cohort of personnel whose skills and experiences might differ greatly, though they worked at the same station in consecutive years. And unlike in Kiziba, the epidemiology of sleeping sickness in the area involved a constant influx of new potential cases from the Belgian Congo as well as undiscovered hot spots. These diverse human factors combined with a disease environment thick with tsetse flies and undetected cases to present a distinct set of challenges perceived by German colonial doctors directing anti-sleeping sickness measures. In negotiating with Rundi communities, particularly in making demands for laborers to clear roads, lakeshore, and river crossings of the bush that harbored tsetse flies, sleeping sickness camp doctors were forced to work within regulations on labor and taxes set out by the Urundi Resident at Usumbura. These administrative rules, when they conflicted with sleeping sickness work, could bolster a chief's claim that clearing work presented an additional and onerous burden on his subjects – by differentiating between the camp's demands and the Resident's demands, chiefs forced doctors and administrators to negotiate over whose claim on workers would take priority.

Politics and Sleeping Sickness in the Imbo

The Bukoba gland-feelers sent to survey villages for the sick were not subjects of the Rundi king, nor of the chiefs scattered throughout the Imbo. They did not fill a locally-grounded intermediary role that might have situated sleeping sickness prevention work between Rundi royal power, colonial authority, and everyday village life in the Imbo. Rather, they fit into the sleeping sickness campaign as an additional manifestation of German colonial intervention, as African men with special training and skills. Long-standing caravan routes connecting the Tanganyika and Victoria lakeshores point suggest that Haya men in Urundi (or vice versa) would not have been unfamiliar figures, particularly among those who made their

living as caravan porters or as traders. Kihaya and Kirundi may have been mutually intelligible languages among travelers in the early twentieth century.⁵⁹⁸ Native speakers of both languages were also likely familiar with Swahili, especially in communities along the both lakeshores, allowing another avenue for communication. Such considerations of linguistic familiarity or mutual intelligibility were likely a concern for German doctors as they arranged for Ziba auxiliaries to work in the Imbo region; this would have been bolstered by a racialized German belief that Ziba auxiliaries shared some fundamental cultural affinity with Rundi villagers. Some overlap between Kihaya and Kirundi certainly could have had a functional utility in enabling Ziba men to communicate with people as they searched through villages. But Ziba auxiliaries were still foreign, and, arriving under the auspices of the SKB and maintaining a close association with the Urambi camp, they could not have been considered “local” men.

At work in Urundi, Ziba auxiliaries’ political obligations lay with the German doctors directing the SKB. As such, they fit into a colonial political structure in Urundi that was organized around the system of the Residency (of which there were three, Urundi, Bukoba, and Rwanda). Following military defeat of Rundi troops, the Resident was based at Usumbura, which also served as the chief trading center of the northern end of Lake Tanganyika. The Residency was premised on an early idea of indirect rule and modeled after perceived British successes in Uganda, but also informed by a push for colonial reform in Germany that followed the Maji Maji rebellion.⁵⁹⁹ Rather than installing chiefs or overlords to attempt to collect taxes, direct labor, dictate agricultural production, and mandate punishments, the Urundi Residency instead sought to graft colonial power onto the Rundi political system. Ruling the territory through Rundi chiefs forced into this relationship by military defeat, the German administration aimed at civilian rule that would govern the kingdom cheaply and less disruptively than a continued military presence. The Residency generally was the most influential in the central

⁵⁹⁸ David Schoenbrun, *A Green Place*, pp. 22-23

⁵⁹⁹ Chrétien, *Great Lakes of Africa*, pp. 252-53; Louis, *Ruanda-Urundi*, pp. 128-30.

highlands, where the mwami's traditional power remained the strongest. While William Roger Louis argues that the semi-independence of Rundi chiefs in the Tanganyika valley allowed them to engage with the German Resident, citing their assistance with sleeping sickness as an example of this "direct" relationship, I would argue the converse.⁶⁰⁰ Sleeping sickness campaign projects triggered more direct engagement with the Resident and provided a focal point for Rundi and colonial administrative negotiations over labor, taxes, and political obligation. Campaign staff at the scattered camps – the majority of which were at least a day's march from the Usumbura or Ujiji stations – presented a regular and relatively permanent colonial presence otherwise lacking in the Tanganyika valley.⁶⁰¹

The German sleeping sickness campaign's territory in Urundi overlapped almost exactly with the rough boundaries of the Imbo. Within the bureaucratic organization of the sleeping sickness campaign, the region was designated "North Urundi" and divided into sub-districts named for the sleeping sickness camp location in each. Doctors also referred to their work at different camps on the "Urundi coast," which I will follow rather than "North Urundi," as the lakeshore is actually the furthest southwestern boundary of the historic and current

⁶⁰⁰ Louis, *Ruanda-Urundi*, p. 134.

⁶⁰¹ It is also important to note that the Residency and the SKB were not always in agreement. Conflict between the Resident and the SKB initially focused on the impact of examinations and internment on Rundi relations with colonial authorities, and, later, involved the overlapping demands of the Residency and SKB for laborers from the same chiefdom. Rundi villagers' work was, during the SKB, required by their own chiefs, the Residency, and the SKB for projects such as bush clearing, re-planting cleared areas, cultivating crops, and improving roads, paths, and landings. Early friction set the tone for relations between the SKB and the Resident. In early 1908, Resident von Grawert forced Usumbura camp doctor Friedrich Breuer to release people Breuer had interned and began to treat with atoxyl in the 3 months prior, arguing that the SKB's desired measures would make governing Urundi impossible; Von Grawert, via Keil, to DSM, 3/19/1908, BAB R 1001, 5897. The ensuing fracas drew in the government at Dar es Salaam, the SKB leadership, and the obstinate Tanganyika campaign coordinator Oskar Feldmann. Feldmann and von Grawert established an adversarial relationship between the SKB and residency that resolved only with von Grawert's replacement by Heinrich Fonck and Feldmann redirecting his energies nearer to Ujiji, at the opposite end of the Residency. In later years, camp doctors' claims on Rundi workers – typically tens of workers from individual chiefdoms on a monthly basis – drew protests from the chiefs and workers, who lodged their complaints with the Resident. While individual camp doctors had a good deal of discretion in how they managed and compensated clearing work, they also turned to the Resident when conflicts over work arose. Forced labor fit into the Residency's regime of tax collection, and both work and tax obligations were ultimately reconciled with SKB demands, such that work for a camp was recognized as laboring for the Residency. See Resident von Langenn, Draft of notice to all sleeping sickness camps, 6/4/1912, BAB R 155F 81454.

Burundian state. The Urundi coast camps, along with those along the Rusizi River, made up the Urundi section of the SKB's three divisions along the 400-mile shoreline of Lake Tanganyika, with Ujiji (the central lakeshore) and Bismarckburg (the southernmost lakeshore) comprising the remaining two.

The campaign on the Urundi coast bore some similarities to the initial campaigns at Lake Victoria in the areas near Shirati and Bukoba. Falling in line with the campaign's general goals, on the Urundi coast doctors once again sought to monitor and control people's movements in and out of the area, screening for symptoms of sleeping sickness; the sleeping sickness camp formed a hub for the coordination of three main tasks: surveying the population to identify the sick; administering 6-8 week regimens of atoxyl injections; and clearing vegetation from tsetse fly habitats in areas of high traffic or dense population.⁶⁰² To secure the participation of the surrounding African population, doctors provided "gifts" of fabric or seeds and offered cash premiums.⁶⁰³ They also occasionally worked with the district administration to arrange hut tax forgiveness or release from other work projects. Conversely, however, there

⁶⁰² Clearing of fly habitats was a major element of the sleeping sickness campaign at Tanganyika. While my emphasis here is on selected medical auxiliaries drawn from men surrounding traditional authorities, clearing work involved the labor of peasants. Sleeping sickness camp doctors, through Rundi chiefs and elders (as well as chiefs elsewhere in the campaign where tsetse flies presented a threat to local populations) demanded regular squads to clear bush from riverbanks and reeds from lakeshore landings, to plant replacement crops such as sweet potatoes and corn on the cleared land, and to clear perimeters around the camps and along major paths. Jean-Pierre Chrétien discusses German clearing work in the context of broader ecological crises in the Imbo region in *Burundi: l'histoire retrouvée*, pp. 143-50. Chrétien's analysis is based on oral histories conducted around Burambi, Buhonga, Rumonge, and Nyanza, as well as the same German archival material and printed ethnographies that I utilize. This "gigantic" work of *mutemo* ("cutting" or clearing out undergrowth) began at the end of the rainy season. Clearing work was contentious, not least of all because it fell more heavily on people living near the camps, who recognized the inequality of demands on their work when compared with villages at greater remove in the hills. Bwari migrants who had settled on the Imbo coast also protested being obliged to do "kazi ya malale" ("sleeping sickness work," in Swahili). Chrétien, focusing on clearing work, does not address the extent to which the requirement for atoxyl regimens played into this protest, a point that I hope to address in my ongoing research.

⁶⁰³ In 1908, Fonck, the new Resident for Urundi, discusses loaning a government cow to chiefs whose assistance was needed with clearing work, calves from which they could keep; Fonck, Report, 11/1/1908, BAB R 1001, 5899. A broad policy of giving cattle gifts was being used generally at Lake Tanganyika in 1909, according to a policy meeting in Berlin; "Sitzung des Reichs-Gesundheitsrats (Unterausschuß für Schlafkrankheit)," 4/5/1909, BAB R 1001 5876, p. 13. I have found mention of nominal "gifts" to individual workers following clearing work in Feldmann, Report dated 9/26/1908, BAB R 1001 5899 and Wittrock, Report, 2/6/1911, BAB R 1001, 5906. Chrétien focuses his analysis on the gifting of a given number of cattle to chiefs who provided workers for the camp. For Rumonge and Burambi (Urambi), the ratio of workers per cow gifted was roughly 17:1; Chrétien, *Burundi: l'histoire retrouvée*, p. 143.

were also a myriad of negative consequences for refusal: threat of individual violence, destruction of property and burning down huts, imposing fines, flogging, or imprisonment.⁶⁰⁴ The colonial government set out a plan for the implementation of camps that recommended situating camps in proximity to colonial stations and stressed cooperation between district administrators and campaign doctors.⁶⁰⁵ But this was not always a realistic strategy. The Urundi coast was a vastly larger field of activity than either site on Lake Victoria, with administrators and their supporting askari located at either end of the 150-mile Urundi coast at Ujiji and Usumbura. In terms of territory and population, the Tanganyika campaign was a much larger enterprise than the Victoria campaign: each individual camp and its environs compared roughly to the camp at Kigarama, which had been the chief camp for the entire Bukoba residency, for instance. Without direct mediation by colonial authorities locally – absent, in effect, an established relationship between the German administrator and the chief who ruled the camp’s immediate vicinity in the Imbo – engaging with Rundi authorities nearby the camps remained priority. Giving of cattle gifts, discussed in depth by Chrétien, was the main mode of engagement.⁶⁰⁶

In 1909, the Tanganyika campaign had begun to evolve two distinctive foci: the Rusizi River and its tributaries, coordinated by Friedrich Breuer from Usumbura and new posts further north in the river valley, and the Urundi coast, led by Oskar Feldmann from Niansa, and including camps on the lake at Kiguena, Rumonge, and Urambi.⁶⁰⁷ Late in 1908, German colonial officers estimated that inhabitants of the area around the village of Urambi already suffered from a high rate of infection with sleeping sickness – one doctor judged 60-75% of the population to be sick and argued that the toll of the sick and dead in certain areas on the

⁶⁰⁴ Vorwerk, Report, 5/28/1912, BAB R 155F 81454.

⁶⁰⁵ Letter from Winterfeld to Feldmann in Ujiji and Kudicke in Kigarama, 11/25/1907, BAB, R 1001, 5896.

⁶⁰⁶ Chrétien, *Burundi: l’histoire retrouvée* (1993).

⁶⁰⁷ Feldmann, Report, 5/20/1908, BAB R 1001, 5898.

Tanganyika lakeshore was on par with mortality on the Sesse Islands and Buganda.⁶⁰⁸ The Rusizi Valley and Urundi Coast would ultimately be the campaign's main "districts." The following year, another camp at Rumangu would open under newly-commandeered doctor Walter Fischer, followed by one more at Migera in 1911. These six posts, now spaced roughly equidistantly on the lakeshore between Ujiji and Usumbura, were connected by boat travel and footpaths. Clearing work and searching for the sick developed a pattern following the onset and ebb of seasonal rains. This also allowed camp doctors to shift how they deployed their own energies and the energies of those whose labor they demanded, according to staffing shortages, planting and harvest times, and expansion into new areas.

Ziba Auxiliaries at Urambi

Ziba gland-feelers arrived in 1911 in the midst of the sleeping sickness campaign in progress. The campaign was coordinated by Dr. Oskar Feldmann, whose various tours in East Africa since 1901 had involved service as the Ujiji, Bukoba, and then Mwanza station doctor, and as an assistant on Robert Koch's research expedition in 1906-07 before the sleeping sickness campaign sent him to establish a research base and prevention plan on the Tanganyika coast. They landed at Urambi (now Burambi), where an open sleeping sickness camp had been built near a Rundi village in January 1909.⁶⁰⁹ The "open" Urambi camp's focus on ambulatory dosage with atoxyl contrasted with the two closed isolation camps at Ujiji and Usumbura, and its twinned priorities were the identification of the sick and their integration in the camp's treatment regime, and the organization of bush clearing work. As a policy, mass treatment with atoxyl now aimed to lower the parasites in a person's peripheral bloodstream, not to ultimately cure them of sleeping sickness. Lowering the concentration of parasites would

⁶⁰⁸ Oskar Feldmann, "Bericht über die erste Bereisung der inficierten Urundiküste von Kap Magalla bis Niansa," 7/12/1908, BAB R 1001 5898. Original text: "Wenn sie durchaus sterben wollen, so sei das ihre Sache."

⁶⁰⁹ Friedrich Breuer, Report from Ujiji, 10/10/1909, BAB R 1001 5903.

lessen the chance that, if an individual had trypanosomes in his or her blood, a tsetse fly would take up the parasites in a bite – of paramount importance in an area with dense pockets of population that overlapped with tsetse fly habitats. Mass “atoxylization” and clearing of tsetse flies were the campaign’s only realistic measures to arrest the epidemic on the Urundi coast.

In 1909, German doctors had recruited “respected local men” whom they called “searchers for the sick” to work as auxiliaries near the camp, much as the Ziba gland-feelers had been in Kiziba. A system of incentives was also implemented at Urambi, offering cash premiums per positive case identified, and gifts of cloth to people upon their admission to treatment with atoxyl.⁶¹⁰ These “Krankensucher” were analogous to the Ziba gland-feelers, trained in basic gland palpation and working among their own communities. There may have been overlap between the “Krankensucher” and another group of men, whom German doctors referred to as “waniampara” (from the Swahili *wanyampara*, sing. *nyampara*, caravan leader).⁶¹¹ Doctors at Urambi also hired “wanyampara” to assist with searching for sick people in outlying villages and farms. These men, likely village elders, lived near the camp with their own families and were responsible for rallying a group of people for regular treatments with atoxyl.⁶¹² They functioned as representatives of local chiefs at the camp:

Each chief has supplied a nyampara, who lives near the camp with this family. These wanyampara (13 in Urambi) oversee the ambulatory patients and are required to bring

⁶¹⁰ Breuer, Report from Ujiji, 10/10/1909, BAB R 1001 5903, p. 2.

⁶¹¹ In the process of choosing titles to categorize their interlocutors, these doctors used the general title “wanyampara” to refer to village elders involved in interactions between the sleeping sickness campaign and Rundi villages. This choice presents its own historical puzzle, as *wanyampara* is a Swahili word that, at the time, referred most often to a caravan leaders or headmen; along the caravan route from Lake Tanganyika to the Indian Ocean; along the caravan route from Lake Tanganyika to the Indian Ocean, *wanyampara* was linked to the word for “grandfathers.” Stephen J. Rockel, *Carriers of Culture*, pp. 72-73. Walter Fischer, in his memoir *Unter der Geißel der Schlafkrankheit* (Berlin: Weller Verlag, 1938), used “wanyampara” to refer to caravan leaders (p. 14), but never, in his colonial reports, to refer to local village elders. Fischer had studied Swahili in Berlin before his tour in East Africa, according to his memoir. On the promotion of Swahili as a colonial language in eastern Congo see Johannes Fabian, *Language and Colonial Power: the appropriation of Swahili in the former Belgian Congo, 1880-1938* (Berkeley: University of California Press, 1986). Fabian notes the exclusive promotion of the language in German colonies, p. 16. See also Marcia Wright, “Swahili Language Policy, 1980-1940,” *Swahili* 35 (1965), pp. 40-8.

⁶¹² Feldmann, “Vierteljahresbericht,” 7/1/1909, BAB R 1001, 5902, p. 2.

them regularly twice per month to treatment, after they have collected the people in the chiefdoms by sounding the drum.⁶¹³

Monthly wages paid to wanyampara by the camp fluctuated between 3 and 10 rupees, and varied by the number of cases a nyampara supervised; Feldmann noted that “whoever keeps his patients together the best and brings in the most new cases, receives the highest pay.”⁶¹⁴ Incentives for individual patients and their families paralleled the wages and premiums offered to Rundi auxiliaries. In addition to the variable monthly wage, an auxiliary received 25 Heller (1/4 rupee) for each new sick person, but any other person bringing in someone sick could also earn this additional premium. Whether Krankensucher and wanyampara were overlapping or mutually exclusive groups is unclear, but their work in seeking and delivering the sick was credited as the reason for a surge in people in treatment by June 1909.

This spike in new cases alarmed officials in Dar es Salaam, who saw in the uptick in cases – from a few dozen in early 1909 to 315 in the month of May alone – evidence of a burgeoning epidemic on the Tanganyika shore.⁶¹⁵ But, when a change in the camp supervisor brought a change in tactics – the withdrawal of Krankensucher and wanyampara and, later, the reinstatement of a campaign of mass atoxylization – the number of cases in treatment declined precipitously.⁶¹⁶ Reading these statistics, the wild swing in the number of cases throughout the

⁶¹³ Feldmann, “Vierteljahresbericht,” 7/1/1909, BAB R 1001, 5902, p. 2. Original text: “Jeder Häuptling hat einen Mniampara zur Verfügung gestellt, der mit seiner Familie beim Lager wohnt. Diese Waniampara (in Urambi 13) haben die Aufsicht über die ambulanten Kranken und sind verpflichtet diese regelmässig 2mal [sic] im Monat zur Behandlung vorzuführen, nachdem sie die Leute durch Gomaschlagen in den Watualeschaften gesammelt haben.” Feldmann’s conspicuous reference to “the sounding of the drum” as a means for wanyampara to gather the surrounding population indicates that these men were in close proximity to royal or chiefly power, of which the drum was a constitutive element. Schoenbrun notes that historically, in Great Lakes societies, “communities saw in the drum not only a potent part of healing practice but also a concrete symbol of leadership,” *A Green Place*, p. 106.

⁶¹⁴ Feldmann, *ibid.*, p. 3. Original text: “Wer seine Kranken am besten zusammenhält und am meisten neue Kranken zuführt, erhält den höchsten Lohn.”

⁶¹⁵ Feldmann, “Nachweisung über die kranken Europäer und Farbigen der Expedition zur Bekämpfung der Schlafkrankheit am Tanganika, Monat vom 1 Juni 1909 bis 30 Juni 1909,” 7/1/1909, BAB R 1001 5902.

⁶¹⁶ In the last quarter of 1909: 17 new patients were taken in for ambulatory regimens of atoxyl injections between October 1 and December 31, compared with 63 in the month of August alone. Charts for Urambi dated 8/18/1909, 9/25/1909, BAB R 1001, 5902, and 10/2/1909, 11/5/1909, and 1/1/1910, BAB R 1001 5903.

year suggests a deep problem in the interactions between camp doctors and the people they sought to treat, as well as with the political leaders that doctors had hoped to co-opt. The inconsistent use of the system of paying auxiliaries from Rundi villages and offering incentives of cash and cloth for people to come to the camp had dire consequences for the camp:

The lesser number of admissions in the report quarter is primarily explained by the discontinuance of premiums for voluntary sleeping sickness patients, as well as the abandonment of special gland-feelers responsible for the seeking out and bringing in of patients. With this, the incentive to bring themselves into treatment falls away for the sick of the Warundi population, who are generally exceedingly apathetic, especially in light of the ever-increasing number of less sick among them in the territory of the campaign district, who for the most part, in the absence of major ailment, still lack understanding of the worth of an early treatment, for the most part.⁶¹⁷

Over the coming six months, efforts to attract and retain people at the Urambi camp appeared to fail almost completely, yielding neither well-attended injection days nor regular numbers of new cases. Attendant to encouraging the first appearance of a patient in the camp's rolls was the problem of retention. The decline in new cases and withdrawal of others from the camp led the doctor supervising Urambi to a change in strategy. Sometime between July and September of 1910, Wittrock stopped providing cash payments for the wanyampara for the groups of people they brought in, instead paying 5-8 Heller directly to people who came in for treatment.⁶¹⁸ Previously, he had offered 25 Heller per person after completion of a months-long course of treatment, but now the incentive was more remunerative and more direct.⁶¹⁹ The decline in the number of people counted could not be due to them being released as "healed," given the protracted regimen of injections. The steep decline from one month to the next showed the

⁶¹⁷ Friedrich Breuer, "Bericht über die Fortschritte der Schlafkrankheitsbekämpfung im Bekämpfungsbezirk Nord-Urundiküste/Kanigifluß bis Lusambifluß/ in der Zeit vom 1. Oktober bis 31. Dezember 1909," 1/1/1910, BAB R 1001, 5904, p. 1-2. Original text: "Die geringe Anzahl von Zugängen im Berichtsvierteljahr erklärt sich hauptsächlich aus dem Fortfall von Prämien für freiwillige Stellung von Schlafkranken, sowie der Abschaffung von besonderen mit dem Aufsuchen und Herbeischaffen von Kranken betrauten Drüsenfühlern. Damit fiel für die Kranken der an und für sich äußerst gleichgültigen Warundibevölkerung der Anreiz sich in Behandlung zu begeben fort, besonders für die immerhin noch erhebliche Anzahl von Leichtkranken in den Landschaften des Bekämpfungsbezirkes, denen bei dem Fehlen größerer Beschwerden doch meistens das Verständnis für den Wert einer Frühbehandlung nach wie vor mangelt."

⁶¹⁸ Wittrock, Report, 10/5/1910, BAB R 1001, 5905. PAGE

⁶¹⁹ Wittrock, "Vierteljahresbericht," 7/3/1910, BAB R 1001 5905.

camps consistently losing patients and represented a conscious choice by the Rundi population to withdraw from the camp and its regimen of injections.

The possibilities for withdrawing from the camp were soon made more difficult, as more coercive and aggressive measures followed the arrival of Oskar Feldmann as supervising doctor. Feldmann initially advocated an oblique “certain pressure” to convince Africans to comply with camp discipline during his work at Niansa in 1908, when he served as the Tanganyika campaign’s first coordinator.⁶²⁰ Now, in late 1910, he cycled briefly through Urambi to replace a doctor released on furlough and reinstated his own “trusted system.” Feldmann’s system entailed rounding up large numbers of suspicious cases and treating all of them with atoxyl without confirming their infection through an examination of blood or lymph. He abjured the “protracted blood examinations” that provided confirmation of sleeping sickness, claiming they were impossible to conduct.⁶²¹ This system did not exclude a reliance on wanyampara’s work to gather up people from their villages, and Feldmann emphasized that he continued to give gifts of cattle to local chiefs. Feldmann’s method of bringing in large numbers of suspected cases and seeking to treat them en masse – whether with the assistance of auxiliaries or not – resulted in a six-fold increase in new cases admitted, up from 65 to 285 per month in the space of three months.⁶²²

⁶²⁰ Feldmann outlined a plan for the Tanganyika campaign in a report dated 5/20/1908, noting “The black must be brought around to a certain endpoint through a gentle force, his absence of will helped along by an order, a “power of government.” When he sees that that his internment occurs by order of the administration, he will soon feel quite comfortable in the camp with all the comforts afforded to him – ample sustenance, clothing as well as a little beer and tobacco – that will furnish him with the carefree life suited to his constitution.” Original text: “Der Neger muss aber einen gewissen toten Punkt durch einen gelinden Zwang hinweggebracht werden, seiner Entschlussunfähigkeit muss ein Befehl, ein amri ya Serkali, nachhelfen. Wenn er sieht, dass seine Internierung auf Befehl der Regierung erfolgt, wird er sich bald im Lager bei den ihm gebotenen Bequemlichkeiten, reichlich Verpflegung, Bekleidung, auch etwas Pombe und Tabak, die ihm ein seiner Veranlagung nach sehr zusagendes sorgloses Leben gewährleisten, ganz wohl fühlen.” BAB R 1001, 5898, p. 12. This preceded, and may have triggered, Friedrich Kleine’s directive dated 8/30/1908 that no force should be used in compelling people to live at sleeping sickness camps, see Kleine, Report, 8/30/1908, BAB R 1001, 5898.

⁶²¹ Feldmann, Report, 1/3/1911, BAB R 1001, 5906, p. 5.

⁶²² See Wittrock, Report, 10/5/1910, BAB R 1001, 5905 and Feldmann, Report, 1/3/11, BAB R 1001, 5906.

A wide range of symptoms and physical signs could have led to Feldmann identifying a Rundi villager as a suspicious case. But his blithe rejection of microscopic confirmation of an infection meant that no process of screening or examination came between his determination that a person could be sick and the beginning of a treatment with atoxyl. Effectively, all suspicious cases became admitted patients, making a sharp spike in numbers a foregone conclusion. Microscopic confirmation of a trypanosomal infection was difficult, as Feldmann himself well knew from his conflict with Koch at Mwanza in 1906. But, given that admission to the camp meant the start of a long course of injections with atoxyl, the SKB still held to recommending that physical symptoms of sleeping sickness should be followed with a confirmed identification of trypanosomes in a person's bloodstream. This allowed the examining doctor to rule out other diseases that might manifest similarly to sleeping sickness – in the Imbo, malaria and filariasis as well as syphilis were a concern. Feldmann's methods did not persist after his departure. His successor at Urambi, Bruno Eckard, noted that "the diagnosis of trypanosomiasis was confirmed microscopically, in 71 of 78 admissions" for the second quarter of 1911; only a small minority with "typical" swelling were admitted without it.⁶²³ Eckard also reinstated paying an 8 Heller premium per person at each double-injection (on consecutive days) with atoxyl.

But, under Eckard's supervision, the number of new cases ebbed once again within a further six months. In July 1911, "Bukoba boys" – Ziba gland-feelers – came to Urambi.⁶²⁴ Eckard's use of "boy" to describe African subordinates was an import from widespread British colonial language, and served to differentiate this group of men from other gland-feelers or auxiliaries at work in the Urambi area.⁶²⁵ It stands out in comparison to other titles, which were

⁶²³ Bruno Eckard, "Vierteljahresbericht über die Schlafkrankheitsbekämpfung an der Nordurundiküste," 7/1/1911, BAB R 1001 5907, p. 2. Original text: "In Urambi wurde bei möglichst allen Kranken, von 78 Zugängen bei 71, die Diagnose Trypanosomiasis mikroskopisch bestätigt."

⁶²⁴ Bruno Eckard, "Vierteljahresbericht über die Schlafkrankheitsbekämpfung an der Urundiküste," 10/1/1911, BAB R 1001 5908, p. 2-3.

⁶²⁵ German doctors always linked "Bukoba boys" to the work of gland palpation in their reports, which I take to mean that their work was limited to sleeping sickness-related tasks and not other forms of service.

generally descriptive of a person's work: Drüsenfühler (gland-feelers), Fliegenfänger (fly-catchers), or Krankenwärter (patient attendants). They arrived on the heels of strategies that had worked in Kiziba, including the employment and training of "Krankensuchern," a group of men whose skill set and social esteem should have mirrored their own.

What could auxiliaries from Bukoba do that locally-trained men could not? Eckard offered a clue in noting that they made possible the "systematic searching" of the area for people with sleeping sickness – contrasting with years prior, when Rundi wanyampara gathered people from their own villages and local "searchers for the sick" made their circuits through the population. Unlike Rundi auxiliaries, Ziba gland-feelers had no social or political obligations or responsibilities apart from their work surveying the population; they could be "systematic" and perhaps dispassionate in identifying people upon whom the camp's energies would focus.

The Bukoba auxiliaries were sent out with a village elder from the respective chiefdom they were to search, and an askari, a colonial soldier. This grouping suggests that Eckard wanted a combination of expertises in play as villages were searched. A nyampara would have ensured communication and likely acted as a local guide, though would not necessarily have been personally familiar with each person examined; the askari signaled the coercive force of the colonial administration, whether he was a camp "policeman" or a member of the company of troops based at Usumbura. The "Bukoba boy" in the group, then, provided a different kind

Jeremy Rich notes "the English word "boy," used all over Africa and the American South to describe black males of any age, became a part of the colonial African French lexicon," and we can extend this to include the colonial German lexicon as well. See Rich, "Searching for Success: Boys, Family Aspirations, and Opportunities in Gabon, ca. 1900-1940," *Journal of Family History* 35, no. 1 (2010), p. 9. Bukoba gland-feelers' histories fit into a growing literature that considers colonial labor regimes, childhood, and discourses of race, childhood or youthhood, and gender together. See, for example, William B. Cohen, "The Colonized as Child: British and French Colonial Rule," *African Historical Studies* 3, No. 2 (1970), pp. 427-431; Karen Tranberg Hansen, "Household Work as a Man's Job: Sex and Gender in Domestic Service in Zambia," *Anthropology Today* 2, No. 3 (1986), pp. 18-23; Lisa McNee, "The Languages of Childhood: The Discursive Construction of Childhood and Colonial Policy in French West Africa," *African Studies Quarterly* 7, No. 4 (2004), www.africa.ufl.edu/asq/v7/v7i4a2.htm, pp. 20-32; Paul Ocobock, "Coming of Age in a Colony: Youthhood, Lawlessness, and Colonial Authority in Kenya, 1898-1963," Unpublished PhD dissertation, Princeton University, 2010. On "boys" as missionaries' house, garden, and surgery servants in Congo, see Nancy Rose Hunt, *Colonial Lexicon*, pp. 125-130.

of expertise, based on his experience with sleeping sickness cases and his familiarity with the kinds of information that camp doctors also wanted on the age, sex, household size, and provenance of suspected cases. Ziba gland-feelers were paid a wage for their work, though the system of offering a premium to them for each positive case identified, as had been done in the past in Kiziba, was later suggested as a possibility.⁶²⁶

While representatives of local and military authority accompanied them, Ziba gland-feelers alone drew Eckard's praise. In the first quarter they worked in the Urambi area, Ziba auxiliaries brought 196 new cases to the Urambi camp; the following quarter, a further 282 new cases came to the camp and were given atoxyl injections. Eckard commented simply that "searching of the Urambi district for people with sleeping sickness with gland-feelers has further proved itself quite good."⁶²⁷ They remained a necessity, as German doctors still could not go into outlying villages without triggering mass flight. In 1911, Eckard reported the Colonial Office's senior medical officer that "even now it happens, that in remote mountain villages the inhabitants flee from [him], and this was earlier the norm near the camp."⁶²⁸ African auxiliaries would counter that response, getting close enough to people in outlying villages, hopefully, to examine them for sleeping sickness.

Because tsetse flies were abundant on the flatlands of the Tanganyika coast, sleeping sickness was not limited to travelers or migrants who had been where the disease was prevalent, as was the case in Kiziba with respect to the Sesse Islands and Buganda. In that case, people in particular occupations (rubber collecting or fishing, for example) or who were recent travelers came under the scrutiny of doctors from the Kigarama camp, and later the gland-feelers they deployed. In the Imbo region, such distinctions according to occupation or gender

⁶²⁶ Bruno Eckard, *Vierteljahresbericht über die Schlafkrankheitsbekämpfung an der Nord-Urundiküste*, 4/1/1912, BAB R 1001 5908, p. 2.

⁶²⁷ Eckard, "Vierteljahresbericht über die Schlafkrankheitsbekämpfung an der Urundiküste," 1/1/1912, BAB R 1001 5908, p. 2. Original text: "Das Absuchen des Urambi-Bezirks nach Schlafkranken durch Drüsenfühler hat sich weiter recht gut bewährt."

⁶²⁸ Emil Steudel, "Auszug...", BAB R 1001 5892, p. 31.

were not useful – a fly carrier could bite men, women, and children as they went about everyday activities such as collecting water, tending crops, or fishing. The nature of the epidemic, according to German doctors, somehow led to a different manifestation of individual symptoms than they had come to rely on – every case did not have the characteristic, large swollen lymph glands on the back of the neck. This condition of the epidemic in the area also affected gland-feelers' work. Eckard reported that the gland-feeler already at work "had to search diligently to find the sick," because people with advanced stages of the disease and "large, thick glands" were found only rarely.⁶²⁹ Uncertainty over how doctors (and auxiliaries) could recognize the sick persisted throughout the campaign, even as swollen glands continued to be taken as a sign of potential infection. This was not a matter of training or expertise, of European or African skill sets, but rather a matter inherent to the ongoing accumulation of information about sleeping sickness, and the development of a scientific consensus about its attributes as a disease. Gland-feelers and doctors alike operated in a field where ideas and practices were in flux.

Early in 1912, Eckard noted that several more "boys" from the Bukoba district had been requested to work as gland-feelers at Urambi.⁶³⁰ Eckard's promotion of bringing in further auxiliaries indicates that doctors came to place a priority on experience and reliable skills over familiarity with a specific area, language, or political situation. Reports do not indicate that there was any dearth of potential auxiliaries from Urambi; indeed, at least one "Krankensucher" from the surrounding population had been employed in the camp's outlying area for some time. But the Bukoba auxiliaries emerged as distinctively successful, again – auxiliaries at work at Urambi found, by the following quarter, more suspected cases of sleeping sickness in their

⁶²⁹ Bruno Eckard, Vierteljahresbericht über die Schlafkrankheitsbekämpfung an der Nord-Urundiküste," 4/1/1912, BAB R 1001 5908, p. 2. Original text: "Der Drüsenfühler muss fleissig suchen um Kranken zu finden. Leute mit grossen, dicken Drüsenpaketen, also solche im vorgeschrittenen Stadium der Krankheit, wurden nur noch selten gebracht."

⁶³⁰ Bruno Eckard, Vierteljahresbericht über die Schlafkrankheitsbekämpfung an der Nord-Urundiküste," 4/1/1912, BAB R 1001 5908, p. 2. Original text: "Geht die Zahl dieser Schlafkranker weiter zurück, so ist für das Auffindung von Kranken eine Prämie in Aussicht genommen. Ausserdem sind noch einige Boys als Drüsenfühler aus dem Bukoba-Bezirk erbeten worden."

searches than among travelers through the area who were examined.⁶³¹ Within the following three months, further:

Patient admissions stayed approximately at the same level as in the past quarter and will presumably, with expanded searching, stay as high for a further period of time. The gland-feelers transferred here from Bukoba are proving good and are dealing with the local population without difficulties.⁶³²

What sense we have of the potential problems that gland-feelers might cause in a community, based on their work in Kiziba, does not surface similarly in colonial reports from Lake Tanganyika. Because clearing work and the campaign's demands for labor were a point of such contention in Imbo villages and chiefdoms, any disruption that gland-feelers' work caused may have seemed a less important issue not meriting mention in doctor's reports. Another serious issue dominating reports contemporary to the deployment of Bukoba auxiliaries in Urambi was equally fundamental to the campaign's tactics – the very drug regimens in the sleeping sickness camp, which represented the end that gland-feelers' work of searching for the sick served.

Experimental Therapies

Ziba auxiliaries arrived in a situation in coastal Urundi that was, in some ways, very similar to one they had left behind in coastal Buhaya. After several years of using atoxyl to treat sleeping sickness, it and other, new experimental drugs began to hinder rather than aid the SKB's goals. The problem, identified by Dr. Otto Wittrock, newly stationed at Urambi, revolved around the drugs themselves – established drug regimens required too much of patients, did not cure them, and newly introduced drugs were more toxic than the already-problematic atoxyl.⁶³³ The standard regimen for atoxyl developed by Robert Koch required patients to

⁶³¹ Otto Wittrock, "Vierteljahresbericht über die Schlafkrankheitsbekämpfung an der Urundiküste," 7/1/1912, BAB R 1001 5909, p. 2.

⁶³² Otto Wittrock, "Vierteljahresbericht über die Schlafkrankheitsbekämpfung an der Urundiküste," 10/1/1912, BAB R 1001 5910, p. 2. Original text: "Der Krankenzugang hielt sich ungefähr auf gleicher Höhe wie im verflossenen Vierteljahr und wird vermutlich bei ausgedehntem Suchen auch noch längere Zeit gleich hoch bleiben. Die aus Bukoba hierher übernommenen Drüsenfühler bewähren sich gut und werden mit der hiesigen Bevölkerung ohne Schwierigkeiten fertig."

⁶³³ Wittrock took up supervision of Urambi in January 1910. Wittrock, 1/24/1910, BAB R 155F 81454. On injections with atoxyl, see Wittrock, "Vierteljahresbericht," 7/3/1910, BAB R 1001 5905.

receive two double injections on consecutive days at 10-14 day intervals for a total of eight visits. After completing the round of injections, a person was “released” from treatment, a designation important for German colonial record keeping, but with little practical importance. Atoxyl could potentially suppress a resurgence of fever or acute symptoms of sleeping sickness, and did decrease the concentration of parasites in a person’s bloodstream, but being thusly “released” gave no promise of long-term protection against the disease. Indeed, the primary purpose of atoxyl regimens at this stage was not curative, but rather was intended to bring down parasitemia and attempt to slow the disease’s spread in the population at large.

Doctors continued to treat both initial and severe cases of sleeping sickness with atoxyl, sometimes to the detriment of a person’s health; particularly in advanced cases, atoxyl injections appeared to precipitate a decline into greater weakness and wasting. This led a patient’s relatives or caretakers to associate continued adherence to the proscribed atoxyl regimen with declining health -- to reject injections and the camp. Outright refusal to continue the atoxyl regimen was couched by doctors as patients “removing themselves from treatment” and, as I have discussed in Kigarama, is visible through the slow but steady trickle of people out of treatment or their absence from the next time they were due at the camp for an injection. Amid the controversy over ebbing and increasing numbers of cases at Urambi in 1910, an interim doctor cited another problem that did not show up in camp statistics – that people in early and intermediate stages of the disease remained undetected in the villages. This linked to assessments of Rundi auxiliaries’ work in searching for the sick, and may have influenced the subsequent decision to bring in Ziba auxiliaries. Less important than the problem of compliance with atoxyl regimens or retention in a course of treatment, perceived here as part and parcel of the campaign, was the reason why people stayed away from the camp.

Believing that many undetected cases remained from what he himself had “seen and heard on occasional visits to the villages,” Dr. Otto Wittrock noted that:

...this is indicated by the circumstance that, time and again during monitoring of travelers a not inconsequential percent of people will be stopped, who sick, but still not having been treated, are not counted at all in the number of those who fearfully seek to

avoid every meeting with a European, only because of their fear of the “schindano,” that is, an injection.⁶³⁴

It was not, then, due to a lack of cases, but also due to a purposeful and cautious avoidance of treatment, that camp intake statistics shifted. This in itself is hardly an acute observation. What is interesting is that Wittrock’s mention of “fear of the ‘schindano,’” (from sindano, the Swahili word meaning, variously, needle, injection, or hypodermic syringe) came at a time when experimental drugs were being rolled out in a number of sleeping sickness camps.⁶³⁵

Having acknowledged atoxyl’s flaws, chiefly that it did not offer a durable cure for sleeping sickness, scientists in Europe were at work developing new drugs.⁶³⁶ European colonies with endemic and epidemic sleeping sickness were their testing ground for use of these drugs in human bodies. Use of arsenophenylglycin, also an arsenic-derived substance, began at Utegi on the eastern shore of Lake Victoria in late 1909.⁶³⁷ Wittrock introduced it into the regimen of the Urambi and Rumonge camps in the summer or fall of 1910, as part of a broader attempt to test its efficacy against trypanosomes; it was attractive because it seemed to require fewer injections to kill trypanosomes. Wittrock himself had misgivings about the drug in short order. In October 1910, three of his test patients died after being treated with the drug – the

⁶³⁴ Wittrock, “Vierteljahresbericht,” 7/3/1910, BAB R 1001 5905. Original text: “Dafür spricht schon der Umstand, dass bei der Reisekontrolle immer wieder ein nicht unbeleutender [sic] Prozentsatz von Leuten angehalten werden muss, welche krank, aber noch nicht behandelt worden sind, garnicht der Zahl derer zurechnen, welche ängstlich jedes Zusammentreffen mit dem Europäer zu vermeiden such, allein schon aus Angst vor der “schindano,” d.h. Injection.”

⁶³⁵ On the history of needles and injections in Tanzania, see Malloy, “Holding [Tanganyika] by the Sindano,” specifically chapter 3, “Dawa ya Sindano’: Towards a Genealogy of the Needle,” pp. 104-163. Malloy discusses atoxyl, pp. 131-34, but does not touch on arsenophenylglycin.

⁶³⁶ Deborah Neill’s work also addresses development and testing of new sleeping sickness drugs in Europe and in African colonies. See Neill, “Paul Ehrlich’s Colonial Connections: Scientific Networks and Sleeping Sickness Drug Therapy Research, 1900-1914,” *Social History of Medicine* vol. 22, no. 1, pp. 61-78 and her forthcoming monograph *Networks in Tropical Medicine: Internationalism, Colonialism, and the Rise of a Medical Specialty, 1890-1930*. For a broad and specifically German context, see Wolfgang U. Eckart and Andreas J. Reuland, “First Principles: Julius Moses and Medical Experimentation in the Late Weimar Republic,” in Eckart, ed., *Man, Medicine, and the State* (Stuttgart: Steiner Verlag, 2006), pp. 35-48.

⁶³⁷ Scherschmidt, Reports dated 1/4/1910 and 2/15/1910, BAB R 1001, 5904. Eckart’s “The Colony as Laboratory” discusses Scherschmidt’s work in detail, pp. 76-77.

only deaths in the camps at Urambi and Rumonge that quarter.⁶³⁸ He then reported to his superiors in Dar es Salaam:

I reported to the leader of the sleeping sickness campaign that, based on my experiences, I believe it would be irresponsible for me to proceed any further with the experiments with arsenophenyglycin, particularly because the population has already become mistrustful of this drug, by whose different method of application they identify it. The provisional suspension of the research has been approved by me.⁶³⁹

Wittrock's comment suggests that avoiding admission to the camp was not simply a matter of fearing injections, but of avoiding a particular injection with a particular drug. Not being certain of the details of interactions when doctors injected people – whether drugs were mixed in a separate room or in front of the patient, whether patients were alone with the doctor when injected, and so on – we can only imagine possible ways that arsenophenyglycin would have been recognized. According to Paul Ehrlich's instructions for its use circulated in late 1908, it came in a yellow powdered form, in vacuum-sealed test tubes, and was to be mixed with clean water immediately before injection, with any remaining liquid disposed of rather than re-used.⁶⁴⁰ No such care was taken with atoxyl, a white powder which could be ordered by the kilogram. Further, arsenophenyglycin's immediate side effects – an abscess at the injection site – would have been apparent to people who either received atoxyl injections themselves, or had family members or neighbors who had been treated at Urambi. Wittrock's reports of initial trials with arsenophenyglycin note that he introduced it to people already being given atoxyl injections – people who received the experimental therapy do not appear to have been set apart in any way. The body's reaction to the drug spoke for its difference from atoxyl, and the three

⁶³⁸ Wittrock, "Vierteljahresbericht," 10/5/1910, BAB R 1001 5905, p. 4. Original text: "Ich habe dem Leiter der Schlafkrankheitsbekämpfung berichtet, dass ich auf Grund meiner Erfahrungen es nicht verantworten zu können glaube, die Versuche mit Arsenophenyglycin noch länger fortzusetzen, zumal auch schon die Bevölkerung diesem Mittel gegenüber, dessen andere Anwendungsweise es ihr kenntlich macht, misstrauisch wurde. Die einstweilige Einstellung der Versuche ist von mir genehmigt worden."

⁶³⁹ *Ibid.*, p. 5.

⁶⁴⁰ Paul Ehrlich, "Gebrauchsanweisung für Arsenophenyglycin (Vakuumpräparat)," undated, accompanying correspondence from Georg Gaffky (Institute for Infectious Diseases) to Imperial Health Office director Bumm, 11/25/1908, BAB R 1001, 5876.

sudden deaths that Wittrock reported must have reverberated through the people living around and attending injection days at the Urambi camp.

As with the camp at Kiziba, the camp at Urambi provided only one treatment option among others for Rundi villagers. Further research is needed to address how Rundi nosologies and treatments responded specifically to new ailments in the early twentieth century, but ethnographies of the time do allow us to begin to put common practices into a wider perspective. Though German claims to heal and treatment practices occurred in a different context – the organized, cleared space of the camp – in comparison to Rundi healing practices that preceded them, villagers would likely have put German doctors' practices into the context of those of *bafumu* (traditional healers, sing. *umufumu*), who were powerful social figures in Rundi villages.⁶⁴¹ Making incisions into the skin was a healing practice observed at the turn of the century, sometimes accompanied by adding another substance, in the form of a salve or powder, to the incision.⁶⁴² Physically cutting into the body in the process of diagnosis and treatment may also have occurred in the context of variolation in times past.⁶⁴³

Campaign doctors, now eighteen months in, had not delivered the healing results they had constantly attempted to promise a skeptical Rundi population. Friedrich Kleine summarized work with arsenophenylglycin in East Africa as “extraordinarily bad,” noting that the doctors who had used the drug had seen only “failures.”⁶⁴⁴ Atoxyl, though decidedly imperfect, remained the drug most used in the Tanganyika campaign. Such as there was a plan for coping with sleeping sickness in the Imbo region, Ziba auxiliaries were part of it. The Ziba

⁶⁴¹ Meyer, *Die Barundi*, p. 129.

⁶⁴² Meyer, *Die Barundi*, p. 141. Original text: “Aber man öffnet oberflächliche Geschwüre mit der Nadel oder dem Messer und macht häufig in die Haut schmerzender Glieder eine Reihe kleiner Einschnitte mit dem einheimischen Rasiermesser, worauf gewisse heilsame Salben oder Pulver in die Wunden gerieben werden.”

⁶⁴³ Malloy, “Holding Tanganyika by the Sindano,” pp. 107-11; cf. note 344 above.

⁶⁴⁴ Kleine, letter to government at Dar es Salaam in response to Imperial Health Advisory Council meeting on 6/15/1910, dated 4/10/1911, BAB R 1001 5906. Trials with arsenophenylglycin would continue in Germany's West African colonies up until the First World War.

gland-feelers' "systematic searching" was ultimately part of a long-term strategy for managing sleeping sickness in the area, and signaled a transition in German policy aimed at a prolonged campaign that would require follow-up searches and familiarity with the sick. Kleine's intent to incorporate gland-feelers into a cycle of follow-up examinations also points to a shift in German understandings of sleeping sickness as endemic – a constant along the Tanganyika coast – rather than occurring in isolated epidemics. Gland-feelers would continue to be deployed in rolling examinations of villages along the lakeshore; the campaign's other focus on the Rusizi River valley placed a heavier emphasis on bush clearing work and closure of areas difficult to "sanitize" or monitor. Here, too, dealings with Belgian authorities on the opposite riverbank made for a different dynamic and different priorities.

Neither in the Imbo region nor in the Rusizi Valley could camp doctors consistently compel the cooperation of populations in a camp's immediate environs as well as further afield. The campaign's purview remained limited to a strip several kilometers wide along the lakeshore, encroaching on villages in foothills and mountains nearby only shortly before the campaign was disrupted by the outbreak of the First World War. People in lakeshore villages, particularly those within a network of Bwari immigrants, could move or travel to avoid being drawn into the campaign, if identified as sick; people with connections to settlements higher into the mountains could – and did – move beyond the campaign's reach. Plans for the campaign in future years, left unattempted because of the war, focused on controlling Rundi settlement and cultivation patterns, effectively using farming and maintenance of oil palm forests as a means to limit tsetse fly habitats.⁶⁴⁵

Unlike the campaign near Bukoba, but similarly to the ongoing work at Shirati on Lake Victoria's eastern shore, the Tanganyika campaign looked to be a matter of managing cases in the long term. It would also require ongoing negotiations with the Urundi Resident, now located in the highlands at Gitega, to manage the constant stream of workers need to keep

⁶⁴⁵ Max Taute and Hugo Meixner, Report from Niansa, 5/12/1914, BAB R 86 2632.

roads, river crossings, and landings on the lake cleared of underbrush.⁶⁴⁶ The transfer of the Resident's headquarters inland likely reinforced sleeping sickness camp doctors' sense of a their own distance from centralized authority in Urundi, a point already clear in their dealings with chiefs in the Imbo, and now also true for the colonial administration. The campaign's later years were characterized by a continuing autonomy in negotiating with the chiefs and communities around the camps, and also by an increasingly mobile approach to individual local foci of the epidemic. The use of 2-day postings to temporary outstations where people would attend designated *Spritztage* (injection days), perhaps injected with atoxyl by Ziba or Rundi auxiliaries, meant that the sleeping sickness campaign became an increasingly flexible and mobile manifestation of the German colonial presence.⁶⁴⁷

Conclusion

While the resident at Usumbura got involved in matters of argument between chiefs and sleeping sickness campaign stations, and administrators were quick to involve the government in Dar es Salaam when conflicts between the Resident and campaign doctors arose, a generous degree of autonomy allowed doctors and sanitation officers to develop, implement, and retract policies according to their perceived results. Success was measured in areas cleared of flies, and the number of people completing 8-week courses of double injections with atoxyl. As long as camp doctors could explain any significant increases or decreases in the number of people they treated, maintained their quarterly budget, and kept within the parameters of the campaign, the local sleeping sickness interventions proceeded by their direction. But this is not to suggest that doctors and sanitation officers enjoyed a free hand in implementing disease prevention measures. Medical officers at the camps defined the work to be done at a given time seasonally, prioritizing certain tasks and demanding work on particular projects, with a fair measure of

⁶⁴⁶ The Residency moved from Usumbura to Gitega in 1912. Louis, *Ruanda-Urundi*, p. 135.

⁶⁴⁷ Penschke, Quarterly report for Usumbura, 10/4/1912, BAB R 1001, 5910.

latitude from the colonial administration and campaign leadership. But latitude in what camp doctors on the Urundian coast could do remained limited, chiefly through the engagement and resistance of local African communities, which defined what was practicable and possible.

Ziba auxiliaries played a key role in defining the campaign's parameters. Gland-feelers from Bukoba became, when deployed in Urambi, functionaries of the colonial state, associated first with the sleeping sickness camp rather than with African authority, as they had been when near to Mutahangarwa's court at Kiziba. In Urundi, they were experts at detecting sleeping sickness, fitting into a scientific approach to disease prevention that demanded its participants be impartial and thorough. Though non-local soldiers had been part of the askari corp in German East Africa in preceding decades, and people traveled widely for work or trade otherwise, importing gland-feelers from Bukoba was an innovation, just as training gland-feelers at Kigarama had initially been. Ziba auxiliaries provided an alternative to Rundi "searchers for the sick" or village elders, and were intended to provide a more careful, "systematic" survey of Rundi communities near the Urambi camp. These auxiliaries point us to the importance of the research encounter and the contentiousness of disease prevention tactics – and the unpredictability and inconsistency inherent in each. Changes in personnel, in drug treatments, and in tactics led Rundi villagers to distance themselves from the camp, and Ziba auxiliaries were part of a shifting dynamic of deliberate incentives and unintended deterrents through which villagers engaged with German sleeping sickness prevention programs.

Chapter Eight

Conclusion

This dissertation has focused on the history of sleeping sickness over a relatively short period of time – some twelve years – and has addressed experiences of people scattered over a vast territory on the borderlands of East and Central Africa in the Great Lakes region. In closing, I want to suggest several possible implications of my research, considering different perspectives on elements that have run through the historical narrative, but which remained on the periphery of the dissertation itself. The possibilities of (relatively) *longue durée* studies of sleeping sickness are one point of connection; the implications of the history of sleeping sickness for studying ethics and practices of drug treatment are another. How we can continue to connect sleeping sickness in East Africa with the history of science and medicine in Germany presents a third.

The relatively recent history of interventions into sleeping sickness – all within the last 115 years of the modern epidemic, its beginning just over the border of living memory – provides an opportunity to locate modern disease elimination programs, such as those spearheaded by the World Health Organization in partnership with large pharmaceutical companies, within a trajectory of disease control and prevention that began during European colonialism. We can begin to historicize approaches to illnesses and infections that are cast in our current parlance as urgent, emerging, or resurgent, and query why others remain “neglected.”⁶⁴⁸ Sleeping sickness, whose story as an epidemic is still being told in terms of generations rather than millennia, presents a unique opportunity to consider the history of ideas about disease prevention and the history of experiences of disease prevention programs. Shedding light onto a sliver of those twinned histories has been the ultimate goal of this dissertation.

⁶⁴⁸ See, for instance, Paul Farmer, "Rethinking Emerging Infectious Diseases," in Haun Saussy, ed. *Partner to the Poor: a Paul Farmer Reader* (2010), pp. 155-174.

The long sweep of sleeping sickness in the twentieth century lets us think critically about the trajectory of disease prevention programs in the colonial and post-colonial eras, about institutional energies and how they are mobilized, and about expertise and the production of scientific consensus. But that long sweep of history also pulls in successive generations of people living where sleeping sickness epidemics can flare up, and therefore presents a further opportunity – to consider how regimes of disease prevention, pursued by colonial officials, independent African national health services, or multinational NGOs, are experienced by the same communities, time and again. Wainaina, in *Beyond River Yei*, tells a version of the sleeping sickness team’s lead doctor’s story:

Then this war started when I was eight, and we moved away from the road, into the bush. It may have been while collecting water at the river one evening that the tse-tse fly bit my mother. Two years later, my mother became mad. She would screech like a witch – sleep at odd hours, wake up singing songs and crying. My father, now an elder of a religious organization that believed in daemons, sought, endlessly, an evangelist with sufficient charisma to perform a successful exorcism. There is a part of me that believes that he preferred her mad – it made his efforts to get her “healed” saintly.

The tse-tse fly is a fat, lazy fly, as flies go – it cannot fly further than 200 metres from its base; but it will find somebody to bite at some point. This fly that bit my mother must have bitten somebody who carried trypanosomes; maybe one of the Dinke cattle sellers, making their way to Arua, across the border; maybe somebody fleeing some conflict somewhere in Sudan or Uganda, or Central African Republic or Congo. Many possibilities.

So the fly released Tryps into my mother’s body. She had never been physically strong; they multiplied quickly.

This parasite has one supreme skill. Camouflage. When mama’s antibodies attacked this stranger, it changed its surface causing much confusion in the immune system. Eventually, it made its way into my mother’s brain, and she started to sleep during the day; my father prayed, surrounded her with praying men. He hit her several times, thinking this was just laziness.

Wind blew us away from our perches when the war for Yei started. We ran to Uganda, lived in a refugee camp, where I went to school. By the time the doctors got to her, it was too late. She had been suffering convulsions, then fell into a coma. She died.⁶⁴⁹

Regimes of prevention invariably involve both experts from “outside” (in some capacity) as well as auxiliaries from the “inside” whose task is to find and screen the sick. Tracing a line

⁶⁴⁹ Binyavanga Wainaina, *Beyond River Yei: a journey into Sudan*, (Nairobi: Kwani Trust, 2006), pp. 53-54.

from the Ziba gland-feelers to “Bukoba boys” and on to Binyavanga Wainaina’s Kenyan men – working far from home but still “inside” Africa to screen for sleeping sickness – is, for example, one way to explore this history. Wainaina also writes of people being screened for sleeping sickness:

I saw the team in full operation first last week, unpacking their lab – several large metal trunks, and placing the two or three hundred villagers into a conveyer belt of activity: checking blood, checking lymph nodes, checking lymphatic fluid for tryps.⁶⁵⁰

But another way would consider the people who could fall sick with sleeping sickness now, whose parents and grandparents may have experience similar processes of screening and testing. If, as Wainaina describes, the techniques of discovering and treating sleeping sickness (palpating glands, taking people to central treatment stations) have changed relatively little in 100 years, continuities in experience and memory among people living in sleeping sickness-prone areas must also exist. How are the consistencies in sleeping sickness treatment and prevention read and remembered over an extended period of time? How are dynamics of political and economic power felt and contended with? What narratives of sleeping sickness might be possible? Further studies of sleeping sickness’s more recent history may allow historians to examine practices and methods of health and medicine that have traveled, changing but also persisting in their scope and form.

We can locate the history of sleeping sickness in the Great Lakes region within a broader epistemology of medical ethics and medical treatments. The wide use of drugs like atoxyl, which had serious side effects, across Europe’s African colonies, is a case of transnational and inter-colonial coordination and consensus-building that makes clear the need for a comprehensive study of its ideas and practices. But sleeping sickness also provides a foothold for historicizing more deeply of the relationship between sick people in sub-Saharan Africa and multi-national pharmaceutical companies, which would parallel those in other regions of the

⁶⁵⁰ Wainaina, *Beyond River Yei*, p. 17.

globe as explored in Adriana Petryna's recent work.⁶⁵¹ This is particularly striking with regard to the recent history of treatments for the disease. Sleeping sickness is no longer a disease that is impossible to cure because of a lack of appropriate therapies.⁶⁵² Rather, sleeping sickness is a disease that is seen as very difficult to cure, because effective therapies are, on the one hand, prohibitively expensive to produce compared to their potential market. On the other hand, more affordable therapies are available, but they remain difficult to administer because of the chemical combinations and lengthy duration of treatment they require. Some of this difficulty, particularly in the latter case of combination treatments, has much to do with the complex nature of the trypanosome parasite. But it also has a lot to do with global markets of health and the marginalization of people living in areas where sleeping sickness can, and does, strike.

But in the story of sleeping sickness drugs and prevention programs a century ago, issues of ethics and practices persist that would benefit from historical analysis in a wider imperial frame. We know that scientists used their work in the colonies, particularly when it involved discovering (and usually naming) a new parasite or vector or elucidating the etiology of a disease, to mobilize resources in metropolitan Europe and establish their careers out of the colonies. But how might colonial medical research, such as that done on sleeping sickness, also have complicated doctors' relationships with their tropical medicine colleagues in Europe? Robert Koch's failures in working with atoxyl were shared broadly by scientists at work in Africa, and, while criticism must have smarted at the time, his reputation could only be tarnished so much. And Koch did not work with the most toxic drugs tested in East Africa,

⁶⁵¹ Adriana Petryna, *When Experiments Travel: Clinical Trials and the Global Search for Human Subjects* (Princeton: Princeton University Press, 2009), see also Adriana Petryna, Andrew Lakoff, and Arthur Kleinman, eds., *Global Pharmaceuticals: Ethics, Markets, Practices*, (Durham, NC: Duke University Press, 2006).

⁶⁵² The example of eflornithine is the most glaring of recent years. Eflornithine is a compound that kills trypanosomes, and that is produced not as an anti-sleeping sickness drug but as a component of a treatment for excessive hair growth. Albert Sjoerdsma and Paul J. Schechter, "Eflornithine for African sleeping sickness," *The Lancet* 354, Issue 9174, (17 July 1999); Tobias Luppe, "Pharmaceutical Research and Development for Neglected Diseases: Market Failures and the Case of Sleeping Sickness," in Ernst Ulrich von Witzsäcker et al, *Limits to Privatization: How to Avoid Too Much of a Good Thing* (London: Earthscan, 2005), pp. 141-44; Peter J. Hotez, *Forgotten People, Forgotten Diseases: The Neglected Tropical Diseases and their Impact on Global Health and Development*, (Washington: ASM Press, 2008), pp. 87-88.

such as arsenophenyglycin. What can experiments with arsenophenyglycin by German doctors still young in their careers tell about their own sense (or lack) of ethics, as well as their construction of the “patients” upon whom they experimented?

If we locate doctors’ words and reports within the frame of contemporary medical ethics – rather than the tactics of contemporary colonial rule – their emphasis on the nature of African participation in sleeping sickness programs takes on different meaning. Otto Wittrock and others posted in the sleeping sickness campaign located their work within a broad collegial network – that operated in, across, and outside the contexts and constructs of colonial research – while conforming to the standard practice of abjuring force established in 1908. This appears most clearly in the discussion of voluntary or compulsory examinations and treatment of potential African patients. Time and again, sleeping sickness campaign reports reiterate the “voluntary” adherence to ambulatory treatments, the “free” arrival of people from the countryside, narrating how people began treatment “by choice.” This they distinguished from the use of force, of “compulsory” admission to the camp, of the work of “closed” camps, surrounded by barbed wire. Merely demonstrating that their work conformed to the goals and practices of the SKB does not fully explain the insistence on voluntarism in the campaign; neither Wittrock nor Eckard, for instance, appear to have been reprimanded or reminded by Kleine or by the colonial government that no force should be used to compel people to be examined or injected with atoxyl. Rather, the language of their reports could be viewed as an effort to remain connected to the European metropolitan medical world, and to fit into the medical practices acceptable and valued in that world, to which they returned on furlough and to which they may have hoped to return after their colonial tour was complete.

Lastly, while one goal of this dissertation has been to illuminate the German history of tropical medicine, I hope that it has also muddied the waters on historical understandings of scientific schools of thought in pre-war Europe. I engaged with a nationalistic appraisal of the distinctive scientific schools of thought believed to dominate the European academy in the late nineteenth century – typically construed as the Pastorian French, Listerian British, and Kochian

Germans. A sense of competition and rivalry in the immediate build-up to World War I, as well as the post-war isolation of German academics, has been projected backward onto the period between roughly 1890 and 1910. Doing so suggests that sharply divided national scientific styles arose inevitably in Europe, producing a significant obstacle to a transnational scientific collaboration and exchange. In reality, though doctors such as Friedrich Kleine were marginalized by Germany's exclusion from international science during the Weimar Republic's seven-year exclusion from the League of Nations, they may not have been left completely out in the cold.⁶⁵³ Berlin joined the league in 1926 and Kleine was back in East Africa working alongside British sleeping sickness researchers in 1926-27, seemingly at the first opportunity to revisit his earlier fieldwork on tsetse flies. A sense of the complexity and transnationalism of nineteenth-century science would be wholly impossible without studies that explore the different cultural contexts and political-economic environments out of which nationally-focused academies grew.⁶⁵⁴ However, focusing on administrative categories or funding structures cannot fully explain the intellectual and scientific developments that were most provocative in this growing field, itself located at the intersection of European national institutions and the far-flung imperial projects on which they relied. Rather, ideas and practices, exchange with foreign peers, international training, and a sense of collective, standardizing knowledge of which different colleagues had ownership were all key aspects of the practice of tropical medicine research. Scholarly attention to scientists' human relations can be used to situate new research in a broader social and intellectual history.⁶⁵⁵ Tropical medicine was a discipline of empire, developing in response to and also sustained by the practice of medicine and public health in

⁶⁵³ Iris Borowy, *Coming to Terms with World Health: the League of Nations Health Organization, 1921-946*, (Peter Lang: Frankfurt am Main, 2009), chapter 2; Kleine, *Ein deutscher Tropenarzt*, pp. 17-19.

⁶⁵⁴ See, for example, J. Andrew Mendelsohn, *Cultures of Bacteriology: Formation and Transformation of a Science in France and Germany, 1870-1914*. Unpublished Dissertation. Princeton University, 1996; Woodruff D. Smith, *Politics and the sciences of culture in Germany*, (New York: Oxford University Press, 1991).

⁶⁵⁵ Here, I follow Deborah Joy Neill's synthesis in her introduction to "Transnationalism in the colonies: Cooperation, Rivalry, and Race in German and French Tropical Medicine, 1880-1930," Unpublished dissertation. University of Toronto, 2005.

Europe's colonies. But is it possible that the emphasis on empire – connected with nationalism in Europe – has in some ways obscured the connections between practitioners of tropical medicine, connections that allowed them to work around national academies or imperial bureaucracies and to address scientific concerns that arose far from the possibilities and constraints formulated in (and for) the metropole. Sleeping sickness research in the Great Lakes region a century ago was, in many ways, enabled by such maneuvers.

Appendices

I: Oral Histories

Arranging Interviews in Bukoba

Based on my research and on advice I received in Dar es Salaam, I began my search for informants with church networks in Bukoba, the largest town in Kagera region and location of Catholic and Lutheran church administrative offices. I had learned that both the Catholic and Lutheran churches in the area around Kigarama were historic parishes and, in Bukoba, I learned that they still had large congregations. I had preliminarily decided to focus on three parishes, two Catholic and one Lutheran. The Catholic parishes were Kashozi and Kigarama-Kanyigo; the Lutheran parish was in Kigarama proper. Kashozi parish succeeded the White Fathers mission of Marienberg, founded in 1897, south of the site of the historic sleeping sickness camp. Kigarama Kanyigo parish was a more recently built church around a kilometer south of the current town of Kigarama. The Lutheran church at Kigarama was likewise in a more recently built complex, but succeeded a missionary church established in the 1910s.

I conducted interviews in and around Kashozi and Kigarama, Tanzania in August 2008, with the assistance of Fr. Elpidius Rwegoshora. Contacts in Dar es Salaam, including current White Fathers missionaries and priests in the local Catholic diocese had suggested that I start at the cathedral in Bukoba, Kagera Region's largest town. I met Elpidius in the courtyard of the Catholic cathedral shortly after arriving in town. Elpidius and several other young priests happened to be nearby as I asked an administrator about the history of the church and where I might learn more about parishes that I had begun researching in Dar es Salaam. Elpidius volunteered to show me around the cathedral grounds and took me to the cathedral bookstore, and I quickly learned that he had studied history and was interested in local history in particular. He also had several colleagues from seminary who were junior priests in parishes near Kigarama and volunteered to go with me to Kashozi that day. Elpidius and I agreed that he would accompany me to several parishes I had identified and make introductions over the coming weeks; he ultimately accompanied me to visits both to parishes and to people's homes and translated between Kihaya, Swahili, and English when necessary. Elpidius also helped me to arrange transport with a parishioner we hired to drive us for a set daily fee.

In addition to being part of a large Catholic diocese, Kigarama and its environs also have a strong Lutheran Christian tradition. Recognizing that working with Elpidius could potentially limit the people I spoke with to those who were Catholic parishioners known to his colleagues in the clergy, I also visited the Bukoba Lutheran Church and spoke with Pastor Lawrence Nshombo. Pastor Nshombo had close ties to the Kigarama area and personally knew of several elderly men living near Kigarama, one of whom was a respected former teacher (Heslon Lutimba). Pastor Nshombo put me in touch with the pastor of the Kigarama Lutheran church for an introduction.

Because Elpidius had close ties to clergy at Kashozi and Kigarama-Kanyigo, we began our work by meeting with parish priests and also contacted the Lutheran pastor at Kigarama. I talked with members of the clergy about my interest in the sleeping sickness camp, in Mukama Mutahangarwa's reign, and the history of the area during the German colonial period. No one alive during the period of German colonization still survived at the time of my research, and I had decided to narrow my interviews to people who might be able to discuss family memories from parents alive during that time. I asked about people in the area who might be interested in talking about the past, about local history, and/or whose parents had been alive before World War I. Regarding the latter group, I hoped that we might be able to talk about their family histories and their own memories of family stories. On our first day meeting with

people in Kashozi, we found that informants sometimes mentioned who else they thought might also be knowledgeable and willing to talk with me; this was the case with Heslon Lutimba, and Lutheran & Catholic clergy also mentioned him. When talking with parish clergy about possible interviews, we mentioned these possible contacts as well.

Contacts through current clergy limited my possible group of informants to people known within Catholic and Lutheran parishes. Informants had varying levels of closeness in their connections with the parish church, some intimate and some more informal; Bernard Mutekanga, for instance, lived on church property at Kashozi, while Heslon Lutimba was familiar with both the Catholic and Lutheran congregations. Another limitation arose with regard to the gender of my informants, only one of whom, Odilia Kokujiwara, is a woman. This bears discussion. The interview with Mrs. Kokujiwara followed directly from me mentioning to the Kigarama-Kanyigo priests that the men in families dominated the interviews thus far, which I was having trouble getting around. Wives and daughters remained on the periphery of conversations with their husbands, and I was having difficulty carving out time to speak with women as introductions were made and interviews began. I said I wanted to talk with women about their memories and stories as well, and on the next visit the senior priest suggested that we meet with Mrs. Kokujiwara. I was unfortunately not able to return to re-interview each of my informants as I originally planned, due to unexpected complications with travel to and from Bukoba.

I relied upon a loosely-structured set of questions in Swahili for each interview and asked permission to record our conversation. I used a small, digital voice recorder that I placed near me during the conversation; I also kept a notebook nearby. Elpidius and I would talk over a given conversation on our hour-long drives between Kigarama and Bukoba and strategize together about follow-up questions or different directions for a subsequent interview. I asked many of the same general questions, but each interview followed a different path. I was discouraged from giving gifts at each interview by Elpidius, with the exception of Bernard Mutekanga and Bartholomeo Tibawa, to whom I gave small cash gifts at the end of the interview.

Individual Interviews

In addition to parish priests and pastors, Elpidius Rwegoshora and I spoke with a total of 6 people. All interviews described below occurred in Kagera Region, Tanzania.

Bernard Mutekanga

Kashozi (August 19, 2008 with Elpidius Rwegoshora)

Bernard Mutekanga lives with his wife on the grounds of the Kashozi parish church. His home was a small brick and stucco house; he and his wife had sweetgrass spread on the dirt floor of their front room and had many Catholic images displayed prominently. Mutekanga was around 90 years old when we spoke with him in 2008. We talked primarily about stories he had heard about sleeping sickness and German medicines, and about traditional healing by diviners.

We spoke briefly in Swahili, and Mutekanga then asked if he could answer my questions and speak freely in Kihaya; Elpidius then translated my questions and his answers as we talked. Our interview lasted several hours and ended with my giving Mutekanga a small cash gift. Elpidius Rwegoshora led Mr. Mutekanga and his wife, who had remained in another room, in prayer immediately before we departed.

Damian Mulogo

Kashozi (August 19, 2008, with Elpidius Rwegoshora)

Damian Mulogo and his wife live 3-4 km south of Kashozi church in a large house with new furniture under plastic covers. He offered us chilled soft drinks when we arrived. Mulogo had been a “professional teacher” and had done various other jobs and was well-off in his retirement. He had worked elsewhere in Tanzania and moved home to the Kashozi area to take care of his father in the early 1980s. He remained formal throughout our conversation; his wife remained on the periphery of the room as we spoke and teased me about my Swahili. He was 80 years old when we spoke in 2008.

We spoke in both Swahili and English about the history of Kashozi and the periods of German and British colonialism, primarily about local politics.

John Muganyizi

Kigarama (August 21, 2008, with Elpidius Rwegoshora)

John Muganyizi lives near the town of Kigarama in a modest but comfortable concrete-block home. When we spoke, he was in his late 60s. He was spoken of as a respected member of the community and had worked as a teacher; Muganyizi was considered knowledgeable in local history. He owned several historic books, including Hermann Rehse’s *Kiziba: Land und Leute* (a German text published in 1910), which he referred to when discussing the history of Kiziba. We spoke primarily in Swahili about the political history of the early twentieth century in Kiziba and about Muganyizi’s own work as a teacher.

We were encouraged to speak to Muganyizi by the local Lutheran pastor. We met him on a festival day when the *mwenge*, the torch representing Tanzanian national unity, was coming through Kigarama on its national tour. Our meeting was brief because of the *mwenge* festivities.

Heslon Lutimba

Kigarama (August 21 and 25, 2008, with Elpidius Rwegoshora)

Heslon Lutimba lives in a spacious, raised concrete-block home between Kigarama town and the shore of Lake Victoria. His home sits on his farm, land that was also farmed by his father, currently planted with bananas and coffee. At the time of our interview he was 88 years old. He lives with his wife; one grand-daughter was staying with him temporarily to recuperate from a leg injury. She was otherwise in secondary school. Lutimba was a former teacher and had also done other work within Tanzanian government relating to education; he identified primarily as a teacher. His farm is not accessible by car, only on foot or motorbike. It is directly adjacent to the site of the former German sleeping sickness camp. Lutimba’s father had worked as a laundryman for the German doctors at the camp before 1914 and had also traveled with Dr. Friedrich Kleine in the late 1920s when Kleine returned to East Africa to collaborate with British sleeping sickness researchers. We spoke primarily in Swahili, with some English scattered throughout.

We met with Mr. Lutimba first on August 21 and agreed to speak again later in the week, and met again on August 25 for several more hours. On August 25, Lutimba also walked with us around the former sleeping sickness camp site, indicating where houses, other buildings, and camp fences had been. He indicated that the remains of a house on a farm adjacent to the camp site and his own farm had once belonged to Dr. Robert Kudicke.

Both the Catholic parish priest and Lutheran pastor suggested that we meet Lutimba; the local Lutheran pastor rode his motorbike with us to direct us to Lutimba's farm and introduced us. Lutimba had previously hosted two American students in the area for research, whose photo he showed us.

Leander Kato

Kigarama (August 25, 2008, with Elpidius Rwegoshora)

Leander Kato was born in 1914, and 94 years old when we spoke with him in 2008. His home was an *msonge*, a traditional round, wooden Haya home with a thatched roof and dirt floor; the words "GOD EXISTS EVERY DAY" were written in English across the top of the doorframe. He lived with his grown daughter, two grand-daughters, and their three children. Nearby on their land were the beginnings of a foundation for a concrete-block house. Kato's land had bananas and vegetables growing nearest the house. Kato's grand-daughter tended the fire and cooked in a room adjacent.

After introductions in Swahili, Kato wanted to speak in Kihaya; Fr. Rwegoshora translated into English. We spoke about stories he had heard about the German colonial period and at length about the founding of the sleeping sickness camp; I asked questions about medicines used by the Germans, how people were brought to the camp or convinced to go to the camp, and what other diseases people spoke about being prevalent. A young man who worked at the Kigarama-Kanyigo church guided us to Kato's home and introduced us.

Odilia Kokujwara

Bugombe (August 25, 2008, with Elpidius Rwegoshora)

Odilia Kokujwara was born in 1920, and 88 years old when we spoke with her. She is a widow; one daughter and a grandson were in the home when we spoke with her. Her home was sturdy and well-kept-up brick and stucco with a metal roof and with sweetgrass covering the floor; the land surrounding it was planted thickly with banana trees. She wore a bright new kanga over her dress. Kokujwara kept all of her important documents and papers in a box in a small wooden cabinet, including a government-issued card with her birthdate and mementos from her husband and family. She showed us the papers as she answered questions and volunteered stories.

I asked questions in Swahili which Elpidius Rwegoshora translated into Kihaya. My questions focused on what Kokujwara had heard about sleeping sickness, but ranged to deal with other diseases according to her answers. She spoke about leprosy and syphilis as well. We also asked questions about use of forested areas and whether sleeping sickness had changed this, historically.

Bartolomeo Tibawa

Bugombe Kashakere (August 25, 2008 with Elpidius Rwegoshora)

Bartolomeo Tibawa was 98 years old when we met him in 2008. Two grandchildren, a boy of 10 and a toddler, lived with him and his wife in an older brick home with crumbling stucco, sweetgrass covering the floor, and a metal roof. The family had two bicycles. Tibawa had worked growing coffee and as a fisherman, and also worked carrying building supplies in the

area as a young man. Land around the house was planted with coffee and banana; coffee beans were drying on mats outside the house on the day that we visited.

I began my questions in Swahili but the interview was almost exclusively in Kihaya with Elpidius translating as we went along. Based on Tibawa's initial comments, we asked questions about how and why people had historically traveled to Uganda, as well as questions about the German sleeping sickness camp.

Transcription and Translation

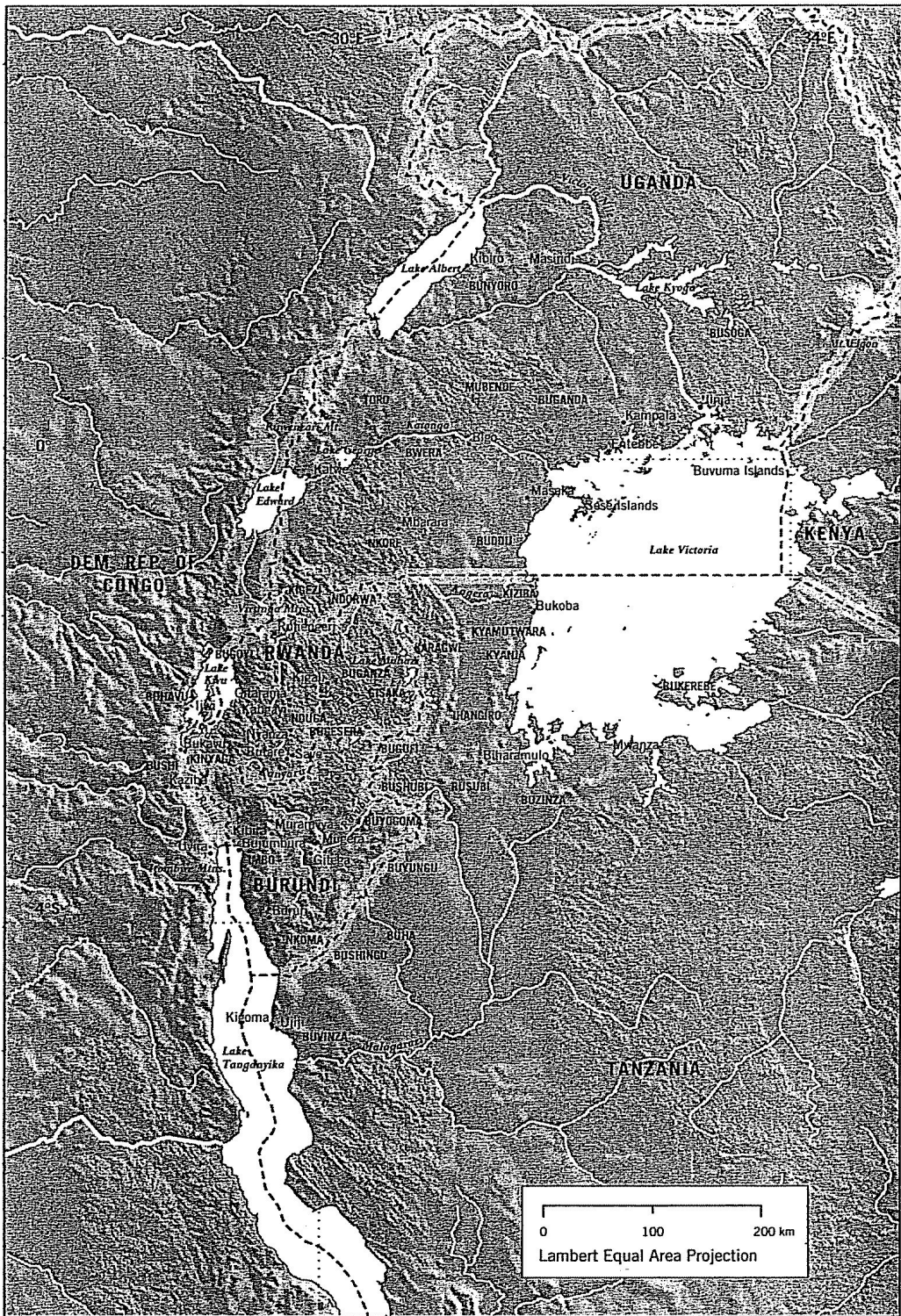
I worked to transcribe and translate interviews in Swahili; for interviews primarily in Kihaya, I worked with an acquaintance in Dar es Salaam, Arnold Kisiraga, who listened to and summarized several of the interviews. I later paid a translator/transcriber, Irene Rwegamalira, to work on Heslon Lutimba's two interviews and to begin transcribing and translating those with Tibawa, Kokujwara, Kato, and Mutekanga. Mr. Kisiraga, himself from the Bukoba area, was very interested in talking about health and disease in the area; he worked on a project focused on clean water delivery in rural areas. Ms. Rwegamalira was studying to be a teacher and had moved to Dar es Salaam as a child; her parents were from Buhaya and she spoke Kihaya and Swahili at home.

After this first round of transcription and translation in Tanzania, I returned to Germany and then the U.S., where I then hired Nyambura Mpesha to revise transcription and complete translation of the interviews with Tibawa, Kokujwara, Kato, and Mutekanga.

II. Political map of Africa, U.S. Central Intelligence Agency, 2008.



III. The Great Lakes Region from Chrétien, *The Great Lakes of Africa* (2003).



Bibliography

Archives

Federal Archives of Germany, Berlin-Lichterfelde
 Federal Archives of Germany, Military Archive, Freiburg-im-Breisgau
 Prussian State Archives, Berlin-Dahlem Geheimes Staatsarchiv-Preußisches Kulturbesitz
 National Archives of Britain, Kew
 Tanzania National Archives, Dar es Salaam

Archives of the London School of Hygiene and Tropical Medicine
 Archives of the Liverpool School of Tropical Medicine
 Archives of the Royal Society
 Wellcome Trust Institute for the History and Understanding of Medicine
 Archives of the Bernard Nocht Institute
 Archives of the Robert Koch Institute

White Fathers Missionaries of Africa Provincial Archive, Dar es Salaam
 White Fathers Missionaries of Africa Generalate Archive, Rome
 Bethel Mission Archives, Wuppertal

Printed Primary Sources

Castellani, Aldo. "Researches on the Etiology of Sleeping Sickness." *Journal of Tropical Medicine*. June 1, 1903, pp. 167-171.

Christy, Cuthbert. "Sleeping Sickness." *Journal of the Royal African Society* Vol. 3, No. 9 Oct., 1903, pp. 1-11.

Cory, Hans and M.M. Hartnoll. *Customary Law of the Haya Tribe, Tanganyika Territory*. London: Published for the Interantional African institute by P. Lund, Humphries & Co., Ltd., 1945.

Deutsches Kolonial-Lexicon. 3 volumes. Quelle & Meyer: Leipzig, 1920.

Dutton, John E. and John L. Todd. "First Report of the Trypanosomiasis Expedition to Senegambia 1902 of the Liverpool School of Tropical Medicine." *Thompson Yates and Johnston Laboratories Reports V*, 1903.

_____. "Reports of the Trypanosomiasis Expedition to the Congo 1903-1904 of the Liverpool School of Tropical Medicine and Medical Parasitology." *Thompson Yates and Johnston Laboratory Reports VI new series* 1905.

Gaffky, Georg and Eduard. Pfuhl, eds. *Gesammelte Werke von Robert Koch*. Leipzig: 1912.

Hermann, Carl. "Die Wasiba und Ihr Land." *Mitteilungen von Forschungsreisenden und Gelehrten aus den deutschen Schutzgebieten*, 1894.

Kleine, Friedrich. *Ein deutscher Tropenarzt*. Hannover: Schmorl & von Seefeld Nachf., 1949

Langheld, Wilhelm. *Zwanzig Jahre in Deutschen Kolonien*. Wilhelm Weicher: Berlin, 1909.

- Manson, Patrick. *Tropical Diseases: a Manual for the Diseases of Warm Climates*. London: Cassell and company, 1898.
- Martin, Gustave, Emile Roubaud, and Alexis Leboeuf. *Mission d'études de la maladie du sommeil au Congo Français*. Masson: Paris, 1909.
- Medizinal Berichte für die deutschen Schutzgebiete, herausgegeben von der Kolonial-Abteilung des Auswärtigen Amts*. Ernst Siegfried Mittler und Sohn, Königlich Hofbuchhandlung: Berlin, 1905-1912.
- Mener, Alois. *Kleines Ruhaya-Deutsches Wörterbuchi*. Trier: Mosella-Verlag, 1914.
- Meyer, Hans. *Die Barundi: eine völkerkundliche Studie aus Deutsch-Ostafrika*. Leipzig: Otto Speyer, 1916.
- Rehse, Hermann. *Kiziba: Land und Leute*. Stuttgart: Strecker & Schröder, 1910.
- van der Burgt, J.M.M. *Dictionnaire Français-Kirundi*. Société "l'Illustration Catholique": Bois-le-Duc, Holland, 1903.
- _____. *Un Grand Peuple de l'Afrique Equatoriale: Éléments d'une Monographie sur l'Urundi et les Warundi*. Société "l'Illustration Catholique": Bois-le-Duc, Holland, 1903.
- Various. *Reports on the Sleeping Sickness Commission*, Harrison and Sons, London, 1903-19.

Books and Articles

- Allsopp, Reg. "Options for vector control against trypanosomiasis in Africa." *Trends in Parasitology* 17, 1 (January 2001), pp. 15-19.
- Amsterdamska, Olga. "Demarcating Epidemiology." *Science, Technology, & Human Values*. vol. 30, no.1, p. 17-51.
- Anderson, David M. "Cow power: livestock and the pastoralist in Africa." *African Affairs* 92 1993, pp. 121-33.
- Anderson, Warwick. "Immunities of Empire: Race, Disease, and the New Tropical Medicine, 1900-1920." *Bulletin of the History of Medicine* 70, no. 1 1996: 94-118.
- _____. "Natural Histories of Infectious Disease: Ecological Vision in Twentieth-Century science." *Osiris* 19 2004, pp. 39-61
- Arnold, David. *Imperial Medicine and Indigenous Societies*. New York: St. Martin's Press, 1988.
- _____. ed. *Warm Climates and Western Medicine: the Emergence of Tropical Medicine, 1500-1900*. Atlanta, GA: Rodopi, 1996.
- _____. *The Problem of Nature: Environment, Culture, and European Expansion*. Oxford: Oxford University Press, 1996.
- _____. "Medicine and Colonialism." in Roy Porter and W.F. Bynum, eds., *Companion Encyclopedia to the History of Medicine*, Routledge: London, 1993, pp. 1393-1415.

- Austen, Ralph A. *Northwest Tanzania Under German and British Rule: Colonial Policy and Tribal Politics, 1889-1939*. New Haven: Yale University Press, 1968.
- Baldwin, Peter. *Contagion and the state in Europe, 1830-1930*, New York: Cambridge University Press, 1999.
- Baranowski, Shelley. *Nazi Empire: German Colonialism and Imperialism from Bismarck to Hitler*. Cambridge: Cambridge University Press, 2011.
- Bashford, Alison and Carolyn Strange, eds. *Isolation: Places and Practices of Exclusion*. London: Routledge, 2003.
- Bauche, Manuela. "Zwischen Metropolen und Peripherien. Malariabekämpfung in Kamerun, Ostafrika und Ostfriesland, ca. 1880-1920." PhD Dissertation, University of Leipzig, forthcoming.
- Beck, Ann. *Medicine and Society in Tanganyika*. Philadelphia: American Philosophical Society, 1977.
- _____. "The Role of Medicine in German East Africa."
- _____. *A History of the British Medical Administration in East Africa, 1900-1950*. Cambridge, MA: Harvard University Press, 1970.
- Bjerk, Paul K. "They Poured Themselves into the Milk: Zulu Political Philosophy under Shaka." *Journal of African History* 47, no. 1, 2006, pp. 1-19.
- Bonnell, Victoria E. and Lynn Hunt, eds. *Beyond the Cultural Turn*. Berkeley: University of California Press, 1999.
- Borowy, Iris. *Coming to Terms with World Health: the League of Nations Health Organization, 1921-1946*. Peter Lang: Frankfurt am Main, 2009.
- Boyd, John. "Sleeping Sickness: The Castellani-Bruce Controversy." *Notes and Records of the Royal Society of London* 28, No. 1 Jun., 1973, pp. 93-110.
- Brock, Thomas D. *Robert Koch: a Life in Medicine and Bacteriology*. Washington, DC: ASM Press, 1999.
- Brown, Karen. "From Ubombo to Mkhuzi: disease, colonial science, and the control of Nagana (livestock trypanosomosis) in Zululand, South Africa, C. 1894-1953." *Journal of the History of Medicine and Allied Sciences* 63, 3 (2008), pp. 285-322.
- Burri, C. and R. Brun. "Human African Trypanosomiasis." in Gordon C. Cook and Alimuddin I. Zumla, eds., *Manson's Tropical Diseases*. Saunders: London, 2003.
- Bynum, William F. "Nosology." in Roy Porter and W.F. Bynum, eds., *Companion Encyclopedia to the History of Medicine*. Routledge: London, 1993, pp. 335-56.
- _____. "Policing hearts of darkness: aspects of the international sanitary conferences," *History and Philosophy of the Life Sciences* 15 (1993), pp. 421-34.

- _____. and Caroline Overy. *The Beast in the Mosquito: the Correspondence of Ronald Ross and Patrick Manson*. Rodopi: Amsterdam, 1998.
- Cell, John W. "Anglo-Indian Medical Theory and the Origins of Segregation in West Africa." *American Historical Review* 91 (1986), pp. 307-35.
- Chrétien, Jean-Pierre. *The Great Lakes of Africa: Two Thousand Years of History*, translated by Scott Strauss. New York: Zone Books, 2003.
- _____. *Burundi: l'Histoire retrouvée, 25 ans de métier d'historien en Afrique* Karthala: Paris, 1993.
- _____. and Jean-François Dupaquier, *Burundi 1972, au bord des génocides*, Paris: Karthala, 2007.
- _____. Richard Banégas, eds., *The Recurring Great Lakes Crisis: Identity, Violence and Power* London: Hurst & Co., 2008.
- Cohen, William B. "The Colonized as Child: British and French Colonial Rule," *African Historical Studies* 3, No. 2 1970, pp. 427-431.
- Colgrove, James. "The McKeown Thesis: A Historical Controversy and its Enduring Influence." *American J. of Public Health* vol. 92, Iss. 5 May 2002, pp. 725-729.
- Conte, Christopher. *Highland sanctuary: environmental history in Tanzania's Usambara Mountains*. Athens: Ohio University Press, 2004.
- Cooper, Frederick and Ann Laura Stoler. *Tensions of Empire: Colonial Cultures in a Bourgeois World*. Berkeley: University of California Press, 1997.
- Cooper, Frederick and Jane Burbank. *Empires in World History: Power and the Politics of Difference*. Princeton: Princeton University Press, 2010.
- Cooper, Frederick. *Colonialism in Question: Theory, Knowledge, History*. Berkeley: University of California Press, 2005.
- _____. "Conflict and Connection: Rethinking Colonial African History." *American Historical Review* 99, no. 5, 1994, pp. 1516-1545.
- Conklin, Alice L. *A Mission to Civilize: The Republican Idea of Empire in France and West Africa, 1895-1930*. Stanford, CA: Stanford University Press, 1997.
- Corbel, Vincent and Marie Claire Henry, "Prevention and control of malaria and sleeping sickness in Africa: Where are we and where are we going?" *Parasites & Vectors* 4, no. 37 2011, < <http://www.parasitesandvectors.com/content/4/1/37>>.
- Cory, Hans *Historia ya Wilaya Bukoba (History of the Bukoba District)*, Mwanza: Lake Printing Works, 1956.
- Crozier, Anna. *Practising Colonial Medicine: the Colonial Medical Service in British East Africa*. I.B. Tauris: London, 2007.

- Cunningham, Andrew and Perry Williams, eds. *The Laboratory Revolution in Medicine*. New York: Cambridge University Press, 1992.
- Cunningham, Andrew. "Transforming Plague: the laboratory and the identity of infectious disease." in Cunningham and Perry, eds., *The Laboratory Revolution in Medicine*, Cambridge University Press, 1992, pp. 209-244.
- Curtin, Philip. *Death by Migration: Europe's Encounter with the Tropical World in the Nineteenth Century*. Cambridge: Cambridge University Press, 1989.
- _____. *Disease and Empire: the Health of European Troops in the Conquest of Africa*. Cambridge: Cambridge University Press, 1998.
- _____. "Medical knowledge and urban planning in tropical Africa." *American Historical Review* 90, no. 3 June 1985, pp. 594-613.
- Curtis, Kenneth. "Capitalism fettered: state, merchant, and peasant in Northwestern Tanzania." Unpublished PhD Dissertation. University of Wisconsin, Madison, 1989.
- Davies, J.N.P. "The cause of sleeping sickness? Entebbe 1902-03." *East African Medical Journal* 39, 3 (1962), pp. 81-99.
- Dawson, Marc H. "Socioeconomic Change and Disease: Smallpox in colonial Kenya, 1880-1920." in Feierman and Janzen, eds., *The Social Basis of Health and Healing in sub-Saharan Africa* Berkeley: University of California Press, 1992, pp. 90-103.
- de Boeck, Filip. "Therapeutic Efficacy and Consensus among the Aluund of South-Western Zaire." *Africa: Journal of the International African Institute* 61, 2 (1991), pp. 159-185.
- Des Forges, Alison L. edited by David Newbury, *Defeat is the only bad news: Rwanda under Musinga, 1896 -1931*, Madison: University of Wisconsin Press, 2011.
- _____. "'The Drum is Greater than the Shout': the 1912 rebellion in northern Rwanda." in Donald Crummey, ed., *Banditry, Rebellion and Social Protest in Africa*, London: James Currey, 1986, pp. 311-31.
- Deutsch, Jan-Georg. "Celebrating power in everyday life: the administration of law and the public sphere in colonial Tanzania, 1890-1914." *Journal of African Cultural Studies* 15, no. 1 2002, pp. 93-103.
- _____. *Emancipation without Abolition in German East Africa c. 1884-1914*. Oxford: James Currey, 2006.
- Dickerman, Carol. "Economic and Social Change in an African City: Bujumbura, Burundi, 1900-1962." Unpublished dissertation. University of Wisconsin-Madison, 1984.
- Digby, Anne, Waltraud Ernst and Projit B. Mukharji, eds. *Crossing Colonial Historiographies: Histories of Colonial and Indigenous Medicines in Transnational Perspective*. Newcastle upon Tyne: Cambridge Scholars, 2010.
- Diptee, Audra A. and Martin A. Klein, "African Childhoods and the Colonial Project." *Journal of Family History* 35 no. 1, 2010 pp. 3-6.

- Doyle, Shane. "Population change, environmental change, and "diseases of the wilderness" in Uganda." unpublished paper 1999.
- _____. *Crisis and Decline in Bunyoro: Population and Environment in western Uganda, 1860–1955*. Athens, OH: Ohio University Press, 2006.
- Eckart, Wolfgang U. *Medizin und Kolonialimperialismus, Deutschland 1884-1845*. Schöningh: Paderborn, 1997.
- _____. "The Colony as Laboratory: German Sleeping Sickness Campaigns in German East Africa and Togo, 1900-1914." *History and Philosophy of the Life Sciences* 24 2002.
- _____. "First Principles: Julius Moses and Medical Experimentation in the late Weimar Republic." Eckart, ed., *Man, Medicine, and the State: the Human Body as Object of Government Sponsored Medical Research in the 20th Century*. Stuttgart: Steiner, 2006.
- Fabian, Johannes. *Language and Colonial Power: the Appropriation of Swahili in the Former Belgian Congo, 1880-1938*. Cambridge: Cambridge University Press, 1986.
- _____. *Out of Our Minds: Reason and Madness in the Exploration of Central Africa*. Berkeley: University of California Press, 2000.
- Farmer, Paul. "Rethinking Emerging Infectious Diseases." In Haun Saussy, ed. *Partner to the Poor: a Paul Farmer Reader*. Berkeley: University of California Press, 2010: pp. 155-174.
- Feierman, Steven. *The Shambaa Kingdom: a History*. Madison: University of Wisconsin Press, 1974.
- _____. "Struggles for Control: the Social Roots of Health and Healing in Modern Africa." *African Studies Review*, vol. 28, no 2/3, 1985, pp. 73-147.
- _____. *Peasant Intellectuals: Anthropology and History in Tanzania*. Madison: University of Wisconsin Press, 1990.
- _____. and John M Janzen. *The Social Basis of Health & Healing in Africa*. Berkeley: University of California Press, 1992.
- _____. "A Century of Ironies (ca. 1780-1890)" in Philip Curtin, Steven Feierman, Leonard Thompson, and Jan Vansina, eds., *African History from Earliest Times to Independence*. New York: Longman, 1995, pp. 352-76.
- _____. "Africa in History: The End of Universal Narratives." In Gyan Prakash, ed. *After Colonialism: Imperial Histories and Postcolonial Displacements*. Princeton: Princeton University Press, 1995, pp. 40-65.
- _____. "Colonizers, Scholars, and the Creation of Invisible Histories." In Victoria E. Bonnell and Lynn Hunt, eds. *Beyond the Cultural Turn*. Berkeley: University of California Press, 1999, pp. 176-216.
- Fallers, Lloyd A. assisted by S.B.K. Musoke, "Social Mobility, Traditional and Modern." in Fallers, ed., *The King's Men: Leadership and Status in Buganda on the Eve of Independence* East African Institute for Social Research/Oxford University Press, 1964.

- Fèvre, E.M., P.G. Coleman, S.C. Welburn, and I. Maudlin, "Reanalyzing the 1900-1920 Sleeping Sickness Epidemic in Uganda." *Emerging Infectious Diseases*, vol. 10, no. 4, April 2004, pp. 567-593.
- Ford, John. *The Role of the Trypanosomiases in African Ecology: A Study of the Tsetse-fly Problem*. Clarendon Press: Oxford, 1971.
- Foucault, Michel. *The Birth of the Clinic: an archaeology of medical perception*, trans. M. Sheridan Smith. New York: Vintage, 1994.
- Geissler, P. Wenzel and Catherine Molyneux, eds. *Evidence, Ethos, and Experiment: the Anthropology and History of Medical Research in Africa*. New York: Berghahn Books, 2011.
- Giblin, James. "Trypanosomiasis Control in African History: an Evaded Issue?" *Journal of African History* 31, no. 1 1990, pp. 59-80.
- _____. *The Politics of Environmental Control in Northeastern Tanzania, 1840-1940*. Philadelphia, PA: University of Pennsylvania Press, 1992.
- Good, Charles M. "Salt, Trade, and Disease: Aspects of Development in Africa's Great Lakes Region." *International Journal of African Historical Studies* vol. 5, no. 4, 1977, pp. 543-86.
- Graboyes, Melissa. "Surveying the "pathological museum": A history of medical research and ethics in East Africa, 1940-1965." Unpublished Dissertation. Boston University, 2010.
- Gradmann, Christoph. "Invisible Enemies: Bacteriology and the Language of Politics in Imperial Germany." *Science in Context*, Vol. 13, no. 1 2000, pp. 8-30.
- _____. "Robert Koch and the pressures of scientific research: tuberculosis and tuberculin." *Medical History* 45, 1 (January 2001), pp. 1-32.
- _____. "'It Seemed About Time to Try One of Those Modern Medicines': Animal and Human Experimentation in the Chemotherapy of Sleeping Sickness 1905-1908." In Maio, Giovanni and Volker Roelcke eds. *Twentieth Century Ethics of Human Subjects Research: Historical Perspectives on Values, Practices, and Regulations*. Stuttgart: Steiner Verlag, 2004.
- _____. *Krankheit im Labor: Robert Koch und die medizinische Bakteriologie*. Göttingen: Wallstein Verlag, 2005.
- _____. "Robert Koch and the invention of the carrier state: tropical medicine, veterinary infections and epidemiology around 1900." *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences* 41,3 (Sept. 2010), pp. 232-40.
- Hansen, Karen Tranberg. "Household Work as a Man's Job: Sex and Gender in Domestic Service in Zambia." *Anthropology Today* 2, No. 3 1986, pp. 18-23.
- Hardy, Anne. *The epidemic streets : infectious disease and the rise of preventive medicine, 1856-1900*. New York: Oxford University Press, 1993.
- _____. "Cholera, the quarantine and the English preventive system, 1850-1895." *Medical History* 37 (1993), pp. 250-269

- _____. and M. Eileen Magnello, "Statistical methods in epidemiology: Karl Pearson, Ronald Ross, Major Greenwood and Austin Bradford Hill, 1900–1945." *Social and Preventive Medicine* 47, No. 2, (2002) pp. 80-89.
- Hartwig, Gerald W. "The Victoria Nyanza as a Trade Route in the Nineteenth Century." *Journal of African History* 11, no. 4, 1970, pp. 535-52.
- Haynes, Douglas. *Imperial Medicine: Patrick Manson and the Conquest of Tropical Disease*. Philadelphia: University of Pennsylvania Press, 2001.
- Hawking, Frank. "African Trypanosomiasis" in George W. Hunter III, J. Clyde Swartzwelder, and David F. Clyde, *Tropical Medicine*. Philadelphia: 1976.
- Headrick, Rita, and Daniel R. Headrick. *Colonialism, Health and Illness in French Equatorial Africa. 1885-1935*. Atlanta, Ga.: African Studies Association Press, 1994.
- Hodgson, Dorothy L. *Once Intrepid Warriors: gender, ethnicity, and the cultural politics of Maasai development*. Bloomington: Indiana University Press, 2001.
- _____. *Rethinking Pastoralism in Africa: Gender, Culture, and the Myth of the Patrilineal Pastoralist*. Oxford: James Currey, 2000.
- Holmes, C.F. "Zanzibari Influence at the Southern End of Lake Victoria: The Lake Route." *African Historical Studies*, vol. 4, no. 3 1971, pp. 477-503.
- Hoppe, Kirk Arden. *Lords of the Fly: Sleeping Sickness Control in British Uganda, 1900-1960*. Westport, CT: Praeger, 2003.
- Hotez, Peter J. *Forgotten People, Forgotten Diseases: The Neglected Tropical Diseases and their Impact on Global Health and Development*. Washington, DC: ASM Press, 2008.
- Huber, Valeska. "The Unification of the Globe by Disease? The International Sanitary Conferences on Cholera, 1851-1894." *The Historical Journal* 49, 2 (Jun., 2006), pp. 453-476.
- Hunt, Nancy Rose. *A Colonial Lexicon of Birth Ritual, Medicalization, and Mobility in the Congo*. Durham, NC: Duke University Press, 1999.
- Hutchinson, Sharon. "The Cattle of Money and the Cattle of Girls among the Nuer, 1930-83." *American Ethnologist* 19, No. 2 1992, pp. 294-316.
- Iliffe, John. *Tanganyika under German rule, 1905-1912*. Cambridge: Cambridge University Press, 1969.
- _____. *A Modern History of Tanganyika*. Cambridge: Cambridge University Press, 1979.
- _____. *East African Doctors: a History of the Modern Profession*. Cambridge: Cambridge University Press, 1998.
- _____. ed., *Modern Tanzanians: a Volume of Biographies*, Nairobi: East Africa Publishing House, 1973.
- Ishumi, A. G. M. *Kiziba, the cultural heritage of an old African kingdom*. Syracuse, N.Y.: Maxwell School of Citizenship and Public Affairs, Syracuse University, 1980.

- Jacobs, Nancy. "The Intimate Politics of Ornithology in Colonial Africa." *Comparative Studies in Society and History* 48, no. 3 May 2006, pp. 564-603.
- Janzen, John M. *The Quest for Therapy: Medical Pluralism in Lower Zaire*, Berkeley: University of California Press, 1978.
- _____. "Therapy Management: Concept, Reality, Process." *Medical Anthropology Quarterly*, vol.1, iss. 1 March 1987, pp. 68-84.
- Kaijage, Frederick. "AIDS Control and the Burden of History in Northwestern Tanzania." *Population and Environment* 14, no. 3 1993, pp. 279-300.
- Kadende-Kaiser Rose M. and Paul J. Kaiser, "Modern Folklore, Identity, and Political Change in Burundi." *African Studies Review* 40, No. 3 1997, pp. 29-54.
- Kilaini, Method M.P. *The Catholic Evangelization of Kagera in North-West Tanzania: the Pioneer Period, 1892-1912*. Rome, 1990.
- Kjekshus, Helge. *Ecology Control and Economic Development in East African History: The Case of Tanganyika, 1850-1950*. Athens: Ohio University Press, 1996.
- Klöppel, Ulrike. "Enacting Cultural Boundaries in French and German Diphtheria Serum Research." *Science in Context* 21, 2 (2008), pp. 161-180.
- Kleine, Friedrich. *Ein deutscher Tropenarzt*. Hannover: Schmorl & von Seefeld Nachf., 1949.
- Kodesh, Neil. *Beyond the Royal Gaze: Clanship and Public Healing in Buganda*. Charlottesville: University of Virginia Press, 2010.
- Koponen, Juhani. *Development for Exploitation: German Colonial Policies in Mainland Tanzania, 1884-1914*. Münster: Lit Verlag, 1994.
- Langlands, Brian. "The Sleeping Sickness Epidemic of Uganda – 1900-1920." Occasional Paper No. 1, Makerere University, Kampala, 1967.
- Langwick, Stacey. "Devils, Parasites, and Fierce Needles: Geographies of Medicine: Interrogating the Boundary between 'Traditional' and 'Modern' Medicine in Colonial Tanganyika." *Science, Technology, and Human Values* 32, no. 1 (2007), pp. 88-117.
- Larsson, Birgitta. *Conversion to Greater Freedom?: Women, Church and Social Change in North-Western Tanzania under Colonial Rule*, Stockholm: Almqvist & Wiksell International, 1991.
- Latour, Bruno. "Give Me a Laboratory and I Will Raise the World." In *Science Observed*, K. Knorr and M. Mulkay, eds., 141-70. Beverly Hills: Sage, 1983.
- _____. *Science in Action*. Cambridge, Mass: Harvard University Press, 1992.
- Lawrance, Benjamin N. Emily Lynn Osborn, and Richard L. Roberts, eds. *Intermediaries, Interpreters, and Clerks: African Employees in the Making of Colonial Africa* Madison: University of Wisconsin Press, 2006.
- Legros, Dominique, Gaëlle Ollivier, Marc Gastellu-Etchegorry, Christophe Paquet, Christian Burri, Jean Jannin, and Philippe Büscher, "Treatment of human African

- trypanosomiasis—present situation and needs for research and development." *Lancet Infectious Diseases* 2 2002, pp. 437-40.
- Lemarchand, René. *Dynamics of Violence in Central Africa*, Philadelphia: University of Pennsylvania Press, 2009.
- _____. *Burundi: Ethnic Conflict and Genocide* New York, NY: Cambridge University Press, 1996.
- _____. *Burundi: Ethnocide as discourse and practice* Cambridge University Press: Cambridge, 1994.
- _____. *Rwanda and Burundi*, Praeger: New York, 1970.
- Luedke, Tracy J. and Harry G. West, eds. *Borders and Healers: Brokering Therapeutic Resources in Southeast Africa*. Bloomington, IN: University of Indiana Press, 2006.
- Lilienfeld, David E. and Paul D. Stolley. *Foundations of Epidemiology*, 3rd ed., Oxford: Oxford University Press, 1994.
- Livingston, Julie. *Debility and the Moral Imagination in Botswana*. Bloomington, IN: Indiana University Press, 2005.
- _____. "Productive Misunderstandings and the Dynamism of Plural Medicine in Mid-century Bechuanaland." *Journal of Southern African Studies* 33, 4 (2007), pp. 801-10.
- Louis, William Roger. *Ruanda-Urundi 1884-1919*. Clarendon Press: Oxford, 1963.
- Lyons, Maryinez. "Sleeping sickness epidemics and public health in the Belgian Congo." In David Arnold, ed., *Imperial Medicine and Indigenous Societies*. New York: St. Martin's Press, 1988.
- _____. *The Colonial Disease: a Social History of Sleeping Sickness in Northern Zaire, 1900-1940*. Cambridge University Press: Cambridge, 1992.
- _____. "African Trypanosomiasis." In Kenneth Kiple et al., *Cambridge World History of Human Disease*. Cambridge: Cambridge University Press, 1993, pp. 552-61.
- Lwamgira, Francis X. *Amakuru ga Kiziba: The History of Kiziba and its Kings*. Second Edition, 1949. Translated by E.R. Kamuhangire, Makerere College, 1969.
- Malkki, Liisa. *Purity and Exile: Violence, Memory, and National Cosmology among Hutu Refugees in Tanzania* Chicago: University of Chicago Press, 1995.
- MacLeod, Roy and M. Lewis, eds. *Disease, Medicine and Empire*. Routledge: New York, 1988.
- Maddox, Gregory, James L. Giblin, and I.N. Kimambo, eds. *Custodians of the Land: Ecology and Culture in the History of Tanzania*. London: James Currey, 1996.
- Malloy, Patrick Thomas. "Holding [Tanganyika] by the Sindano": Networks of Medicine in Colonial Tanganyika." Unpublished Dissertation, University of California-Los Angeles, 2003.

- Malowany, Maureen. "Unfinished Agendas: Writing the History of Medicine of Sub-Saharan Africa." *African Affairs* 99 2000, pp. 325-349.
- Mannweiler, Erich. *Geschichte des Instituts für Schiffs- und Tropenkrankheiten in Hamburg, 1900-1945*. Kelttern-Weiler: Goecke & Evers, 1998.
- Markel, Howard. *Quarantine!: East European Jewish Immigrants and the New York City Epidemics of 1892*. Baltimore: Johns Hopkins University Press, 1997.
- Marks, Shula. "What is colonial about colonial medicine? And what has happened to imperialism and health?" *Social History of Medicine* 10 1997, pp. 205-219.
- McKenzie, John. "Experts and Amateurs: Tsetse, Nagana and Sleeping Sickness in East and Central Africa." in John MacKenzie, ed. *Imperialism and the Natural World*. Manchester: Manchester University Press, 1990.
- McNee, Lisa. "The Languages of Childhood: The Discursive Construction of Childhood and Colonial Policy in French West Africa." *African Studies Quarterly* 7, No. 4 (2004), pp. 20-32. <<http://www.africa.ufl.edu/asq/v7/v7i4a2.htm>>.
- Mendelsohn, J. Andrew. *Cultures of Bacteriology: Formation and Transformation of a Science in France and Germany, 1870-1914*. Unpublished Dissertation. Princeton University, 1996.
- _____. "From Eradication to Equilibrium: How epidemics became complex after World War I." In Christopher Lawrence and George Weisz, eds., *Greater than the Parts; Holism in Bio-medicine 1920-1950*. Oxford University Press: Oxford, 1998, pp. 303-31.
- Möllers, Bernhard. *Robert Koch: Persönlichkeit und Lebenswerk*. Hannover, 1951.
- Morabia, Alfredo, ed., *History of Epidemiologic Methods and Concepts*. Basel: Birkhauser Verlag, 2004.
- Mülders, Monika. "Formeln gegen Flagellaten – Der pharmakologische Kampf gegen die afrikanische Trypanosomiasis, 1900 bis 1950." Unpublished Ph.D. Dissertation. Ruprecht-Karls-Universität Heidelberg, 2003.
- Münch, Ragnhild and Stefan Biel. "Expedition, Experiment und Expertise im Spiegel des Nachlasses von 'Robert Koch'." *Sudhoffs Archiv* 82, 1 (1998), pp. 1-29.
- _____. *Robert Koch und seine Nachlaß in Berlin*. Berlin: Walter de Gruyter, 2003.
- Murray, Max and J.C.M. Trail. "Comparative Epidemiology and Control of Trypanosomes." *International Journal for Parasitology* 17, 2 (February 1987), pp. 621-27.
- Musambachime, Mwelwa C. "The Social and Economic Effects of Sleeping Sickness in Mweru-Luapula 1906-1922." *African Economic History* 10 1981, pp. 151-173.
- Neill, Deborah Joy. "Transnationalism in the Colonies: Cooperation, Rivalry, and Race in German and French Tropical Medicine, 1880-1930." Unpublished dissertation. University of Toronto, 2005.
- _____. "Paul Ehrlich's Colonial Connections: Scientific Networks and Sleeping Sickness Drug Therapy Research, 1900-1914." *Social History of Medicine* vol. 22, no. 1, pp. 61-77.

- _____. *Networks in Tropical Medicine: Internationalism, Colonialism, and the Rise of a Medical Specialty, 1890-1930*. Stanford, CA: Stanford University Press, forthcoming.
- Nelson, Kenrad E. and Carolyn F. Masters Williams, eds., *Infectious Disease Epidemiology: Theory and Practice*, Sudbury, MA: Jones and Bartlett Publishers, 2007.
- Newbury, David S. "Precolonial Burundi and Rwanda: Local Loyalties, Regional Royalties." *International Journal of African Historical Studies*, 34, no. 2 2011, pp. 255-313.
- _____. *Kings and clans: Ijwi Island and the Lake Kivu Rift, 1780-1840* Madison: University of Wisconsin Press, 1991.
- _____. "Irredentist Rwanda: Ethnic and Territorial Frontiers in Central Africa." *Africa Today* 44, No. 2 1997, pp. 211-221.
- _____. *The Land Beyond the Mists: essays on identity and authority in precolonial Congo and Rwanda*, Athens: Ohio University Press, 2009.
- Newbury, Catharine. *The Cohesion of Oppression: clientship and ethnicity in Rwanda, 1860-1960*, New York: Columbia University Press, 1988.
- Ocobock, Paul. "Coming of Age in a Colony: Youthhood, Lawlessness, and Colonial Authority in Kenya, 1898-1963." Unpublished PhD dissertation, Princeton University, 2010.
- Ogot, Bethwell A. *History of the southern Luo* Nairobi: East African Publishing House, 1967.
- Olpp, Gottlieb. *Hervorragende Tropenärzte in Wort und Bild*. Otto Gmelin: Munich, 1932.
- Olsson, Lars. "Labor Migration as a Prelude to World War I." *International Migration Review* 30, 4 (Winter, 1996), pp. 875-900.
- Opinel, Annick. "The Emergence of French Medical Entomology: The Influence of Universities, the Institut Pasteur and Military Physicians (1890–c.1938)." *Medical History* 52, 3 (2008), pp. 387–405.
- Osborne, Emily Lynn. "'Circle of Iron': African Colonial Employees and the Interpretation of Colonial Rule in French West Africa." *Journal of African History* 44,1 2003, pp. 29-50.
- Packard, Randall. *The Making of a Tropical Disease: a Short History of Malaria*. Baltimore: Johns Hopkins University Press, 2007.
- Pesek, Michael. "Cued Speeches: the emergence of *shauri* as colonial praxis in German East Africa, 1850-1903." *History in Africa* 33, 2006, pp. 395-412.
- Petryna, Adriana. *When Experiments Travel: Clinical Trials and the Global Search for Human Subjects*. Princeton: Princeton University Press, 2009.
- _____, Andrew Lakoff, and Arthur Kleinman, eds. *Global Pharmaceuticals: Ethics, Markets, Practices*. Durham, NC: Duke University Press, 2006.
- Picozzi, Kim, Eric M. Fèvre, Martin Odiit, Mark Carrington, Mark C. Eisler, Ian Maudlin, Susan C. Welburn, Sleeping Sickness In Uganda: A Thin Line Between Two Fatal Diseases." *British Medical Journal* 331, No. 7527 Nov. 26, 2005, pp. 1238-1241.

- Power, Helen J. *Tropical Medicine in the Twentieth Century: the Liverpool School of Tropical Medicine, 1898-1990*. Kegan Paul International: London, 1999.
- Pratt, Mary Louise. *Imperial Eyes: Travel Writing and Transculturation*, 2nd ed. New York: Routledge, 2008.
- Reid, Richard J. *Political Power in Pre-Colonial Buganda: Economy, Society, and Warfare in the Nineteenth Century*. Oxford: James Currey, 2002.
- _____. "The Ganda on Lake Victoria: a Nineteenth-Century East African Imperialism." *Journal of African History* 29 1998, pp. 349-63.
- Reining, Priscilla Copeland. "Haya Land Tenure: Landholding and Tenancy." *Anthropological Quarterly*, vo. 35, no. 2 , Apr. 1962, pp. 58-73.
- Riethmiller, Steven. "From Atoxyl to Salvarsan: Searching for the Magic Bullet." *Chemotherapy* 51 (2005), pp. 234-42.
- Rich, Jeremy. "Searching for Success: Boys, Family Aspirations, and Opportunities in Gabon, ca. 1900-1940." *Journal of Family History* 35, no. 1 2010, pp. 7-24.
- Ricossé, J.H. "Comparative aspects: II. French West and Equatorial Africa." In *Health in Tropical Africa During the Colonial Period*, E.E. Sabben-Clare, D.J. Bradley, and K. Kirkwood, eds., Oxford: Clarendon Press, 1980, pp. 228-38.
- Robertshaw, Peter and David Taylor, "Climate Change and the Rise of Political Complexity in Western Uganda." *Journal of African History* 41, No. 1 (2000), pp. 1-28.
- Stephen J. Rockel, *Carriers of Culture: Labor on the Road in Nineteenth-Century East Africa*. Portsmouth, NH: Heinemann, 2006.
- Schmidt, Peter R. *Historical Archaeology: a Structural Approach in an African Culture*. Westport, CT: Greenwood Press, 1978.
- _____. *Historical archaeology in Africa: representation, social memory, and oral traditions*. Lanham, MD: AltaMira Press, 2006.
- _____. *Iron technology in East Africa: symbolism, science, and archaeology*. Bloomington, IN: Indiana University Press, 1997.
- Schabel, Hans G. "Tanganyika Forestry under German Colonial Administration, 1891-1919." *Forest & Conservation History* 34, 3 (Jul., 1990), pp. 130-141.
- Schoenbrun, David Lee. *A Green Place, a Good Place: Agrarian Change, Gender, and Social Identity in the Great Lakes Region to the 15th Century*. Portsmouth, NH: Heinemann, 1998.
- _____. "Cattle Herds and Banana Gardens: The Historical Geography of the Western Great Lakes Region, ca. AD 800-1500." *The African Archaeological Review*, 11 1993, pp. 39-72.
- _____. "We Are What We Eat: Ancient Agriculture between the Great Lakes." *Journal of African History* 34, No. 1 1993, pp. 1-31.

- _____. "A Past Whose Time Has Come: Historical Context and History in Eastern Africa's Great Lakes," *History and Theory*, Vol. 32, No. 4, Beiheft 32: History Making in Africa (Dec., 1993), pp. 32-56.
- Schumaker, Lyn. *Africanizing Anthropology: Fieldwork, Networks, and the Making of Cultural Knowledge in Central Africa*. Durham: Duke University Press, 2001.
- Simarro, Pere, Jean Jannin and Pierre Catand. "Eliminating Human African Trypanosomiasis: where to we stand and what comes next?" *PLoS Medicine* 5, 2 (February 2008): e55.doi:10.1371/journal.pmed.0050055.
- Shorter, Aylward. *Cross and Flag in Africa; the "White Fathers" during the Colonial Scramble 1892-1914*. Orbis Books: Maryknoll, NY, 2006.
- Sjoerdsma, Albert and Paul J. Schechter, "Eflornithine for African sleeping sickness." *The Lancet*, Volume 354, Issue 9174, 17 July 1999, p. 254.
- Smythe, Kathleen R. "African Women and White Sisters at the Karema Mission Station, 1894-1920." *Journal of Women's History* 19, No. 2, 2007, pp. 59-84.
- Snowdon, Frank. *The Conquest of Malaria: Italy, 1900-1962*. New Haven: Yale University Press, 2006.
- Soff, Harvey. "Sleeping Sickness in the Lake Victoria Region of British East Africa, 1900-1915." *African Historical Studies* 2, no. 2 1969, pp. 255-68.
- Sommers, Marc. *Fear in Bongoland: Burundi Refugees in Urban Tanzania*, New York: Berghahn Books, 2001.
- Spear, Thomas and Richard Waller, eds., *Being Maasai: ethnicity & identity in East Africa*, London: James Currey, 1993.
- Spivak, Gayatri Chakravorty and Ranajit Guha, eds. *Selected Subaltern Studies*. New York: Oxford University Press, 1988.
- Steinmetz, George. "'The Devil's Handwriting': Precolonial Discourse, Ethnographic Acuity, and Cross-Identification in German Colonialism." *Comparative Studies in Society and History* 45, 1 (Jan., 2003), pp. 41-95.
- Stevens, Lesley. "Religious Change in a Haya Village, Tanzania." *Journal of Religion in Africa* 21, (1991), pp. 2-25.
- Steverding, Dietmar. "The history of African trypanosomiasis." *Parasites & Vectors* 1, no. 3, 2008, p. 15.
- Sunseri, Thaddeus. *Vilimani: Labor Migration and Rural Change in Early Colonial Tanzania*. Portsmouth, NH: Heinemann, 2002.
- Tappan, Jennifer. "'A Health Child Comes from a Healthy Mother: Mwanamugimu & Nutritional Science in Uganda, 1935-1973.'" Unpublished PhD Dissertation. Columbia University, 2010.

- Tilley, Helen. *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge*. Chicago: University of Chicago Press, 2011.
- _____. "Ecologies of Complexity: Tropical Environments, African Trypanosomiasis, and the Science of Disease Control in British Colonial Africa, 1900-1940." *Osiris* 19 2004, pp. 21-38.
- _____. *Ordering Africa: Anthropology, European Imperialism and the Politics of Knowledge*. New York: Palgrave, 2007.
- Torr, Stephen J., John W. Hargrove and Glyn A. Vale. "Towards a rational policy for dealing with tsetse." *Trends in Parasitology* 21, 11 (November 2005), pp. 537-41.
- Travis, Anthony S. "Anilines: Historical Background." In Zvi Rappaport, ed., *The Chemistry of Anilines*, pp. 1-75. Wiley: West Sussex, 2007.
- Ulrich von Wiezsäcker, Ernst, Oran R. Yong and Matthias Finger, eds. *Limits to Privatization: How to Avoid Too Much of a Good Thing*. London: Earthscan, 2005.
- Ureña Valerio, Lenny A. "The Stakes of Empire: Colonial Fantasies, Civilizing Agendas, and Biopolitics in the Prussian-Polish Provinces 1840-1914." Unpublished Dissertation. University of Michigan, 2010.
- Vansina, Jan. *Le Rwanda ancien: le royaume Nyiginya*. Paris: Karthala, 2001.
- _____. *Being Colonized: the Kuba experience in rural Congo, 1880-1960*. Madison: University of Wisconsin Press, 2010.
- Vaughan, Megan. *Curing Their Ills: Colonial Power and African Illness*. Stanford: Stanford University Press, 1991.
- Waller, Richard. "Tsetse fly in Western Narok, Kenya." *Journal of African History* 31, 1 (1990), pp. 81-101.
- Wainaina, Binyavanga. *Beyond River Yei: a journey into Sudan*. Nairobi: Kwani Trust, 2006.
- Weiss, Brad. *The Making and Unmaking of the Haya Lived World: Consumption, Commoditization, and Everyday Practice*. Durham, NC: Duke University Press, 1996.
- _____. *Sacred Trees, Bitter Harvests: Globalizing Coffee in northwest Tanzania*. Portsmouth, NH: Heinemann, 2003.
- White, Luise. *Speaking with Vampires: Rumor and History in Colonial Africa*. Berkeley: University of California Press, 2000.
- _____. "Tsetse Visions: Narratives of Blood and Bugs in Colonial Northern Zambia." *Journal of African History* 36, 2 (1995), pp. 219-45.
- _____. "'They could Make Their Victims Dull': Genders and Genres, Fantasies and Cures in Colonial Southern Uganda." *American Historical Review* 100, 5 (1995), pp. 1379-1402.
- _____., David William Cohen, and Stephen F. Miescher, eds. *African Words, African Voices*. Bloomington, IN: Indiana University Press, 2001.

- _____. "Differences in Medicine, Differences in Ethics: Or, When is It Research and When is It Kidnapping or is That Even the Right Question?" In P. Geissler and C. Molyneux *Evidence, Ethos, and Experiment: the Anthropology and History of Medical Research in Africa*, pp. 445-61. New York: Berghahn Books, 2011.
- Wilkinson, Lise and Anne Hardy. *Prevention and Cure: the London School of Hygiene & Tropical Medicine, a 20th Century Quest for Global Public Health*. Kegan Paul: London, 2000.
- Worboys, Michael. "The Emergence of Tropical Medicine: A Study in the Establishment of a Scientific Discipline." In G. LeMaine et al., *Perspectives on the Emergence of Scientific Disciplines*, pp. 75-98. Aldine: Chicago, 1976.
- _____. "The comparative history of sleeping sickness in East and Central Africa." *History of Science* 23 1990: 89-102.
- _____. "Tropical Diseases." In *Companion Encyclopedia to the History of Medicine*, Roy Porter and W.F. Bynum, eds.,. Routledge: London, 1993, pp. 512-36.
- _____. "Germs, Malaria and the Invention of Mansonian Tropical Medicine: From 'Diseases in the Tropics' to 'Tropical Diseases'" in David Arnold, ed., *Warm Climates and Western Medicine: the Emergence of Tropical Medicine, 1500-1900*, Rodopi: Amsterdam, 1996, pp. 181-207.
- _____. *Spreading Germs: Diseases, Theories, and Medical Practice in England, 1865-1900*. Cambridge University Press: Cambridge, 2000.
- Wright, Marcia. "Swahili Language Policy, 1890-1940." *Swahili* 35 (1965), pp. 40-8.
- _____. *Strategies of Slaves and Women: Life-Stories from East/Central Africa*. London: James Currey, 1993.
- _____. "Maji-Maji: Prophecy & Historiography." in David M. Anderson & Douglas H. Johnson, eds., *Revealing prophets: Prophecy in Eastern African History*. London: James Currey, 1995.