GLOBAL CONNECTIONS: ROUTES AND ROOTS – 15

Medical Mercenaries and Transimperial Science

Between the Dutch East Indies and German-speaking Europe, 1873–1920s

MONIQUE LIGTENBERG

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Monique Ligtenberg

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INTRODUCTION

The Dutch Empire and Germanophone Europe

"It is remarkable," Dutch officer Bloys van Treslong Prins declared in his 1935 address to the German Society for Natural History and Anthropology of East Asia in Batavia, "how many Germans one encounters when studying […] the history of the Dutch East Indies. In the early years, they were mostly adventurers and desperados, the same kind of people you find in the foreign legions today […]. However, from the eighteenth century onwards, only the very best travelled from Germany to […] this *Wunderland*;[1] thus there are quite a few Germans who owe a lot to the Indies, but there are also quite a few Germans to whom the Indies owe a lot."[2]

In the course of his speech, Van Treslong Prins particularly emphasized the important role of "German" professionals such as "physicians, clergymen, soldiers, merchants, planters, sailors, carters, musicians, cooks, butchers" who left their mark on the Dutch East Indies over three centuries, a fact that Dutch observers were well aware of at the time.[3] However, what the Dutch officer did not address was that for much of the period he referenced (it reaches back to the seventeenth century), modern-day "Germany" did not exist. In fact, many of the individuals he labelled "German" were born in the Habsburg Empire, the German-speaking parts of Bohemia, Prussia, parts of which today belong to Poland, or the (Old) Swiss Confederacy. What united them was not a national identity, but rather a shared linguistic, professional, or social background.

Among the many professional groups recruited in German-speaking Europe for Dutch colonial services, physicians were second in number only to soldiers.[4] Yet, despite their significant presence in the Dutch East Indies, they have remained largely overlooked in historical scholarship. Addressing this lacuna, *Medical Mercenaries* is the first comprehensive study to put the spotlight on the trajectories

[1] Emphasis added.

[2] B. van Treslong Prins, *Die Deutschen in Niederländisch-Indien: Vortrag gehalten in der Ortsgruppe Batavia am 30. September 1935* (Leipzig: Otto Harrassowitz, 1937), 1.

[3] Ibid.

[4] See P. Krauer, *Swiss Mercenaries in the Dutch East Indies: A Transimperial History of Military Labour, 1848–1914* (Leiden: Leiden University Press, 2024); M. Bossenbroek, *Volk voor Indië: De werving van Europese militarien voor de Nederlandes koloniale dienst 1814–1909* (Amsterdam: Van Soeren, 1992). For the high presence of German physicians in the Dutch Colonial Army see P. Teichfischer, "Transnational Entanglements in Colonial Medicine: German Medical Practitioners as Members of the Health Service in the Dutch East Indies (1816–1884)," *Histoire, médecine et santé* 10 (2016), 63–78.

of the more than 300 physicians from the German-speaking parts of Switzerland, the German States and Empire, and Habsburg Austria, who served in the Dutch East Indies in the late nineteenth and early twentieth centuries.

These physicians acted as "medical mercenaries" both in a literal and metaphorical sense.[5] Literally, they operated within a medical system in which the *Koninklijk Nederlandsch-Indisch Leger* (Dutch Colonial Army; KNIL) maintained a near-monopoly on European health care, and most foreign Europeans in Dutch colonial medical services were recruited as military medical officers. The emergence of civil hospitals and research institutes was closely tied to this military monopoly: many civil facilities, such as plantation or mining estate hospitals, were privately owned and often founded in response to the colonial government's prioritisation of military medical institutions. Metaphorically, medical mercenaries acted as hired agents of (civil) medical institutions whose work extended beyond disinterested or philanthropic care. Civil hospitals and research facilities in the Dutch East Indies primarily focused on maintaining the health of soldiers, settlers, and indentured labourers, and were often shaped by the same disciplinary and biopolitical regimes that shaped military medicine. Importantly, however, despite their close connection to the Dutch colonial regime, medical mercenaries were not merely "tools of empire":[6] their decisions to enter colonial service often reflected professional ambitions, personal interests, and scientific agendas that could diverge from those of their employers.

Apart from constituting a hitherto understudied group of actors, the case of German-speaking physicians in the Dutch East Indies also offers fresh perspectives on the history of colonial medicine and its practitioners more broadly. First, it sheds new light on the border crossing – and at times truly global – nature of medical knowledge production.[7] Rather than examining Switzerland, Germany, Austria, the Netherlands and the Dutch East Indies as separate entities in the making of medical

[5] I use the term "mercenaries" to capture both the financial and professional incentives that drew individuals to the military and civil health institutions of the Dutch East Indies, as well as the sense of "foreignness" that many German-speaking medical professionals reported experiencing in the Dutch Empire. For a broader discussion of the term "mercenary" see S. Morillo: "Mercenaries, Mamluks and Militia: Towards a Cross-Cultural Typology of Military Service," in J. France (ed): *Mercenaries and Paid Men: The Mercenary Identity in the Middle Ages* (Leiden: Brill, 2008), 243–60.

[6] For the conceptualisation of colonial medicine as "tool of empire", see D. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981).

[7] See D. Neill, *Networks in Tropical Medicine* (Stanford: Stanford University Press, 2012); B. M. Bennet and J. M. Hodge (eds), *Science and Empire: Knowledge and Networks of Science across the British Empire, 1800–1970* (Basingstoke: Palgrave Macmillan, 2011); A. Digby, W. Ernst, and P. B. Mukharji (eds), *Crossing Colonial Historiographies: Histories of Colonial and Indigenous Medicines in Transnational Perspective* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2010).

theory and practice, this study adopts the analytical lens of *Germanophoneness* to delimit its spatial framework and to reconstruct transimperial connections between individual regions, nations, and empires.[8] Indeed, as various examples in this book demonstrate, German-speaking physicians in the Dutch East Indies were not primarily connected through national affiliation, but rather through their social, educational, or linguistic background and a shared commitment to the values and virtues of the "modern" medical sciences.

Second, the book analyses official medical publications alongside intimate testimonies such as letters, diaries, or travelogues, revealing that medical professionals' decisions to embark on imperial careers were driven by motives that went beyond allegedly disinterested scientific curiosity. Taking an intersectional perspective, it studies the construction of *medical masculinities in the tropics* to grasp how joining imperial services could merge multiple ambitions and shifting identities. For many physicians, the medical profession could function as a vehicle for upward social mobility and the accumulation of financial, cultural, and symbolic capital, an effect they hoped to amplify by travelling to the colonies and presenting themselves as widely travelled men of science. To others, modern medical subdisciplines such as tropical medicine and bacteriology offered a means to assert paternalistic power over racialised and gendered "others" in the colonies, or to claim scientific authority in the emerging field of laboratory science. Medical rationality and objectivity also often served as powerful tools in reinforcing class distinctions and embodying ideals of middle-class respectability in colonial settings. At the same time, in the colonial field, previously unknown diseases, acts of resistance or competing epistemologies severely threatened these claims to hegemony and limited physicians' scope for action, revealing the inherently fragile nature of European medical masculinities in the tropics.[9]

Third, rather than studying the history of colonial medicine through the development of theories, *Medical Mercenaries* focuses on practitioners "on the spot". This focus helps shed light on the colonial underpinnings and contingent relationship between medical theory and practice in the age of the "laboratory revolution" in medicine. By examining German-speaking medical officers, civil doctors, and plantation physicians employed with colonial health care institutions in the Dutch East Indies, the book explores the role of experiences in the colonial field in shaping "modern" medical subfields such as bacteriology, tropical medicine, and hygiene as

[8] For German-speaking Europe as a distinct space of scholarly exchange from a (albeit Eurocentric) history of science perspective, see D. Phillips, *Acolytes of Nature: Defining Natural Science in Germany, 1770–1850* (Chicago: The University of Chicago Press, 2012), 1–10.

[9] For the "fragility" of "white masculinity", also see W. Anderson: "The Trespass Speaks: White Masculinity and Colonial Breakdown," *The American Historical Review* 102:5 (1997), 1343–70.

well as to the crucial role of colonial armies, hospitals, laboratories, and plantation estates as key sites of medical knowledge production. It covers the period from 1873 – when the Dutch Empire launched its war against the Sultanate of Aceh and medicine became increasingly vital due to the high fatality rates among soldiers succumbing to "tropical" diseases – through the rise of experimental laboratory medicine in the 1880s and 1890s, concluding with the establishment of a civil health-care system in the 1910s and 1920s in the context of the Dutch colonial government's "ethical turn." Adopting a longue durée perspective, the book reconstructs broader shifts in transimperial demands for medical expertise and personnel, as well as the relationship between Dutch colonial policy and German-language medical discourse more broadly. It specifically highlights how racial ideology shaped the supposedly "objective" biomedical sciences at the turn of the twentieth century, even in regions such as Switzerland or the Habsburg and the German Empire, that are often believed to be barely affected by colonial ideology.

Transimperial Demands and German-speaking Europe

The recruitment of over 300 physicians from the German-speaking parts of Habsburg Austria, Switzerland, and the German States and Empire for Dutch colonial services must be understood within the broader context of global markets for labour and expertise that emerged in the early modern period and continued to shape the connections between different European nation states and empires up until the early twentieth century. From the seventeenth century onwards, trading companies such as the Dutch East and West India Companies (*Verenigde Oostindische Compagnie* [VOC]; *Westindische Compagnie* [WIC]) and the English/British East India Company (EIC) faced enormous demands for manpower that could not be fulfilled within the confines of individual states, principalities, or kingdoms. As a consequence, soldiers, sailors, cooks, craftsmen, and ship surgeons were hired through recruitment networks that spread across Europe.[10] These impe-

[10] See J. van Lottum: "Their Last Days in Europe: Germans on the Amsterdam VOC Fleet of 1775," in C. Brauner et al.: *Encountering the Global in Early Modern Germany: Microhistories of Mobility, Materiality, and Belonging* (New York: Berghahn, 2025), 25–44; J. van Lottum and L. Petram, "In Search of Strayed Englishmen: English Seamen Employed in the Dutch East India Company in the Late Seventeenth and Eighteenth Centuries," in S. Levelt, E. van Raamsdonk, and M. D. Rose (eds), *Anglo-Dutch Connections in the Early Modern World* (New York: Routledge, 2023), 100–11; J. van Lottum, J. Lucassen, and L. Heerma van Voss, "Sailors, National and International Labour Markets and National Identity, 1600–1850," in R. Unger (ed), *Shipping and Economic Growth 1350–1850* (Leiden: Brill, 2011), 309–51; J. Lucassen, "A Multinational and its Labor Force: The Dutch East India Company, 1595–1795," *International Labor and Working-Class History* 66 (2004), 12–39.

rial labour markets continued to exist after the VOC (bankrupt in 1799) and the EIC (dissolved in 1874) lost power, and their colonial possessions were gradually transferred to the European monarchies, republics, and nations, which continued to rely on foreign labour and knowledge to sustain imperial expansion. David Arnold has described this dynamic between imperial demands for labour and expertise and the recruitment of foreigners for imperial services as "contingent colonialism," or the "complementarity between what the imperial power could itself provide (not least in administrative infrastructure) and what outsiders could offer by way of additional skills, expertise and commodities […]."[11]

The significance of a foreign European imperial workforce and knowledge has been particularly well established in the case of Germans in the British Empire. In the late eighteenth century, for example, Hanoverian regiments served the British East India Company.[12] From the nineteenth century onwards, university-educated men from the German States became increasingly sought after for British imperial service, as the prestige of "Humboldtian science" enhanced the reputation of German expertise across Europe.[13] German botanists, naturalists, intellectuals, engineering or forestry experts became highly demanded by the British Empire, which – at least until the mid-nineteenth century – lacked sufficient skilled personnel to survey, study, and exploit its overseas territories.[14]

[11] D. Arnold, "Globalization and Contingent Colonialism: Towards a Transnational History of 'British' India," *Journal of Colonialism and Colonial History* 16:2 (2015), online, DOI: 10.1353/cch.2015.0019. See also K. Manjapra, "The Semiperipheral Hand: Middle-Class Service Professionals of Imperial Capitalism," in C. Dejung, D. Motadel, and J. Osterhammel (eds), *The Global Bourgeoisie: The Rise of the Middle Classes in the Age of Empire* (Princeton: Princeton University Press, 2019), 184–204.

[12] See C. Tzoref-Ashkenazi, *German Soldiers in Colonial India* (London: Routledge, 2016). For German soldiers and officers in "foreign" imperial services, also see C. Kamissek, "German Imperialism before the German Empire: Russo-Prussian Military Expeditions to the Caucasus before 1871 and the Continuity of German Colonialism," *Journal of Modern European History* 14:2 (2016), 183–201. That high-ranking German mercenary officers could make a lasting impact is evident from D. Rothermund, "Carl August Schlegel's Military Geography of the Carnatic," in R. Ahuja and M. Christof-Füchsle (eds), *A Great War in South India: German Accounts of the Anglo-Mysore Wars, 1766–1799* (Berlin: De Gruyter, 2021), 79–92.

[13] See A. Daum, "Science, Politics, and Religion: Humboldtian Thinking and the Transformations of Civil Society in Germany, 1830–1870," *Osiris* 17 (2002), 107–40; M. Dettelbach, "Humboldtian Science," in N. Jardine, J. Secord, and E. Spary (eds), *Cultures of Natural History* (Cambridge: Cambridge University Press, 1996), 287–304.

[14] See A. Daum, "German Naturalists in the Pacific around 1800: Entanglement, Autonomy, and a Transnational Culture of Expertise," in H. Berghoff, F. Biess, and U. Strasser (eds), *Explorations and Entanglements: Germans in Pacific Worlds from the Early Modern Period to World War I* (New York: Berghahn, 2019), 79–102; M. von Brescius, *German Science in the Age of Empire: Enterprise, Opportunity and the Schlagintweit Brothers* (Cambridge: Cambridge University Press, 2019); J. Gascoigne, "The German Enlightenment and the Pacific," in L. Wolff and M. Cipollini (eds), *The Anthropology of*

Meanwhile, an emerging body of scholarship on "colonialism without colonies" has demonstrated that the labour markets for foreign expertise encompassed not only colonial "latecomers" like Germany or Belgium but also extended to regions without overseas empires of their own.[15] As an emerging body of literature has shown, settlers, missionaries, merchants, scientists, soldiers, and travellers from various Nordic countries, Switzerland, the Habsburg Empire, or parts of Central and Eastern Europe collaborated with and benefitted from foreign colonial powers.[16]

the Enlightenment (Stanford: Stanford University Press, 2007), 141–71; Arnold, "Globalization and Contingent Colonialism." Also see K. Manjapra, *Age of Entanglement: German and Indian Intellectuals across Empire* (Cambridge: Harvard University Press, 2014); J. Rüger, "Writing Europe into the History of the British Empire," in J. H. Arnold, M. Hilton, and J. Rüger (eds), *History after Hobsbawm: Writing the Past for the Twenty-First Century* (Oxford: Oxford University Press, 2017), 35–49; U. Kirchberger: "Between Transimperial Networking and National Antagonism: German Scientists in the British Empire During the Long Nineteenth Century," in A. Goss (ed), *The Routledge Handbook of Science and Empire* (London: Routledge, 2021), 138–47; idem: "German Scientists in the Indian Forest Service: A German Contribution to the Raj?," *The Journal of Imperial and Commonwealth History* 29:2 (2001) 1–26; T. Delfs, "Kolonialismus ohne Kolonien? Deutsche Naturforscher im Südasien des 18. und 19. Jahrhunderts" *Südasien Chronik* 12 (2022), 389–407.

[15] See P. Purtschert, F. Falk, and B. Lüthi, "Switzerland and 'Colonialism without Colonies': Reflections on the Status of Colonial Outsiders," *International Journal of Postcolonial Studies* 18:2 (2016), 286–302; G. Fur, "Colonialism and Swedish History: Unthinkable Connections?," in M. Naum and J. Nordin (eds), *Scandinavian Colonialism and the Rise of Modernity: Contributions to Global Historical Archaeology* (New York: Springer, 2013), 17–36; W. Telesko, "Colonialism without Colonies: The Civilizing Missions in the Habsburg Empire," in M. Falser (ed), *Cultural Heritage as Civilizing Mission: From Decay to Recovery* (Cham: Springer, 2015), 35–48; P. Purtschert, B. Lüthi, and F. Falk (eds), *Postkoloniale Schweiz: Formen und Folgen eines Kolonialismus ohne Kolonien* (Bielefeld: Transcript, 2012).

[16] For the Nordic countries, see J. L. Hennessey and J. Lathi, "Nordics in Motion: Transimperial Mobilities and Global Experiences of Nordic Colonialism," special issue in *The Journal of Imperial and Commonwealth History* 51:3 (2023) as well as the contributions in J. Höglund and L. Andersson Burnett, "Introduction: Nordic Colonialisms and Scandinavian Studies," special issue of: *Scandinavian Studies* 91:1/2 (2019). For Switzerland, see T. David, B. Etemad, and J. Schaufelbuehl, *La Suisse et l'esclavage des Noirs* (Lausanne: Ed. Antipodes, 2005); B. Ziegler, *Schweizer statt Sklaven: Schweizerische Auswanderer in den Kaffee-Plantagen von Sao Paulo (1852–1866)* (Stuttgart: Steiner, 1985); L. Pfäffli, *Arktisches Wissen: Schweizer Expeditionen und dänischer Kolonialhandel in Grönland (1906–1913)* (Frankfurt am Main: Campus, 2021); O. Pavillon, *Des Suisses au coer de la traite Négrière: De Marseille à l'Île de France, d'Amsterdam aux Guyanes (1770–1840)* (Lausanne: Ed. Antipodes, 2017); B. Schär, *Tropenliebe: Schweizer Naturforscher und niederländischer Imperialismus in Südostasien um 1900* (Frankfurt am Main: Campus, 2015); P. Harries, *Butterflies & Barbarians: Swiss Missionaries & Systems of Knowledge in South-East Africa* (Oxford: J. Currey, 2007); A. Zangger, Koloniale Schweiz: Ein Stück Globalgeschichte zwischen Europa und Südostasien (1860–1930) (Bielefeld: Transcript, 2014); C. Dejung, *Die Fäden des globalen Marktes: Eine Sozial- und Kulturgeschichte des Welthandels am Beispiel der Handelsfirma Gebrüder Volkart 1851–1999* (Köln: Böhlau, 2013); B. Veyrassat, *De l'attirance à l'expérience de l'Inde: Un Vaudois à la marge du colonialisme Anglais, Antoine-Louis-Henri Polier (1741–1795)* (Neuchâtel: Ed. Livreo-Alphil, 2022); B. Schär, "From Batticaloa via Basel to Berlin. Transimperial Science in Ceylon

According to the historian Bernhard C. Schär, the Dutch Empire had particularly high "demands" for European labour and expertise that could not be met within the Netherlands – a small country ruling over a vast overseas empire – creating various "opportunities" for foreigners from regions with no or late direct access to colonies.[17] Historians have showcased the German States and Empire as well as Switzerland as the most important recruitment area for Dutch colonial services. Scholars have, for example, pointed out the significant presence of Swiss and German sailors, naturalists, and settlers aboard the VOC ships and in early modern Dutch settlements.[18]

and Beyond around 1900," *The Journal of Imperial and Commonwealth History* 48:2 (2019), 230–262; Krauer, *Swiss Mercenaries in the Dutch East Indies*. For Habsburg Austria see S. Loidl, *'Europa ist zu enge geworden': Kolonialpropaganda in Österreich-Ungarn 1885–1918* (Vienna: Promedia Verlag, 2017); U. Bach, *Tropics of Vienna: Colonial Utopias of the Habsburg Empire 1870–1900* (New York: Berghahn, 2016); M. Falser, *Habsburgs Going Global: The Austro-Hungarian Concession in Tientsin/Tianjin in China (1901–1917)* (Vienna: Austrian Academy of Sciences Press, 2022); W. Sauer, "Habsburg Colonial: Austria-Hungary's Role in European Overseas Expansion Reconsidered," *Austrian Studies* 20 (2012), 5–23; S. Loidl, "Colonialism through Emigration: Publications and Activities of the Österreich-Ungarische Kolonialgesellschaft (1894–1918)," *Austrian Studies* 20 (2012), 161–75; H. Morrison, "Open Competition in Botany and Diplomacy: The Habsburg Expedition of 1783," *Studies in Eighteenth-Century Culture* 46 (2017), 107–19; J. Feichtinger and J. Heiss, "Interactive Knowledge-Making: How and Why Nineteenth-Century Austrian Scientific Travelers in Asia and Africa Overcame Cultural Differences," in J. Feichtinger, A. Bhatti, and C. Hülmbauer (eds), *How to Write the Global History of Knowledge-Making: Interaction, Circulation and the Transgression of Cultural Difference* (Springer: Cham, 2020), 45–69. For Central and Eastern Europe, see J. Mrázek (ed), *Escaping Kakania: Eastern European Travels in Colonial Southeast Asia* (Budapest: Central European University Press, 2024); T. Ewertowski, "Javanese Mosaic: Three Polish Representations of Java from the Second Half of the Nineteenth Century," *Indonesia and the Malay World* 50:147 (2022), 211–33; N. D. Wood, "Vagabond Tourism and a Non-Colonial European Gaze: Kazimierz Nowak's Bicycle Journey Across Africa, 1931–1936," *Journal of Tourism History* 14:3 (2022), 291–314; M. Grzechnik, "'Ad Maiorem Poloniae Gloriam!' Polish Inter-colonial Encounters in Africa in the Interwar Period," *The Journal of Imperial and Commonwealth History* 48:5 (2020), 826–45. Also see the contributions in B. Schär and M. Toivanen (eds), *Integration and Collaborative Imperialism in Modern Europe: At the Margins of Empire, 1800–1950* (London: Bloomsbury Academic, 2025).

[17] See B. Schär, "Introduction: The Dutch East Indies and Europe, ca. 1800–1930. An Empire of Demands and Opportunities," *BMGN – Low Countries Historical Review* 134:3 (2019), 7–9. For transnational or global perspectives on Dutch colonial history more broadly, also see R. Raben, "A New Dutch Imperial History? Perambulations in a Prospective Field," *BMGN – Low Countries Historical Review* 128:1 (2013), 5–30; S. Legêne, "The European Character of the Intellectual History of Dutch Empire," *BMGN – Low Countries Historical Review* 132:2 (2017), 110–20; K. Fatah-Black, "A Swiss Village in the Dutch Tropics," *BMGN – Low Countries Historical Review* 128:1 (2013), 31–52.

[18] See F. Hoyer, *Relations of Absence: Germans in the East Indies and their Families c. 1750–1820* (Uppsala: Acta Universitas Upsaliensis, 2020); Fatah-Black, "A Swiss Village in the Dutch Tropics"; R. van Gelder, *Het Oost-Indisch avontuur: Duitsers in dienst van de VOC (1600–1800)* (Nijmegen: Sun, 1997); L. Blussé and J. De Moor, *Een Zwitsers leven in de tropen: De lotgevallen van Elie Ripon in dienst van de VOC (1618–1626)* (Amsterdam: Prometheus, 2016); R. Reyes, "German Apothecaries and Botanists in Early Modern Indonesia, the Philippines, and Japan," in Berghoff/Biess/Strasser (eds), *Explorations and*

The global networks linking German-speaking Europeans with the Dutch Empire in Southeast Asia persisted well into the twentieth century, continuing to operate even after these regions transformed into modern nation states. In his seminal study, the historian Philipp Krauer has shed light on the transnational recruitment networks of the KNIL that enabled 5,800 Swiss mercenaries to join Dutch colonial services even after the foundation of the Swiss nation state in 1848.[19] Although less studied, the recruitment of Germans was numerically even more significant to sustain the KNIL's manpower.[20] In the second half of the nineteenth century, merchants and planters from Central and Northern Europe migrated to the Dutch East Indies in search of economic opportunities, playing a crucial role in developing the colonial plantation economy and expanding transimperial trade networks.[21] Others have shown that Swiss and German naturalists made substantial contributions to the scientific investigation of the Dutch East Indies' flora, fauna, and peoples, or how so-called ethnographic artifacts from the Dutch East Indies circulated between museums in Berlin, Dresden, and Vienna through transnationally operating art collectors.[22]

In sum, existing scholarship has significantly expanded the spatial and temporal reach of so-called "traditional" imperial powers such as the British,

Entanglements, 35–54; H. De Groot, "Engelbert Kaempfer, Imamura Gen'emon and Arai Hakuseki: An Early Exchange of Knowledge between Japan and the Netherlands," in S. Huigen, J. L. De Jong, and E. Kolfin (eds), *The Dutch Trading Companies as Knowledge Networks* (Leiden: Brill, 2010), 201–09.

[19] See Krauer, *Swiss Mercenaries in the Dutch East Indies*; B. Schär, "Switzerland, Borneo and the Dutch East Indies: Towards a New Imperial History of Europe, c. 1770–1850," *Past & Present* 257:1 (2022), 134–67; P. Krauer, "Welcome to Hotel Helvetia! Friedrich Wüthrich's Illicit Mercenary Trade Network for the Dutch East Indies, 1858–1890," *BMGN – Low Countries Historical Review* 134:3 (2019), 122–47; Bossenbroek, *Volk voor Indië*; M. Bossenbroek, "The Living Tools of Empire: The Recruitment of European Soldiers for the Dutch Colonial Army, 1814–1909," *The Journal of Imperial and Commonwealth History* 23:1 (1995), 26–53.

[20] See, for example, M. Bossenbroek, "'Dickköpfe' und 'Leichtfüsse': Deutsche im niederländischen Kolonialdienst des 19. Jahrhunderts," in K. Bade (ed), *Deutsche im Ausland – Fremde in Deutschland: Migration in Geschichte und Gegenwart* (Munich: Beck'sche Verlagsbuchhandlung, 1992), 249–54.

[21] See M. Toivanen, "A Nordic Colonial Career Across Borders: Hjalmar Björling in the Dutch East Indies and China," *The Journal of Imperial and Commonwealth History* 51:3 (2023), 421–41; Zangger, *Koloniale Schweiz*.

[22] See B. Schär, *Tropenliebe: Schweizer Naturforscher und niederländischer Imperialismus in Südostasien um 1900* (Frankfurt am Main: Campus, 2015); R. Reyes, "German Apothecaries and Botanists in Early Modern Indonesia, the Philippines, and Japan," in Berghoff/Biess/Strasser (eds), *Explorations and Entanglements*, 33–54; A. Weber, "Collecting Colonial Nature: European Naturalists and the Netherlands Indies in the Early Nineteenth Century," *BMGN – Low Countries Historical Review* 134:3 (2019), 72–95; C. Drieënhuizen, "Being 'European' in Colonial Indonesia: Collections between Yogyakarta, Berlin, Dresden and Vienna in the Late Nineteenth Century," *BMGN – Low Countries Historical Review* 134:3 (2019), 21–46.

German, or the Dutch,[23] while also highlighting the role of "colonial outsiders" like Switzerland or Nordic countries in sustaining, conquering and economically exploiting European overseas colonies. Yet, most existing studies examining the role of foreign Europeans in the Dutch (or British) Empire remain shaped by what Sebastian Conrad has called "methodological nationalism."[24] By focusing on imperial recruitment practices in Switzerland and German separately, historians have tended to overlook the broader pan-European dimension of foreign recruitment, scholarly networks, and ideological currents, as well as institutional and interpersonal exchanges that transcended individual nation-states.

Medical Mercenaries addresses this gap by shifting focus from narrowly defined national backgrounds – such as German, Swiss, or Austrian – to the recruitment of medical professionals from German-speaking Europe as a whole. Using the analytical lens of *Germanophoneness*, it traces both large-scale transimperial recruitment networks linking Switzerland, the German Empire, and the Habsburg Monarchy with the Netherlands and its empire, as well as the micro-historical dynamics behind individual careers shaped by border-crossing diasporic ties, academic exchanges, and professional mobility.[25] The focus on Germanophone Europe aids in exploring connections and alliances that extended beyond national affiliation, such as a shared language, academic culture, or social background, while also shedding light on disconnections stemming from differences in regional identities, linguistic barriers, cultural misunderstandings, or religious tensions.

In addition to broadening the geographical scope of Dutch recruitment of foreign experts, this book also bridges often disconnected time frames by covering the period from 1873 into the 1920s. These decades were marked by profound transformations, including the Dutch colonial government's shift from laissez-faire liberalism to a paternalistic "ethical policy," the rise and eventual collapse of the German Colonial Empire, and the oscillation of colonial medical discourse between national rivalry and scientific internationalism. By studying the history

[23] For global and transnational perspectives on the German Colonial Empire more broadly, see S. Conrad, *Globalisation and the Nation in Imperial Germany* (Cambridge: Cambridge University Press, 2006); S. Conrad and J. Osterhammel (eds), *Das Kaiserreich transnational: Deutschland in der Welt 1871–1914* (Göttingen: Vandenhoeck & Ruprecht, 2004); J. Osterhammel, *Die Verwandlung der Welt: Eine Geschichte des 19. Jahrhunderts* (München: CH Beck, 2009) B. Naranch and G. Eley (eds), *German Colonialism in a Global Age* (Durham: Duke University Press, 2014). For the Dutch Empire, see Raben, "A New Dutch Imperial History?"; S. Legêne, "The European Character of the Intellectual History of Dutch Empire," *BMGN – Low Countries Historical Review* 132:2 (2017), 110–120; Huigen/De Jong/Kolfin (eds), *The Dutch Trading Companies as Knowledge Networks*; D. Onnekink and G. Rommelse, *The Dutch in the Early Modern World: A History of Global Power* (Cambridge: Cambridge University Press, 2019).

[24] S. Conrad, *What is Global History?* (Princeton: Princeton University Press, 2016), 3.

[25] My notion of "transimperiality" builds on D. Hedinger and N. Heé, "Transimperial History – Connectivity, Cooperation and Competition," *Journal of Modern European History* 14:4 (2018), 429–52.

of transimperial labour markets in their longue-durée, the book demonstrates how shifting patterns of national competition and alliance reshaped recruitment practices and redefined the imperial career opportunities as well as the scopes of action available to German-speaking physicians over time.

Globalising Colonial Medicine

Although the range of professional groups considered by the historiography of transimperial labour markets in the age of empire has steadily expanded, encompassing missionaries, mercenaries, merchants, soldiers, sailors, or naturalists, physicians remain conspicuously absent from studies of foreign imperial services. With the notable exception of Philipp Teichfischer's survey of the recruitment of more than 300 German physicians for the Dutch colonial military's health services between 1816 and 1884, no study has systematically examined the role of medical professionals from German-speaking Europe in the Dutch Empire, despite the fact that they at times even outnumbered their Dutch colleagues.[26] This historiographical lacuna is all the more striking given the central role historians have attributed to medicine as a critical "tool of empire" in nineteenth-century imperial conquest.[27]

Over the past decades, the historiography of colonial medicine has moved beyond diffusionist models that imagined a one-way transfer of medical knowledge from European metropoles to colonial peripheries. Scholars have instead highlighted the hybrid nature of medical knowledge, showing how colonial practices were shaped through constant negotiation between European and indigenous actors, and how indigenous medical traditions informed European scientific developments.[28] Historians have also traced how colonial medicine reinforced

[26] See Teichfischer, "Transnational Entanglements in Colonial Medicine."

[27] See D. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981). For the ways in which advances in tropical medicine, parasitology, and hygiene at the turn of the twentieth century influenced imperial culture and expansion, also see R. MacLeod and M. Lewis (eds), *Disease, Medicine and Empire: Perspectives on Western Medicine and the Experience of European Expansion* (London: Routledge, 1988); P. Curtin, *Death by Migration: Europe's Encounter with the Tropical World in the Nineteenth Century* (Cambridge: Cambridge University Press, 1989).

[28] Important studies in this field are H. Tilley, *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870–1950* (Chicago: University of Chicago Press, 2011); P. Chakrabarti, *Medicine and Empire, 1600–1960* (Basingstoke: Palgrave Macmillan, 2014); D. Arnold, *Science, Technology and Medicine in Colonial India* (Cambridge: University of Cambridge Press, 2000); D. Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: University of California Press, 1993); M. Harrison, *Public Health in British India: Anglo-Indian*

racial, gendered, and class hierarchies,[29] how colonial authorities intervened – often violently – in the everyday lives of colonised populations through public health policies and vaccination campaigns,[30] and how medicine served as a key ideological instrument of the "civilising mission."[31] Furthermore, a growing body of work has brought into focus the wide range of intermediaries such as nurses, medical officers, missionaries, so-called shamans, whose work was central to the making of colonial medicine.[32] Examining German-speaking physicians in the Dutch East Indies hence not only allows us to address the understudied role of foreign European medical professionals within the Dutch Empire but also has the

Preventive Medicine 1859–1914 (Cambridge: Cambridge University Press, 1994); M. Vaughan, *Curing their Ills: Colonial Power and African Illness* (Cambridge: Polity Press, 1991).

[29] See, for example, J. Downs, *Maladies of Empire: How Slavery, Imperialism, and War Transformed Medicine* (Cambridge: The Belknap Press of Harvard University Press, 2021); S. Seth, "Race and Science," in N. Hudson (ed), *A Cultural History of Race, vol. 4: In the Reformation and Enlightenment* (London: Bloomsbury Academic, 2021), 71–86; T. Lockley, *Military Medicine and the Making of Race: Life and Death in the West India Regiments, 1795–1874* (New York: Cambridge University Press, 2020); S. Seth, *Difference and Disease: Medicine, Race and the Eighteenth-Century British Empire* (Cambridge: Cambridge University Press, 2018); S. Marks, "What is Colonial about Colonial Medicine?," *Social History of Medicine* 10 (1997), 205–19; P. Lorcin, "Imperialism, Colonial Identity, and Race in Algeria, 1830–1870: The Role of the French Medical Corps," *Isis* 90:4 (1999), 653–79; L. Schiebinger, "The Anatomy of Difference: Race and Sex in Eighteenth-Century Science," *Eighteenth-Century Studies* 23 (1990), 387–405.

[30] See N. Bhattacharya, *Contagion and Enclaves: Tropical Medicine in Colonial India* (Liverpool: Liverpool University Press, 2012); W. Anderson, *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines* (Durham: Duke University Press, 2008); A. Bashford, *Imperial Hygiene: A Critical History of Colonialism, Nationalism and Public Health* (Basingstoke: Palgrave Macmillan, 2005); L. Manderson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870–1940* (Cambridge: Cambridge University Press, 1996); S. Bhattacharya, M. Harrison, and M. Worboys, *Fractured States: Smallpox, Public Health and Vaccination Policy in British India, 1800–1947* (New Delhi: Orient Longman, 2005).

[31] See Chakrabarti, *Medicine and Empire*, 122–40 and 164–81; D. Neill, "Science and Civilizing Mission: Germans and the Transnational Community of Tropical Medicine," in Naranch/Eley (eds), *German Colonialism in a Global Age*, 74–92; Arnold, *Colonizing the Body*; Vaughan, *Curing their Ills*.

[32] L. Ratschiller, *Medical Missionaries and Colonial Knowledge in West Africa and Europe, 1885–1914: Purity, Health and Cleanliness* (Cham: Palgrave Macmillan, 2023); S. Mukherjee, *Gender, Medicine, and Society in Colonial India: Women's Healthcare in Nineteenth- and Early Twentieth-Century Bengal* (New Delhi: Oxford University Press, 2017); M. A. Osborne, *The Emergence of Tropical Medicine in France* (Chicago: University of Chicago Press, 2014); L. Ratschiller and S. Weichlin (eds): *Der Schwarze Körper als Missionsgebiet: Medizin, Ethnologie und Theologie in Afrika und Europa 1880–1960* (Köln: Böhlau Verlag, 2016); P. B. Mukharji, *Nationalizing the Body: The Medical Market, Print and Daktari Medicine* (London: Anthem Press, 2011); Digby/Ernst/Mukharji (eds), *Crossing Colonial Historiographies*; A. Digby and H. Sweet, "Nurses as Cultural Brokers in Twentieth-Century South Africa," in W. Ernst (ed), *Plural Medicine, Tradition and Modernity, 1800–2000* (London: Routledge, 2002), 113–29; J. Allman, "Making Mothers. Missionaries, Medical Officers and Women's Work in Colonial Asante, 1924–1945," *History Workshop* 38 (1994), 23–47.

potential to shed new light on the entangled, global, and hybrid nature of Dutch and German colonial medicine more broadly.

While an emerging body of literature has presented modern medical sciences as an inherently transnational and border-crossing enterprise, particularly with the rise of scientific internationalism in medicine after 1900,[33] historical scholarship on Dutch colonial medicine has largely remained confined to the Netherlands and the Dutch Empire.[34] Similarly, historians have mostly treated German colonial medicine as a self-contained field tied to the period of formal German colonial rule, overlooking its broader transimperial entanglements.[35] This neglect stands in stark contrast to the fact that, by the late nineteenth century, the German-speaking world had become a major global hub for the institutionalisation and specialisation of "modern" laboratory-based medicine, developments often associated with the emerging subdiscipline of bacteriology and its "father" Robert Koch.[36] Yet the colonial underpinnings of German laboratory science in general, and bacteriology in particular, have received only limited attention in historiography. While the rise of tropical medicine has long been understood as inseparable from the aggressive imperial expansion of the late nineteenth century,[37] historians have only

[33] See, for example, A. L. Foster, "Medicine to Drug: Opium's Transimperial Journey," in K. Hoganson, and J. Sexton (eds): *Crossing Empires: Taking U.S. History into Transimperial Terrain* (Durham: Duke University Press, 2020), 112–34; Neill, *Networks in Tropical Medicine*; B. M. Bennet, "Science and Empire: An Overview of the Historical Scholarship," in Bennet/Hodge (eds): *Science and Empire*, 3–29; Digby/Ernst/Mukharji, *Crossing Colonial Historiographies*.

[34] The body of research on colonial medicine in the Dutch East Indies is comparatively small. Recent publications include L. van Bergen, *The Dutch East Indies Red Cross, 1870–1950: On Humanitarianism and Colonialism* (New York: Lexington Books, 2019); H. Pols, *Nurturing Indonesia: Medicine and Decolonisation in the Dutch East Indies* (Cambridge: Cambridge University Press, 2018); L. van Bergen, *Uncertainty, Anxiety, Frugality. Dealing with Leprosy in the Dutch East Indies, 1816–1942* (Singapore: NUS Press, 2018); L. Hesselink, *Healers on the Colonial Market: Native Doctors and Midwives in the Dutch East Indies* (Leiden: KITLV Press, 2011). For a (slightly dated) overview of themes and perspectives in the Dutch East Indies' history of medicine, see G. M. van Heteren, A. De Knecht-van Eekelen, and M. J. D. Poulissen, (eds), *Dutch Medicine in the Malay Archipelago 1816–1942* (Amsterdam: Rodopi, 1989).

[35] For recent historiography of German colonial medicine, see for example M. Hedrich, *Bernhard Nocht: Der Organisator der deutschen Kolonialmedizin*, (Göttingen: Wallstein, 2024); W. Eckart, *Medizin und Kolonialimperialismus: Deutschland 1884–1945* (Paderborn: Schöningh, 1997); K. Wedekind, *Impfe und herrsche: Veterinärmedizinisches Wissen und Herrschaft im kolonialen Namibia 1887–1929* (Göttingen: Vandenhoeck & Ruprecht, 2021).

[36] See T. D. Brock, *Robert Koch: A Life in Medicine and Bacteriology* (Washington D.C.: ASM Press, 1999); A. Cunningham and P. Williams (eds), *The Laboratory Revolution in Medicine* (Cambridge: Cambridge University Press, 2002).

[37] See, for example, D. Neill, *Networks in Tropical Medicine: Internationalism, Colonialism, and the Rise of a Medical Specialty, 1890–1930* (Stanford: Stanford University Press, 2012); D. N. Livingstone, "Tropical Climate and Moral Hygiene: The Anatomy of a Victorian Debate," *The British Journal for the*

recently begun to explore how colonial contexts shaped bacteriological research, and even then, their analyses have largely remained confined to empire-centred frameworks.[38]

As various examples covered in this book demonstrate, German-speaking physicians in Dutch colonial service engaged actively with contemporary controversies in laboratory medicine, referring to their first-hand experiences, observations, and statistical or experimental data gathered throughout their colonial service. By tracing their multifaceted contributions to modern laboratory medicine, *Medical Mercenaries* provides the first comprehensive study of how Germanophone medical discourse shaped medical knowledge, policies, institutions, and practices in the Dutch East Indies and, conversely, how the Dutch East Indies became a crucial site of knowledge production for German-speaking researchers in the emerging microbiological sciences of the late nineteenth and early twentieth centuries.

It is important to note that the medical community described in this book cannot be understood as confined to the Dutch East Indies and Europe alone. Medical discourse in (and beyond) the Dutch East Indies included not only Europeans, but also Germanophone Japanese and, from the twentieth century onwards, European-trained Indonesian physicians. Adopting a transimperial perspective that, as defined by Nadin Heé and Daniel Hedinger, brings "different kinds of empires into one analytic field,"[39] this study rather traces the emergence of a loose network of German-speaking medical researchers at the turn of the twentieth century that connected regions in Central and Northern Europe with the Dutch Empire as well as with the Germanophile Japanese Meiji Empire. These connections, largely overlooked in existing historiography, were forged through German-language publications, congresses, and transimperial research collaborations that served as important precursors to scientific internationalism. Due to their embeddedness in transimperial medical networks, many colonial physicians who served the Dutch colonial military and civil health services would ultimately become important figures in the emerging international and public health movement of the twentieth

History of Science 32:1 (1999), 93–110; D. Arnold (ed), *Warm Climates and Western Medicine: The Emergence of Tropical Medicine, 1500–1900* (Amsterdam: Editions Rodopi B. V., 1996); S. Ehlers, *Europa und die Schlafkrankheit: Koloniale Seuchenbekämpfung, europäische Identität und moderne Medizin 1890–1950* (Göttingen: Vandenhoeck & Ruprecht, 2019); N. Bhattacharya, *Contagion and Enclaves: Tropical Medicine in Colonial India* (Liverpool: Liverpool University Press, 2012); A. Bashford, "'Is White Australia Possible?' Race, Colonialism and Tropical Medicine," *Ethnic and Racial Studies* 23:2 (2000), 248–71.

[38] See van Bergen, *Uncertainty, Anxiety, Frugality*; A. Velmet, *Pasteur's Empire: Bacteriology and Politics in France, its Colonies, and the World* (New York: Oxford University Press, 2020); P. Chakrabarti, *Bacteriology in British India: Laboratory Medicine and the Tropics* (Suffolk: Boydell & Brewer, 2012).

[39] D. Hedinger and N. Heé, "Transimperial History – Connectivity, Cooperation and Competition," *Journal of Modern European History* 14:4 (2018), 430.

century. Within this framework, "Dutch" or "German" medicine appears as a complex co-construction rather than the result of nationally isolated academic traditions that were deeply shaped by ideological currents of colonial culture.

Situating Colonial Physicians

Studying transimperial entanglements "through the lens of professional groups," such as physicians, offers distinct advantages.[40] The focus on the "global microhistory" of individual movements, trajectories, and careers *pars pro toto* for larger collectives allows scholars to respond to major critiques of global history, namely a tendency toward overgeneralisation, vagueness, or its abstract preoccupation with "connections." In other words, tracing the careers of individuals grounds concepts such as "network," "circulation," and "entanglement" in concrete historical evidence and ties it to concrete places and people.[41]

Historians have often described the professional trajectories of individuals across imperial contexts as "(trans)imperial careering."[42] Yet, by framing these careers primarily as pathways of opportunity, much of the scholarship has unintentionally reproduced diffusionist narratives that highlight Western expertise and present the mobility of experts as strategically planned success stories. More recent research, however, has drawn attention to the tensions and "frictions" that often shaped such careers.[43] Hence, while the focus on transimperial careering and mobility grounds global processes in lived experience, it also requires careful attention to complexity in order to avoid linear or triumphalist accounts of border-crossing careers.

[40] See J. L. Hennessey, "Preacher, Trader, Soldier, Spy: Studying Transimperial Individuals through their Occupational Roles," in Schär/Toivanen (eds), *Integration and Collaborative Imperialism*, 17–36.

[41] For a critique of the language of global history, see S. Gänger, "Circulation: Reflections on Circularity, Entity, and Liquidity in the Language of Global History," *Journal of Global History* 12:3 (2017), 303–18. For the potential of global microhistory in adding nuance to global history, see H. Fischer-Tiné, "Marrying Global History with South Asian History: Potential and Limits of Global Microhistory in a Regional Inflection," *Comparativ* 29:2 (2019), 52–77; M. Berg, "Introduction: Global Microhistory of the Local and the Global," *Journal of Early Modern History* 27:1/2 (2023), 1–5.

[42] See, for example, M. V. Veres, "Unravelling a Trans-Imperial Career: Michel Angelo de Blasco's Mapmaking Abilities in the Service of Vienna and Lisbon," *Itinerario* 38:2 (2014), 75–100; C. Mitchell, "Exploring Patronage, Genre, and Scholar-Bureaucracy: The Trans-Imperial Career of Ḥvāndamīr," *Entangled Religions* 13:5 (2022), online; M. von Brescius and C. Dejung, "The Plantation Gaze: Imperial Careering and Agronomic Knowledge between Europe and the Tropics," *Comparativ* 31:5/6 (2022), 572–90; D. Lambert and A. Lester (eds), *Colonial Lives Across the British Empire: Imperial Careering in the Long Nineteenth Century* (Cambridge: Cambridge University Press, 2006).

[43] See M. von Brescius, "Empires of Opportunity: German Naturalists in British India and the Frictions of Transnational Science," *Modern Asian Studies* 55:6 (2020), 1926–71.

To counter the risk of framing transimperial careers as linear stories of success and advancement, it is crucial to situate German-speaking physicians within their multiple, intersecting social contexts. First, their experiences exemplify how the rise of a "global bourgeoisie" was deeply entwined with empire,[44] while also revealing the often neglected gendered dimension of middle-class male mobility.[45] While historians of colonial medicine have fruitfully examined the exclusion of women and the medicalisation of marginalised bodies,[46] male physicians are still often portrayed as unmarked observers in a sense of what Donna Haraway called the "god trick."[47] Building on this, I argue that their positionality as European men fundamentally shaped their understandings of tropical environments and encounters with racialised and gendered others.

At the same time, medicine in the nineteenth century also often functioned as a pathway of upward mobility rather than an end in itself. Many German-speaking physicians entered Dutch colonial services less as part of a mission to disseminate the supposed blessings of European medicine than as a means of securing financial stability, bourgeois respectability, or to enhance their symbolic capital upon their return to Europe. This book uses the concept of *medical masculinities in the tropics* to capture how medicine became a powerful tool of masculine authority in colonial settings, while remaining unstable, relational, and fragile.[48]

Foregrounding medical masculinities also complicates narratives of male hegemony and scientific objectivity in late nineteenth- and early twentieth-century medicine more broadly. German-speaking physicians in the Dutch East Indies did not simply exert European medical superiority abroad; they were forced to navigate professional constraints, local resistance, and epistemic insecurities. They encountered previously unfamiliar diseases that destabilised their claims to the superiority

[44] See C. Dejung, D. Motadel, and J. Osterhammel (eds), *The Global Bourgeoisie: The Rise of the Middle Classes in the Age of Empire* (Princeton: Princeton University Press, 2019).

[45] For studies on masculinities and empire, see A. Wells, "Masculinity and its Other in Eighteenth-Century Racial Thought," in H. Ellis and J. Meyer (eds): *Masculinity and the Other: Historical Perspectives* (Newcastle upon Tyne: Cambridge Scholar Publishing, 2009), 85–114). For masculinity and science, see E. L. Milam and R. A. Nye, "An Introduction to Scientific Masculinities," *Osiris* 30:1 (2015), 1–14; H. Ellis, *Masculinity and Science in Britain, 1831–1918* (London: Palgrave Macmillan, 2017); D. Haraway, "Teddy Bear Patriarchy: Taxidermy in the Garden of Eden, New York City, 1908–1936," *Social Text* 11 (1984–1985), 20–64.

[46] See S. Mukherjee, *Gender, Medicine, and Society in Colonial India: Women's Healthcare in Nineteenth- and Early Twentieth-Century Bengal* (New Delhi: Oxford University Press, 2017); L. Schiebinger, *Nature's Body: Gender and the Making of Modern Science* (New Brunswick: Rutgers University Press, 2013).

[47] D. Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14:3 (1988), 581.

[48] See W. Anderson, "The Trespass Speaks: White Masculinity and Colonial Breakdown," *The American Historical Review* 102:5 (1997), 1343–70.

of European knowledge, competed with local medical practitioners and metropolitan laboratory scientists, and faced severe scepticism from their patients. Such experiences expose the precarity of careers built on colonial service as well as the limits of supposedly universal European understandings of hegemonic masculinity.

Second, transimperial mobility was rarely autonomous; it typically depended on patronage, military protection, or employment within colonial institutions. "Colonial outsiders," in particular, often relied heavily on employment or collaboration with the institutions of formal colonial powers.[49] Alongside their social situatedness, *Medical Mercenaries* also situates colonial medical practitioners within the institutions that employed them, highlighting the often overlooked yet crucial role of colonial armies, hospitals, and plantations in shaping modern European medicine, particularly in the period following the so-called bacteriological revolution.

According to historian Warwick Anderson's, it was precisely the activities of medical practitioners in the colonial field that constituted "what is colonial about colonial medicine."[50] Following Anderson's observation, this book focuses on the lived experiences of practitioners in Dutch East Indies military and civil health institutions. Many blurred the line between physician and scientist: they treated European, Javanese, or Ambonese soldiers as well as Chinese or Javanese indentured labourers, while also conducting experiments on hospital patients and contributing to scientific debates in bacteriology and tropical medicine. Their proximity to patients also created space for acts of resistance and appropriation, complicating any view of European medicine as a one-directional imposition. Moving away from *theories* established in the European laboratories to medical *practices* in the colonies allows historians to challenge deterministic narratives that portray "advances" in bacteriology, parasitology, and tropical medicine at the turn of the twentieth century as a "revolution" that "proved" the universality and superiority of European medicine while replacing older theories that bound the spread of diseases to local conditions.[51] By focusing on practitioners in the colonial field, this book hence also seeks to blur the conventional distinction between theoretical, laboratory-based research and applied, field-based medical practice.

[49] See the contributions in Schär/Toivanen (eds), *Integration and Collaborative Imperialism*; C. L. Blaser, M. Ligtenberg, and J. Selander, "Introduction: Transimperial Webs of Knowledge at the Margins of Imperial Europe," *Comparativ* 31:5/6 (2022), 527–39.

[50] W. Anderson, "Review: Where is the Postcolonial History of Medicine?," *Bulletin of the History of Medicine* 72:3 (1998), 522–30. Also see Marks, "What is Colonial about Colonial Medicine?"

[51] See, for example, van Bergen, *Uncertainty, Anxiety, Frugality*; Velmet, *Pasteur's Empire*; Chakrabarti, *Bacteriology in British India*; M. Mann, "Kolonialismus in den Zeiten der Cholera: Zum Streit zwischen Robert Koch, Max Pettenkofer und James Cuningham über die Ursachen einer epidemischen Krankheit," *Comparativ* 15:5/6 (2017), 80–106.

Sources and Structure

Sources

Medical Mercenaries primarily relies on European sources, with archival research conducted in the Netherlands, Switzerland, Austria, and Germany. Research trips to Indonesia were prevented by the Covid-19 pandemic. Moreover, firsthand accounts from patients, many of whom were soldiers or indentured labourers and thus marginalised within colonised society, are scarce, even in Indonesian archives. In response to this potential Eurocentric bias, this study seeks to highlight instances where their contributions and resistance appear within European sources.

The main body of evidence consists of official administrative documents, reports, and correspondence from Dutch colonial institutions, supplemented by records from Swiss, Austrian, and German archives. These sources illuminate recruitment patterns, bureaucratic processes, and transimperial networks of German-speaking physicians in the Dutch East Indies. Additional material from the League of Nations archives in Geneva informs the book's concluding chapter on colonial medicine and international health. Newspaper archives from the Netherlands, Germany, Austria, and Switzerland were used to reconstruct the careers, travel, and biographies of individual physicians.

Scientific publications in Dutch and German-speaking medical journals provide crucial insights into colonial medical debates and the transimperial circulation of knowledge. Finally, the study draws on published memoirs and private papers of individual physicians, including Heinrich Erni, Heinrich Breitenstein, Friedrich Wilhelm Stammeshaus, Ernest Guglielminetti, and Bernhard Hagen. These sources reveal the everyday experiences, professional roles, and personal perspectives of Germanophone physicians in Dutch colonial service.

Chapter Outline

Rather than focusing on the biographies of a select few, particularly well documented individuals, the book is structured around three key sites of medical knowledge production in the Dutch East Indies following a loose chronological order: the military, the laboratory, and the plantation.

The first chapter outlines the broader transimperial markets for medical expertise that emerged throughout the nineteenth and early twentieth centuries. It highlights how Dutch demands for medical practitioners safeguarding the lives of European settlers and soldiers intersected with the aspirations of many medically trained, middle-class men from German-speaking regions in Switzerland, the German Empire, and Habsburg Austria to conform to (gendered) ideals of bourgeois

European society through colonial services. In turn, it demonstrates how the high esteem of the Germanophone educational system and linguistic compatibilities made physicians from these regions especially appealing to the Dutch Empire. The chapter also examines broader shifts in Dutch medical policies and their impact on the recruitment of foreign medical personnel. It shows how, for much of the nineteenth century, the Dutch Colonial Army served as the primary hub for medical and scientific knowledge production. However, as nationalist sentiments and competition grew at the turn of the twentieth century, the recruitment of foreign medical officers declined, while the emerging civil medical sector in the Dutch East Indies around 1900 created new opportunities (and obstacles) for Germanophone physicians. This shift in recruitment also marked a transition from official channels to more interpersonal ones.

The second chapter delves into the daily lives and encounters of German-speaking medical officers in the Dutch war against the Sultanate of Aceh in northwestern Sumatra in the 1870s and 1880s. Through an intersectional lens, the chapter examines how these medical mercenaries navigated their role as foreign, non-combatant, middle-class men serving the Dutch Colonial Army, highlighting their struggles to position themselves between the various social groups they encountered in the camps and *kampongs*. The chapter shows how they strategically leveraged their medical expertise and "outsider" position to claim hegemonic attributes of imperial masculinity – such as temperance, sexual restraint, and rationality – to distinguish themselves from both the colonised populations and the soldiers they served alongside. However, medical officers' encounters with Acehnese fighters, their incompetence in tackling diseases like beriberi and cholera, and their exposure to (highly popular) feminised indigenous medical traditions also showcase the fragility of their claims to hegemony.

The third chapter focuses on the ways in which physicians from Germanophone Europe employed with the KNIL assumed new roles in the 1880s and 1890s by conducting foundational research in the emerging fields of bacteriology and tropical medicine, partially on their own initiative, partially commissioned by the Dutch colonial government. The chapter demonstrates how they claimed epistemic authority and medical masculinity through their status as European practitioners in the colonies, which they portrayed as a significant advantage over their "armchair" colleagues confined to European laboratories. Rather than perpetuating a deterministic narrative of a "bacteriological revolution," the chapter reveals a complex relationship between older medical theories – linking disease spread to local conditions – and "modern" laboratory medicine connecting diseases to universally present pathogenic microorganisms. Moreover, applying Germanophoneness as a lens of analysis, the chapter illuminates the transimperial production of medical

knowledge from and about the Dutch East Indies between Germanophone Europe, the Dutch Empire, Meiji Japan, and the German Colonial Empire.

The fourth chapter finally shifts the attention from military to civil medicine, focusing on physicians trained in Germanophone Europe recruited by the privatised plantation hospitals in Sumatra in the context of the Dutch colonial government's "ethical turn" around 1900. German-speaking physicians played essential roles in institutionalising plantation hygiene, a medical subdiscipline that claimed to have significantly improved the health of thousands of Chinese and Javanese "coolie" workers. The chapter critically explores the biopolitical implications of these hygiene practices, highlighting how medical knowledge shaped racialised perceptions of the "fitness to labour" of Javanese and Chinese indentured labourers. At the same time, it points to the ways in which indentured labourers or indigenous medical practitioners resisted or appropriated European physicians' attempts to impose top-down health regimes, revealing the limits of biopolitical power and the internal stratification of colonised societies. Moreover, the chapter further examines how knowledge from Sumatra informed German colonial efforts in Africa and the Pacific, as well as how physicians leveraged the Sumatra experience to advance their careers in Europe. The final section gives a brief glimpse into the continuity of personnel within Sumatra's plantation hospitals and the League of Nations' malaria commissions, hinting at the colonial antecedents of the International Health Movement emerging in the mid-twentieth century.

CHAPTER 1

Germanophone Physicians in the Dutch East Indies: Transimperial Markets for Medical Experts

Abstract

This chapter examines the transimperial markets for science and medicine in the nineteenth and early twentieth centuries that linked physicians from German-speaking Europe to military and civil medical institutions in the Dutch East Indies. It highlights how shifting global demand for medical knowledge intersected with the ambitions of Swiss, German, and Austrian medical practitioners to elevate their social standing through overseas careers, and how the Dutch East Indies emerged as a central hub for university-trained medical experts from Germanophone Europe seeking to produce (scientific) knowledge about the tropical world.

Keywords: Global labour markets; Transimperial science; Colonial medicine; Colonial knowledge

On August 30, 1879, Dr. Conrad Kläsi, a physician hailing from the small town of Niederurnen in the Swiss Canton of Glarus, embarked on a voyage to the Dutch East Indies, today's Indonesia. After a few weeks, he arrived in Batavia (present-day Jakarta), having sailed aboard the steamship "Prinses Amalia."[1] Kläsi was one among 354 physicians from the German-speaking parts of Switzerland, the Austrian-Hungarian Empire, and the German States and Empire who joined the *Koninklijk Nederlandsch-Indisch Leger* (Royal Dutch East Indies Army; hereafter referred to as the Dutch Colonial Army or KNIL) between 1816 and 1904 to serve in the Dutch East Indies as medical officer.

An extensive body of historical research has shed light on the global emigration patterns of German-speaking individuals from the eighteenth century onwards.[2]

[1] See "Vertrokken Passagiers," *Het Vaderland*, 1 September 1879; "Vertrokken Passagiers per S. S. Prinses Amalia op 30 Augustus 1879, van Amsterdam naar Batavia," *Java-Bode*, 1 October 1879.

[2] See, for example, K. Manjapra, *Age of Entanglement: German and Indian Intellectuals across Empire* (Cambridge: Harvard University Press, 2014); P. Panay, *The Germans in India: Elite European Migrants in the British Empire* (Manchester: Manchester University Press, 2017); H. G. Penny, *German History Unbound: From 1750 to the Present* (Cambridge: Cambridge University Press, 2022); A. Steidl, *On Many Routes: Internal, European, and Transatlantic Migration in the Late Habsburg Empire* (West Lafayette: Purdue University Press, 2021).

The historians H. Glenn Penny and Stefan Rinke even argue that the global movement of German-speakers is proof of the "inherently polycentric character of German nationhood."[3] Nevertheless, existing literature on overseas migration from Germanophone Europe suffers from two major limitations. First, it largely centres on long-term or permanent settlers. As the historian Philipp Krauer notes, such an "overly narrow migration concept of linear and long-term settlement" overlooks other important forms of mobility in the age of empire, particularly short-term "military labour migration."[4] Most German-speaking physicians who entered Dutch service in Southeast Asia neither sought permanent positions nor intended to settle in the Dutch East Indies. Second, much of the literature (often anachronistically) treats emigration in strictly "German" national terms, neglecting the broader networks that connected German-speakers with one another and with the Dutch Empire.[5]

This second limitation is also visible in Philipp Teichfischer's otherwise seminal study *Transnational Entanglements in Colonial Medicine*, which remains the only detailed examination of the role of German physicians in the Dutch Colonial Army. Tracing the recruitment of more than 300 German physicians between 1816 and 1884, Teichfischer demonstrates that German medical professionals constituted the largest share of non-Dutch European medical staff, at times even outnumbering their Dutch colleagues.[6] Yet, his focus on "Germans" as citizens of the German States and Empire obscures the more complex identities, alliances and networks of nineteenth-century medical professionals. As Chen Tzoref-Ashkenazi has shown, in early modern Europe, the label "German" often served as a broader linguistic and cultural designation, encompassing individuals from Switzerland, Austria,

[3] H. G. Penny and S. Rinke, "Germans Abroad: Respatializing Historical Narrative," *Geschichte und Gesellschaft* 41:2 (2015), 173.

[4] P. Krauer: "Zwischen Geld, Gewalt und Rassismus: Neue Perspektiven auf die koloniale Schweizer Söldnermigration nach Südostasien, 1848–1914," *Schweizerische Zeitschrift für Geschichte* 71:2 (2021), 229. For the shortcomings in colonial migration history also see U. Bosma, "Sailing through Suez from the South: The Emergence of an Indies-Dutch Migration Circuit, 1815–1940," *The International Migration Review* 41:2 (2007), 511–36. Also see A. Zangger, *Koloniale Schweiz: Ein Stück Globalgeschichte zwischen Europa und Südostasien (1860–1930)* (Bielefeld: Transcript, 2011), 16–21; U. Bosma, G. Kessler, and L. Lucassen (eds), *Migration and Membership Regimes in Global and Historical Perspective: An Introduction* (Leiden: Brill, 2013).

[5] For a theoretical discussion on transimperial "networks" connecting hitherto European regions and empires often separated in historiography, see C. L. Blaser, M. Ligtenberg, and J. Selander, "Introduction: Transimperial Webs of Knowledge at the Margins of Imperial Europe," *Comparativ* 31:5/6 (2021), 533.

[6] See P. Teichfischer, "Transnational Entanglements in Colonial Medicine: German Medical Practitioners as Members of the Health Service in the Dutch East Indies (1816–1884)," *Histoire, médecine et santé* 10 (2016), 63–78.

Bohemia, and beyond.[7] This conflation persisted into the nineteenth and twentieth centuries: As various examples covered in this book demonstrate, physicians in Dutch colonial services were often collectively referred to as "German," even if they identified as Swiss or Austrian. Moreover, Teichfischer's temporal frame, ending with the onset of German colonialism in 1884, precludes the possibility of "German" involvements in Dutch imperialism during or after the period of formal German colonial rule. While being heavily indebted to Teichfischer's findings, this study departs from his national framing by adopting a transimperial perspective that traces the linguistic, professional, and institutional networks linking German-speaking physicians to the Dutch colonial world well beyond 1884.

This chapter reconstructs broader developments and shifts within the transimperial markets for scientific expertise in the nineteenth and early twentieth centuries. It begins by examining the strikingly high presence of physicians and scientists from German-speaking Europe in Dutch imperial services, demonstrating how the global demand for scientific and medical expertise intersected with the ambitions of medical men from Switzerland, the German States and Empire, and Habsburg Austria to elevate their social standing in bourgeois society through colonial services. The chapter highlights how, in the nineteenth-century Dutch East Indies, the KNIL emerged as the most important employer for university-trained European foreigners, transforming the Dutch Colonial Army into a crucial hub for the production of knowledge on the Dutch East Indies' flora, fauna, environment, and diseases.

It further situates the recruitment of medical mercenaries in the wider transimperial markets for military labour, demonstrating how KNIL benefitted from preexisting transnational recruitment networks and collaborations across Germanophone Europe, originally established for combatant troops, in recruiting physicians for colonial services. By the late nineteenth century, however, the KNIL's recruitment efforts met with increased official resistance from Swiss, German, and Austrian authorities, eventually putting a halt to the enlistment of medical mercenaries. This shift moved the recruitment of non-Dutch European physicians from the military to the civil sector, and from formal, official channels to informal, interpersonal recruitment networks.

[7] For the use of "German" as a collective term for German-speaking Europeans, also see C. Tzoref-Ashkenazi, *German Soldiers in Colonial India* (London: Routledge, 2016), 13.

Transimperial Markets for Science & Medicine

A large and growing body of research has pointed to the crucial role played by science and medicine in the political and military consolidation and moral justification of imperial rule and, in turn, to the indispensable place of empire in the making of "European" science.[8] The historian Andrew Goss goes as far as to identify an "imperial turn" in the history of science, highlighting how historiography has progressed beyond a diffusionist perspective that solely attributes the "origin" of modern science to Europe, from where it spread globally. Instead, he emphasises the co-construction of science between Europe and its colonies through "complex systems, institutions, and networks which were not only interwoven, but supported, nurtured, and sustained each other."[9]

Scientific experts from German-speaking Europe were firmly embedded within these transimperial networks. With their regions of origin lacking overseas colonies for most of the nineteenth century, many university-trained men from the German States, Switzerland, and Habsburg Austria sought opportunities in foreign empires, drawn by the prospects of scientific advancement, "exotic" adventures, or social prestige. Their expertise, particularly in the medical and natural sciences, was eagerly welcomed by foreign European empires, whose expanding colonial bureaucracies demanded skilled personnel.[10] In turn, German-speaking experts benefitted from access to colonial infrastructures, research facilities, and professional networks,[11] while museum and university collections in Germanophone

[8] See, for example, M. A. Duarte da Silva, T. A. S. Haddad, and K. Raj (eds), *Beyond Science and Empire: Circulation of Knowledge in an Age of Global Empires, 1750–1945* (London: Routledge, 2023); B. M. Bennet and J. M. Hodge (eds), *Science and Empire: Knowledge and Networks of Science across the British Empire, 1800–1970* (Basingstoke: Palgrave Macmillan, 2011); S. Boscani Leoni et al. (eds), *Connecting Territories: Exploring People and Nature, 1700–1850* (Leiden: Brill, 2022); J. Delbourgo and N. Dew (eds), *Science and Empire in the Atlantic World* (New York: Routledge, 2008); T. Ballantyne (ed): *Science, Empire, and the European Exploration of the Pacific* (Aldershot: Ashgate Variorum, 2004).

[9] A. Goss, "Introduction: An Imperial Turn in the History of Science," in idem (ed), *The Routledge Handbook of Science and Empire*, 1.

[10] See B. Schär, "Introduction: The Dutch East Indies and Europe, ca. 1800–1930: An Empire of Demands and Opportunities," *BMGN – Low Countries Historical Review* 134:3 (2019), 4–20; M. von Brescius, *German Science in the Age of Empire: Enterprise, Opportunity and the Schlagintweit Brothers* (Cambridge: Cambridge University Press, 2019).

[11] See L. Pfäffli, *Arktisches Wissen: Schweizer Expeditionen und dänischer Kolonialhandel in Grönland (1908–1913)* (Frankfurt am Main: Campus, 2021); M. von Brescius and C. Dejung, "The Plantation Gaze: Imperial Careering and Agronomic Knowledge between Europe and the Tropics," *Comparativ* 31:5/6 (2021), 572–90; M. Ligtenberg, "Contagious Connections: Medicine, Race, and Commerce between Sumatra, New Guinea, and Frankfurt, 1879–1904," *Comparativ* 31:5/6 (2021), 555–71; idem., "Imperiale Männlichkeiten, zoologische Taxonomien und epistemische Gewalt: Schweizer

Europe profited from a steady influx of plant and animal specimens sent back by their compatriots.[12]

Among the various forms of expertise exchanged in this transimperial market for knowledge, medicine was particularly sought-after. Physicians trained in German-speaking Europe soon became the largest university-trained professional group recruited for service in the Dutch Empire. Through the large-scale recruitment of medical professionals, the Dutch Colonial Army transformed into both an important employer for scientifically inclined European men and a central node in the production of medical and scientific knowledge in the nineteenth-century Dutch East Indies.

Medicine and the Military Monopoly on Knowledge

Recruited in large numbers, physicians from German-speaking Europe were instrumental in shaping the institutional landscape of colonial science in the Dutch East Indies, serving not only as medical practitioners but in many cases also as key intermediaries between medicine and the emerging taxonomic disciplines such as botany or zoology.

A notable example of this is the apothecary Caspar Georg Carl Reinwardt, who was born in the small Prussian town of Lüttringhausen. After completing an apprenticeship at a pharmacy in Amsterdam, he was appointed professor of natural history, chemistry, and pharmacy at the Universities of Harderwijk and Amsterdam. In 1816, following the French and British interregnum in the Dutch East Indies, Reinwardt became the director of the colonial Department of Agricultural Affairs, Sciences, and Arts that advised the Dutch colonial government on questions concerning tropical botany with a particular focus on securing the long-term profitability of the colony through the efficient cultivation of cash crops. It was in this capacity that he successfully lobbied for the establishment of the Botanical Gardens in Buitenzorg (Bogor) that were opened in 1817.[13] The foundation of the Buitenzorg Gardens marked the beginning of a series of transimperial collaborations in the scientific exploration of the Dutch East Indies' flora and fauna.

Naturforscher in Niederländisch-Ostindien, ca. 1800–1900," *L'Homme: Europäische Zeitschrift für Feministische Geschichtswissenschaft* 34:2 (2023), 67–83.

[12] See C. Drieënhuizen, "Being 'European' in Colonial Indonesia: Collectors and Collections between Yogyakarta, Berlin, Dresden and Vienna in the Late Nineteenth Century," *BMGN – Low Countries Historical Review* 134:3 (2019), 21–46; H. G. Penny, *Objects of Culture: Ethnology and Ethnographic Museums in Imperial Germany* (Chapel Hill: The University of North Carolina Press, 2002).

[13] See A. Weber, *Hybrid Ambitions: Science, Governance, and Empire in the Career of Caspar C. G. Reinwardt (1773–1854)* (Amsterdam: Leiden University Press, 2012); A. Weber and R. J. Wille, "Laborious Transformations: Plants and Politics at the Bogor Botanical Gardens," *Studium* 11:3 (2018), 173.

When Reinwardt was appointed to the professorship of natural history at the University of Leiden in 1823, his role as director of the Buitenzorg Garden passed to his compatriot, the physician Carl Ludwig Blume. Under Blume, the Gardens became a global hub for compiling, sharing, and exchanging botanical and zoological data.[14] The establishment of the Gardens was closely intertwined with the formation of the *Natuurkundige Commissie voor Nederlands-Indië* (Natural History Commission for the Dutch East Indies), a state-funded research commission tasked with collecting plant and animal specimens from across the Malay Archipelago. Of the fourteen naturalists employed by the *Commissie* during its existence, eight (Heinrich Boie, Heinrich Bürger, Franz Wilhelm Junghuhn, Heinrich Kuhl, Heinrich Christian Macklot, Salomon Müller, Carl Anton Schwaner, and Alexander Zippelius) were from German States, one (Ludwig Horner) was from Switzerland, and one (Pierre-Médard Diard) from France. Their work involved gathering specimens from islands such as Sumatra or Celebes (Sulawesi) and sending them to Leiden and Buitenzorg for further investigation. The Gardens provided these naturalists with tools, infrastructures, and professional networks enabling them to publish botanical and zoological reference works that enhanced their reputation across Europe.[15] While the *Commissie* was dissolved in 1850 due to budget constraints,[16] the Buitenzorg Gardens experienced a revival at the turn of the twentieth century under Dutch botanist Melchior Treub, attracting hundreds of visiting researchers from Germany, Switzerland, France, Belgium, and the United States.[17]

While historians have occasionally noted the presence of scientists from Germanophone Europe in the Indies, the structural conditions facilitating their recruitment remain underexplored. Crucially, the Dutch Colonial Army's role both

[14] A concise overview of the Buitenzorg Botanical Gardens' early history can be found in A. Weber, "A Garden as a Niche: Botany and Imperial Politics in the Early Nineteenth Century Dutch Empire," *Studium* 11:3 (2018), 178–90 as well as Weber, *Hybrid Ambitions*. For botanical gardens as 'hubs' for transnational botanical research in the age of empire more broadly, see R. Drayton, *Natures Government: Science, Imperial Britain, and the 'Improvement' of the World* (New Haven: Yale University Press, 2000). For more recent studies on colonial agriculture and botany see the contributions in U. Kirchberger and B. M. Bennett (eds), *Environments of Empire: Networks and Agents of Ecological Change* (Chapel Hill: The University of North Carolina Press, 2020).

[15] For the transnational dimension of the *commissie's* activities, see A. Weber, "Collecting Colonial Nature: European Naturalists and the Netherlands Indies in the Early Nineteenth Century," *BMGN – Low Countries Historical Review* 134:3 (2019), 72–95; P. van Wingerden, "Science on the Edge of Empire: E. A. Forsten (1811–1843) and the Natural History Committee (1820–1850) in the Netherlands Indies," *Centaurus* 62:4 (2020), 797–821.

[16] See Weber, "A Garden as a Niche," 189.

[17] See F. Wagner, "Inventing Colonial Agronomy: Buitenzorg and the Transition from the Western to the Eastern Model of Colonial Agriculture, 1880s–1930s," in Kirchberger/Bennett (eds), *Environments of Empire*, 103–28.

as a site of knowledge production and as an employer for university-trained, non-Dutch Europeans has been largely neglected so far. German Carl Ludwig Blume, for example, initially arrived in the Dutch East Indies in 1818 as a second-class military surgeon for the KNIL.[18] It was through his military position that he met his compatriot Reinwardt, who recommended him for the directorship of the Buitenzorg Gardens after being "[i]mpressed by Blume's eagerness and floral expertise."[19] Similarly, the Swiss physician Ludwig Horner joined the KNIL as a medical officer in 1834 before becoming a member of the *Commissie* in 1835.[20] In the same year, the German physician Franz Wilhelm Junghuhn enlisted with the KNIL, serving as a medical officer for a decade before joining the *Commissie* in 1845.[21] Junghuhn's contributions to malaria research, geology, and natural history earned him the epithet "Humboldt of Java";[22] his decade-long employment with the KNIL, however, is largely absent from historical remembrance.

Figures such as Blume, Horner, and Junghuhn were far from exceptional; rather, they exemplify a broader pattern in which military service in the Dutch East Indies often provided an entry point for German-speaking physicians to pursue scientific inquiries into tropical nature. Many physicians arrived in the colonies equipped not only with clinical expertise, but also with a keen interest in studying the local flora, fauna, and climates. Yet, in the Dutch East Indies, opportunities for such research (unless one travelled self-funded) were scarce. Its chronic demand for medical personnel made the KNIL an important employer for university-trained Europeans to travel to and conduct research in the Malay Archipelago.

For many German-speaking physicians, medicine was more than a profession. It was a crucial form of expertise through which they could secure access to foreign colonial spaces and resources. At the same time, medicine was a particularly valued form of knowledge in tropical colonies. As has been demonstrated by historians such as Meaghan Vaughan, David Arnold, Mark Harrison, and others, diseases like malaria, cholera, or beriberi that prevailed in (tropical) colonies posed a major obstacle in upholding the political and military power in European empires as they

[18] See Nationaal Archief Den Haag (NL-HaNA), Inventaris van het Archief van het Ministerie van Koloniën, Stamboeken en Pensioenregisters van Militairen KNIL in Oost- en West-Indië, 1815–1949 (1954), nummer toegang 2.10.50, inv. nr. 2, folio 314.

[19] Weber, "A Garden as a Niche," 184.

[20] See NL-HaNA 2.10.50, inv. nr. 3, folio 890; F. Horner, "Briefe und Tagebuchskizzen des Dr. med. Ludwig Horner (1811–1838) aus Niederländisch-Indien," *Zürcher Taschenbuch* 4 0(1919), 184–5.

[21] See NL-HaNA 2.10.50, inv. nr. 3, folio 899.

[22] See R. Sternagel, *Der Humboldt von Java: Leben und Werk des Naturforschers Franz Wilhelm Junghuhn 1809–1864* (Halle: Mitteldeutscher Verlag, 2011); A. Goss, *The Floracrats: State-Sponsored Science and the Failure of Enlightenment in Indonesia* (Madison: The University of Wisconsin Press, 2011), 17–21; 33–58.

threatened the lives of European settlers, merchants, or soldiers, and with that the success of the imperial project at large.[23] Since the early days of European expansion, Europeans were baffled by the high mortality rates in the tropics.[24] Due to their allegedly pathogenic nature, tropical colonies in Asia, Africa, and the Americas earned a reputation as "White Man's Graves." In his analysis on British and Dutch accounts on the city of Batavia (Jakarta) in the early nineteenth century, historian Hans Pols demonstrates how the Dutch East Indies were discursively constructed as a "graveyard" for Europeans due to the high prevalence of fatal diseases, with British physicians describing Batavia as the most dangerous city in the tropical zone.[25] These discourses were closely linked to the idea of acclimatisation, or the question as to what extent Europeans could potentially adapt to the pathogenic environments encountered in the tropics and eventually become more resistant to tropical diseases.[26] Fears surrounding the deadliness of the tropics were further deepened by statistical surveys that tracked mortality rates and causes of death of European settlers and soldiers. In the Dutch East Indies, such statistics were published on an annual basis in the *Koloniaal Verslag*, the official report of the colonial government.[27]

Throughout the nineteenth century, colonial governments intensified their efforts to combat the high mortality rates caused by diseases. A first driving force behind these efforts was the European hygiene movement that emerged from a growing awareness of the relationship between unsanitary conditions, disease transmission, and mortality. In response, European governments established hospitals and specialised committees with the specific aim of curbing disease spread

[23] Canonical texts include H. Tilley, *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870–1950* (Chicago: University of Chicago Press 2011); P. Chakrabarti, *Medicine and Empire, 1600–1960* (Basingstoke: Palgrave Macmillan, 2014; D. Arnold, *Science, Technology and Medicine in Colonial India* (Cambridge: University of Cambridge Press, 2000); M. Vaughan, *Curing their Ills: Colonial Power and African Illness* (Cambridge: Polity Press, 1991).

[24] See R. MacLeod and M. Lewis (eds), *Disease, Medicine and Empire: Perspectives on Western Medicine and the Experience of European Expansion* (London: Routledge, 1988); P. Curtin, *Death by Migration: Europe's Encounter with the Tropical World in the Nineteenth Century* (Cambridge: Cambridge University Press, 1989).

[25] See H. Pols, "Notes from Batavia, the Europeans' Graveyard: The Nineteenth-Century Debate on Acclimatization in the Dutch East Indies," *Journal for the History of Medicine and Allied Sciences* 67:1 (2012), 120–48.

[26] For the "acclimatisation debate" see, for example, M. A. Osborne, "Acclimatizing the World: A History of the Paradigmatic Colonial Science," *Osiris* 15 (2000), 135–51; D. N. Livingstone, "Tropical Climate and Moral Hygiene: The Anatomy of a Victorian Debate," *The British Journal for the History of Science* 32:1 (1999), 93–110. For the Dutch East Indies, see A. De Knecht-van Eekelen, "The Debate about Acclimatization in the Dutch East Indies (1840–1860)," *Medical History* 44:20 (2000), 70–85.

[27] The volumes of the *Koloniaal Verslag* from 1866 to 1923 are accessible in the digital collections of Leiden University. See https://kitlv-docs.library.leiden.edu/open/Metamorfoze/Kol.%20Verslag/koloniaal%20verslag.html [accessed: 17.03.2023].

and reducing mortality among the rapidly expanding European populations.[28] The European public health movement also informed colonial government policies aimed at combatting the high mortality rates in the tropics. European colonial governments increased their investments in hospital systems, quarantine stations, medical education and research, and introduced (forced) vaccination services for the European and local populations in the colonies.[29]

In the Dutch East Indies, efforts to systematise colonial health care date back to the French interregnum (1806–1811). During this period, the Dutch military officer Herman Willem Daendels, appointed governor of the Dutch East Indies by Napoleon in 1808, implemented far-reaching reforms that reorganised the colonial health services. European medical practitioners were divided into three categories: medical officers, surgeons, and pharmacists, each subdivided into three classes. These reforms were directly linked to a broader reorganisation of the colonial military forces, which ultimately placed all colonial health care institutions under the army. During the British interregnum in the Dutch East Indies (1811–1816) under Sir Thomas Stamford Raffles, the colonial health system was reorganised once again with the Bengal Medical Regulations, which introduced a separate civil medical service. Following the Dutch restoration of the colony in 1816, Caspar Georg Carl Reinwardt, as head of the Department of Agricultural Affairs, Sciences, and Arts, took over responsibility for restructuring the colony's medical institutions. He established separate divisions for civil, military, and vaccination services, reflecting an ambition to strengthen civil medical care. However, persistent austerity measures soon undermined these efforts, and in 1827, control over both the civil and vaccination services was handed back to the army. It was not until 1911 that the colonial civil medical service finally gained full independence from military authority.[30] Consequently, throughout the nineteenth century, the vast majority of European medical professionals in the Dutch East Indies were employed by the KNIL.

[28] There is an extensive body of literature on the history of public health in Europe. Good overviews are G. Rosen, *A History of Public Health* (Baltimore: John Hopkins University Press, 2015); D. Porter, *Health, Civilization and the State: A History of Public Health from Ancient to Modern Times* (London: Routledge, 1998); A. F. La Berge, *Mission and Method: The Early-Nineteenth-Century French Public Health Movement* (Cambridge: Cambridge University Press, 1992); W. M. Frazer, *A History of English Public Health 1834–1939* (London: Baillière Tindall and Cox, 1950).

[29] The literature on public health and colonialism will be discussed in more detail in chapter 4. A good overview is A. Bashford, *Imperial Hygiene: A Critical History of Colonialism, Nationalism and Public Health* (Basingstoke: Palgrave Macmillan, 2005).

[30] For an overview of the Dutch East Indies colonial health care system in the nineteenth century, see S. N. Tan, *Zur Geschichte der Pharmazie in Niederländisch-Indien (Indonesien) 1602–1945* (Würzburg: Jal-Verlag, 1976), 61–98; A. H. M. Kerkhoff, "The Organization of the Military and Civil Medical Service in the Nineteenth Century," in G. M. Van Heteren, A. De Knecht-Van Eekelen, and M. J. D. Poulissen (eds), *Dutch Medicine in the Malay Archipelago 1816–1942* (Amsterdam: Rodopi, 1989), 9–24.

Meanwhile, in the second half of the nineteenth century, Willem Bosch, the chief of the KNIL's military medical services, established two key institutions that shaped the production and circulation of medical knowledge in the Dutch East Indies. In 1845, he founded the *Vereeniging ter bevordering van geneeskundige wetenschappen in Nederlandsch-Indië* (Association for the Promotion of Medical Sciences in the Dutch East Indies), which began publishing the *Geneeskundig Tijdschrift voor Nederlandsch-Indië* (GTNI; Journal of Medicine for the Dutch East Indies) in 1852. Reflecting the military's monopoly over colonial health care, KNIL medical officers were among the main contributors to the GTNI (also see chapter 3). At the same time, Bosch sought to address the chronic shortage of European-trained medical personnel by founding the so-called *Dokter Djawa* schools in 1851. These institutions were designed to train Javanese students in Western medicine and included a programme for indigenous midwives.[31] Their establishment marked a broader shift in nineteenth-century colonial medical discourse. As historian David Arnold has noted, in the second half of the nineteenth century, European physicians increasingly defined themselves through their "scientifique understanding of disease causation and mocked what they saw as fatalism, superstition and barbarity of indigenous responses to disease."[32] The growing professionalisation of European medicine thus deepened the stigmatisation of indigenous healing practices and reinforced racial hierarchies of expertise. Despite being trained in Western medicine, *Dokter Djawa* were not recruited as medical officers until the turn of the twentieth century, even though the KNIL faced a constant shortage of medical personnel.[33]

Unable to meet its demands for physicians within the Netherlands alone, the KNIL instead recruited medical experts from other European countries. Philipp Teichfischer traced the recruitment of medical officers within the German States and Empire between 1816 and 1884. In the 1820s, German physicians accounted for

[31] See Tan, *Zur Geschichte der Pharmazie*, 74; L. Hesselink, *Healers on the Colonial Market: Native Doctors and Midwives in the Dutch East Indies* (Leiden: KITLV Press, 2011).

[32] D. Arnold, "Introduction: Disease, Medicine and Empire," in S. Dubow (ed), *Colonial Knowledges*, vol. 2: *The Rise and Fall of Modern Empires,* (London: Routledge, 2013), 7. Also see P. Boomgaard, "Dutch Medicine in Asia, 1600–1900," in D. Arnold (ed), *Warm Climates and Western Medicine: The Emergence of Tropical Medicine, 1500–1900* (Amsterdam: Rodopi, 1996), 57.

[33] See J. Downs, *Maladies of Empire: How Slavery, Imperialism, and War Transformed Medicine*, (Cambridge: The Belknap Press of Harvard University Press, 2021); T. Lockley, *Military Medicine and the Making of Race: Life and Death in the West India Regiments, 1795–1874* (New York: Cambridge University Press, 2020); D. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981); MacLeod/Lewis (eds), *Disease, Medicine and Empire*; Curtin, *Death by Migration.* For the 'medicalisation of war' resulting from military demands for medical knowledge see M. Harrison, "The Medicalization of War – The Militarization of Medicine," *Social History of Medicine* 9:2 (1996), 267–76.

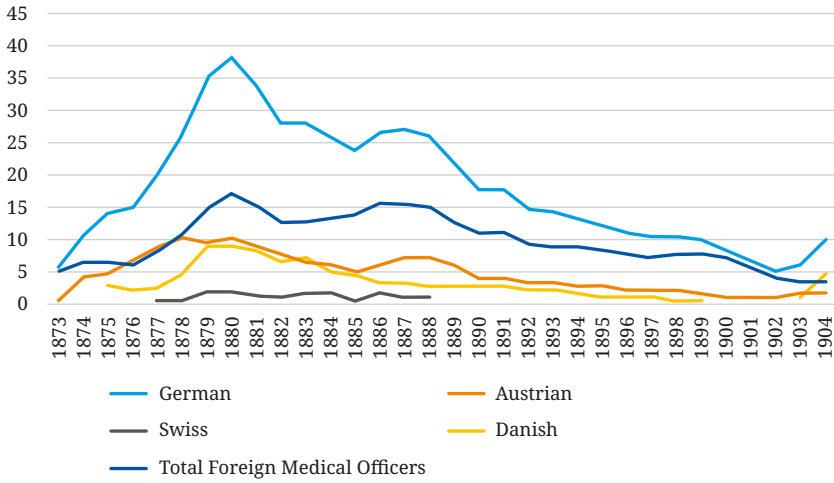

Figure 1: Percentage of non-Dutch medical officers in the Dutch Colonial Army, 1873–1904. Data based on NL-HaNA 2.10.50.

20–25 per cent of the KNIL's medical officers, while their number remained around 50 per cent (between 47 and 66 individuals) in the 1840s and 1850s. From the 1860s onwards, the percentage of Germans dropped significantly to around 18.7 per cent before slowly rising again from the mid-1870s onwards (see figure 1).[34]

Recruitment usually peaked around times of war, for example in 1825 with the beginning of the Java War or the 1856 uprisings on Celebes (Sulawesi) and Borneo (Kalimantan). Physicians from the German States and Empire were however not the only foreign medical experts serving the Dutch Colonial Army. The close analysis of the Dutch Colonial Army's personnel files, the so-called *stamboeken*, reveals a total of 50 medical officers from the Austrian-Hungarian Empire, 42 from Denmark,[35] 11 from Switzerland, and 10 from France, recruited by the KNIL between 1816 and 1904.[36] Moreover, Teichfischer ends his investigation at 1884 with the argument that "German colonial medicine entered a new era with the newly founded German colonies in Africa."[37] However, the outbreak of the Aceh War in northwestern Sumatra in 1873 initiated a new wave of recruitment of foreign medical experts that would last until the official end of the conflict in 1904. Despite the German Empire's own

[34] See Teichfischer, "Transnational Entanglements in Colonial Medicine," 65.

[35] The Danish case will not be considered in this book. It does however promise intriguing avenues for historians to explore in the future.

[36] The numbers of "foreign" medical officers are based on my calculations in NL-HaNA 2.10.50, inv. nrs. 8–19, folios 2160–4897.

[37] Teichfischer, "Transnational Entanglements in Colonial Medicine," 71.

imperial ambitions in the late nineteenth century, German physicians continued to be recruited for service in the Dutch Colonial Army.

Germanophone Physicians, Medical Masculinity and the KNIL

The recruitment of foreign medical personnel was not merely a response to the structural demands of the Dutch Colonial Army but also reflected the aspirations of physicians from Germanophone Europe as a professional and social group. In the nineteenth century, medicine occupied an intermediary position within bourgeois society. As the discipline gradually shifted from a craft practised by surgeons and apothecaries to an academic discipline grounded in scientific authority, physicians increasingly came to identify with the educated middle class (*Bildungsbürgertum*), embracing ideals of education (*Allgemeinbildung*), moral discipline, and financial independence and with that key marker of bourgeois respectability in German-speaking lands.[38]

At the same time, as Robert Nye has argued, nineteenth-century medicine and science functioned as "masculine 'fields of honor'," as "the boundaries of an honor culture expanded [...] to include men of social origins far below that of the old service nobility," including "liberal professionals and others whose career investments were made chiefly in educational capital."[39] Nevertheless, many physicians found themselves disappointed by this promise as they continued to face financial struggles or a perceived lack of social prestige. For many, joining colonial services was attached to a hope of enhancing their social standing in bourgeois European society. The KNIL promised a steady income, (military) honour, and overseas adventures in the tradition of world-travelling explorers. By entering colonial services, many physicians hoped to fashion themselves as disciplined, worldly, and authoritative, embodying a specific form of colonial medical masculinity that merged bourgeois respectability with the prestige of imperial service and the epistemic authority of science.

Teichfischer has argued that "competition was one of the strongest motives for entering the colonial medical service." The number of medical students had risen sharply since the early nineteenth century, while positions for practicing physicians

[38] See P. Hanger, *Ärzte im 19. Jahrhundert: Von handwerklichen Chirurgen und akademischen Medizinern*, (Basel: Christoph Merian Verlag, 2010); R. Braun, "Zur Professionalisierung des Ärztestandes in der Schweiz," in W. Conze and J. Kocka (eds), *Bildungsbürgertum im 19. Jahrhundert: Teil 1. Bildungssystem und Professionalisierung in internationalen Vergleichen*, (Stuttgart: Klett-Cotta, 1992), 332–57; C. Huerkamp, "Die preussisch-deutsche Ärzteschaft als Teil des Bildungsbürgertums: Wandel in Lage und Selbstverständnis vom ausgehenden 18. Jahrhundert bis zum Kaiserreich," in Conze/Kocka, *Bildungsbürgertum im 19. Jahrhundert*, 358–87.

[39] R. A. Nye, "Medicine and Science as Masculine 'Fields of Honor'," *Osiris* 12 (1997), 61.

stagnated, resulting in what contemporaries had called an "overcrowding of medical profession."[40] Many physicians hence faced material deprivation, delayed marriage and a lack of domesticity, and social marginalisation, all markers of failed manhood within bourgeois gender norms.[41] The trope of professional overcrowding (*Überfüllung des ärztlichen Berufs*) persisted well into the 1890s.[42] An article in the *Münchener Nachrichten* of 1892 explicitly mentions the Dutch Colonial Army as one of the preferred career opportunities for unemployed German physicians, even outperforming the English colonies in popularity:

> We know German doctors in Dutch colonies who have an annual income that cannot be earned in their home country, and who live in areas that are by no means uncomfortable in terms of sanitation. In addition, the Dutch welcome German doctors because of their thorough education, and the authorities are friendly to them. In the countries dominated by the English (India, etc.), German doctors are only accommodated in exceptional cases.[43]

However, this public discourse on "overcrowding" peaked at a time when German recruitment for the KNIL had already declined significantly. Moreover, archival data from 1873–1904 only partially supports Teichfischer's hypothesis that competition was the prime motive for Germans to join the KNIL and does not apply at all to Swiss or Austro-Hungarian recruits. A more comprehensive look at the biographies and applications of individual medical officers reveals a more intricate web of shifting motives that evolved and adapted to changing circumstances over time.

The case of the Prussian doctor Friedrich Wilhelm Stammeshaus is particularly illustrative regarding the broad variety of motives and masculine ideals that could shift within a single biography. Having studied medicine in Halle in the early 1860s, Stammeshaus repeatedly struggled to finance his education and appealed to his parents, who were well-off landowners, for support. In a letter from 1865, he asks them for 35 Reichstaler for the "matriculation, rent, the college funds [Collegiengelder], lunch, breakfast, dinner and all other expenses […]."[44] In 1870, during the Franco-Prussian War, he joined the Prussian army as a medical officer,

[40] Teichfischer, "Transnational Entanglements in Colonial Medicine, 73.

[41] For shifting masculinities in the nineteenth century, see J. Tosh, "Masculinities in an Industrializing Society: Britain 1800–1914," *Journal of British Studies* 44: 2 (2005), 330–42.

[42] See, for example, "Eine Abmahnung vom Studium der Medizin," *Norddeutsche allgemeine Zeitung, Morgen-Ausgabe*, 24 June 1892.

[43] "Zur Ueberfüllung des ärztlichen Berufs," undated newspaper snippet in NL-HaNA, Inventaris van het Archief van het Ministerie van Buitenlandse Zaken. A-Dossiers, 1815–1940, Militaire Geneeskundige Dienst in de Koloniën 1871–1898, nummer toegang 2.05.03, inv. nr. 287, dossier A.137.

[44] Letter from Friedrich Wilhelm Stammeshaus to parents, Halle, 11 January 1865, private collection.

gaining both experience and a first sense of military honour. Yet, even during his enlistment, he continued to ask his parents for money.[45] After the war had ended, Stammeshaus decided to take the *Staatsexamen* for medical practitioners. Again, he would repeatedly send letters to his parents requiring their financial aid. Interestingly, he requested the money not for everyday necessities, but rather for maintaining the habitus of a respectable bourgeois man. In 1873, for example, he asked his father to financially support study trips to Utrecht and Vienna.[46] During his stay in Utrecht, he requested 25 taler to attend "festivities in honour of the professors, which I could not escape."[47] There is a gap in the preserved correspondences between 1874 and 1876, but in 1877 Stammeshaus finally decided to take a post as a ship doctor on board the ship "Bahia," which was most likely operated by a Hamburg-based shipping company.[48] The letters from his time as a ship surgeon reveal a desire for masculine adventure. In a letter written from the Danish colony St. Thomas in the West Indies, for example, he portrays himself in the tradition of a worldly explorer, boasting that he had "broadly followed the same course that Christopher Columbus took in his time when he discovered America."[49] It might very well be that this first taste of adventure motivated him to enlist with the KNIL in 1878. At the same time, his service with the Dutch Colonial Army allowed him to clear the debts he acquired over the years and with that, to symbolically restore his honour.[50] "The original purpose of this momentous step, the release from the debt that has been weighing heavily on me for years, has been achieved," he writes to his family, "the Dutch government has kept everything it promised me, my debts have been paid down to the last penny."[51] Over time, colonial service came to mean far more to Stammeshaus than a mere escape from the debts accumulated during his student year. What had begun as a pragmatic solution to economic distress gradually turned into a means of self-fashioning within the moral economy of bourgeois respectability. Stammeshaus took Dutch citizenship in 1899, married a Dutch woman, and raised a family in the Dutch East Indies (also see chapter 2). Through his service in the KNIL, that would last until his death in 1903, he converted

[45] Letter from Friedrich Wilhelm Stammeshaus to parents, Bonn, 16 July 1870, private collection.

[46] Letter from Friedrich Wilhelm Stammeshaus to father, Cologne, 19 April 1873, private collection.

[47] Letter from Friedrich Wilhelm Stammeshaus to parents, Utrecht, 22 June 1873, private collection.

[48] See Letter from Friedrich Wilhelm Stammeshaus to parents, on board the Bahia, 21 February 1877, private collection.

[49] Letter from Friedrich Wilhelm Stammeshaus to parents, St. Thomas, West Indies, 9 April 1878, private collection.

[50] For the importance of 'honour' as a hegemonic ideal of bourgeois masculinity, see U. Frevert, *Emotions in History: Lost and Found* (Budapest: Central European University Press, 2011), 87–9.

[51] Letter from Friedrich Wilhelm Stammeshaus to parents, Nieuwediep, 27 December 1878, private collection.

indebted dependency into disciplined self-reliance, embodying ideals of bourgeois masculinity that he had struggled to attain in Prussia but ultimately realised through his role as a colonial military physician in the tropics.

For others, colonial service offered a means of moral or social rehabilitation, as the case of Friedrich Joseph Max Fiebig illustrates. After Fiebig had applied to join the KNIL with the Dutch Ministry of Colonies, a background screening by German officials in Dresden reported that "he [Fiebig] was involved in an affair of honour with a student and had the bad luck to wound his opponent in a duel by a pistol shot. For this, he was prosecuted and is still awaiting trial this month."[52] It is therefore plausible that Fiebig left Leipzig for the Dutch East Indies to allow the affair to fade from public memory and, in doing so, to restore his reputation and honour and to avoid potential legal consequences. In other words, colonial service provided him with a temporary escape and a path to moral redemption. During his time in the Dutch East Indies, Fiebig became active in the colonial temperance movement, further demonstrating his efforts to embody moral restraint and virtues aligned with contemporary ideals of respectable European masculinity (also see chapter 2).

Education in a broader sense is mentioned as a motive in some of the applications to the Dutch Colonial Army. The German Gustav Eckert, for example, asked the Dutch Ministry of Foreign Affairs if, in case he committed to join the KNIL, the army would finance the continuation of his medical studies in the Netherlands.[53] For the Swiss Conrad Kläsi, who would arrive in the Dutch East Indies in 1879, it was scientific curiosity that drove him to enlist as a medical officer. Despite being warned by the Senior Field Doctor (*Oberfeldarzt*) of the Swiss military about the numerous dangers and diseases that awaited in the tropics, Kläsi displayed little concern in his appeal letter to the Swiss Federal Council "since he hopes to be able to devote himself to scientific studies during the time of his employment."[54] In his obituary, he was described as wishing to follow in the footsteps of Charles Darwin and Alexander von Humboldt, aspiring to a form of scientific masculinity characterised by adventurous exploration that was popularised by world-travelling

[52] Letter to the Dutch delegation in Berlin, Dresden, 2 November 1878, in NL-HaNA, Inventaris van het Archief van het Nederlandse Gezantschap in Pruisen, 1814–1890, Ingekomen en Minuten van Uitgaande Brieven Betreffende de Aanwerving in Pruisen van Vrijwilligers voor het Nederlands-Inisch Leger, 1880–1883, nummer toegang 2.05.10.14, inv. nr. 211.

[53] Letter from Gustav Eckert to the Dutch Ministry of Foreign Affairs, Eisenach, 12 August 1889, in NL-HaNA 2.05.03, inv. nr. 287, dossier A. 137.

[54] Letter from Conrad Kläsi to the president of the Swiss Federal Council B. Hammer, Niederurnen, 23 May 1879, in Bundesarchiv Bern (BAR), Eintritt von Schweizern in ausländische Armeen, Niederländische Armee, Dossier Eintritt von schweiz. Aerzten in die niederl. Kolonialarmee (Oblt. Kläsi, Oblt, G. Glaser, Oblt. H. Erni, Oblt. A Günther), 1879–1880, BAR E27#1000/721#5748.

explorer-scientists of nineteenth-century Europe.[55] As I have argued elsewhere in more detail, Kläsi would use the money and networks he had acquired through his colonial military service to make a name as a zoologist.[56] The Austrian physician Heinrich Breitenstein likewise sought to convert his colonial career into scientific authority. He served as a medical officer in the KNIL for twenty-one years (1876–1897) and published three memoirs based on his experiences in the Dutch East Indies. His books combined detailed (and sometimes wildly exaggerated) accounts of his daily life and medical practice in the tropics with observation on the local flora, fauna, and peoples as well as practical advice on tropical medicine and hygiene.[57] He claims to have devoted his free time off duty to hunting wild animals, and donated or sold several "exotic" animal specimens to zoological museums across Europe.[58] His effort earned tangible scientific recognition when, in 1881, Franz Steindachner, director of the Natural History Museum in Vienna, named a "novel" python species "Python Breitensteini" after Breitenstein had collected a specimen in Borneo and donated it to the museum.[59]

The examples of Kläsi and Breitenstein reinforce Douglas Peers' observation that medical officers and surgeons played a central role in the "collection, analysis and dissemination of knowledge" in colonial contexts.[60] At the same time, they illustrate the symbolic capital that could be acquired through the "exploration" of a tropical colony. Regardless of their initial motivation for joining the KNIL, many physicians from Germanophone Europe – including Stammeshaus and Fiebig – leveraged their first-hand experiences with tropical diseases and their access to patients during their service to claim authority in the emerging fields of bacteriology and tropical medicine. They kept meticulous records on the European, Javanese, Ambonese, or Chinese patients they treated and published widely in journals such as the GTNI (see chapter 3). Owing to the limited institutionalisation of colonial science in the nineteenth century Dutch East Indies, the KNIL thus became an important hub for the production of knowledge about colonised Indonesia's flora, fauna,

[55] See H. Erni, "Nekrolog Konrad Kläsi," *Schweizerische Medizinische Wochenschrift* 48 (1935), 1152.

[56] See Ligtenberg, "Imperiale Männlichkeiten."

[57] See H. Breitenstein, *21 Jahre in Indien: Aus dem Tagebuch eines Militärarztes*, pts. 1–3, (Leipzig: Th Grieben's Verlag, 1899–1901).

[58] See, for example, A. von Pelzen, "Ueber eine von Herrn Dr. Breitenstein gemachte Sammlung von Säugethieren und Vögeln aus Borneo," in *Verhandlungen der zoologischen-botanischen Gesellschaft in Wien* XXIX (1879), 527–32.

[59] See F. Steindachner, "Über eine neue Pythonart (Python Breitensteini) aus Borneo," *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften* 82 (1881), 267–8; "Eine neue Art der Riesenschlange," *Mährisches Tagblatt*, 23 August 1880.

[60] See D. Peers, "Colonial Knowledge and the Military in India, 1780–1860," *The Journal of Imperial and Commonwealth History* 33:2 (2005), 157–80. Also see M. A. Osborne, "Science and the French Empire," in *Isis* 96 (2005), 80–7.

environment, and diseases, while also offering middle-class men with a medical background an opportunity to attain financial stability or to present themselves as widely travelled adventurers or authoritative medical men of science.

Medical Mercenaries and the Military Labour Market

While their medical expertise was a decisive factor in their recruitment, medical in the Dutch East Indies were primarily employed as military personnel under the KNIL, with all the attendant obligations and privileges of officer status. They were hired on fixed-term-contracts, required to wear uniforms, and stationed primarily in military hospitals, where their main responsibility was the health of soldiers and indentured labourers. They operated as medical mercenaries in the sense that their employment was situated at the intersection of demands for medical knowledge and military labour. In recruiting physicians for colonial military services, the KNIL relied on historically entrenched, transimperial markets for military labour stretching across central and northern Europe.

The KNIL and Transimperial Military Labour Markets

In his seminal study *The Living Tools of Empire*, the historian Martin Bossenbroek argues that the emergence of a state monopoly on violence in the nineteenth century posed a particular challenge to the military and political power of sparsely populated countries such as the Netherlands, as the domestic supply of soldiers could not meet the expanding demands of the Dutch state and its overseas empire.[61] Consequently, the Dutch Colonial Army relied heavily on the recruitment of Javanese, Ambonese, and West African soldiers who formed the majority of its manpower until Indonesian independence.[62] To sustain what was regarded as the indispensable "European element" within its ranks, the KNIL also recruited volunteers in non-Dutch European regions, tapping into similar reservoirs of military manpower as the VOC before.

According to the historian Philipp Krauer, the KNIL benefitted from two major developments in nineteenth-century Europe. First, the British Empire had ceased

[61] M. Bossenbroek, "The Living Tools of Empire: The Recruitment of European Soldiers for the Dutch Colonial Army, 1814–1909," *The Journal of Imperial and Commonwealth History* 23 (1995), 26–53.

[62] See J. De Moor, "The Recruitment of Indonesian Soldiers for the Dutch Colonial Army, c. 1700–1950," in D. Killingray and D. Omissi (eds), *Guardians of Empire: The Armed Forces of the Colonial Powers, c. 1700–1964* (Manchester: Manchester University Press,1999), 53–69; G. Teitler, "The Mixed Company: Fighting Power and Ethnic Relations in the Dutch Colonial Army, 1890–1920," in K. Hack and T. Rettig (eds), *Colonial Armies in Southeast Asia* (London: Routledge, 2006), 146–60.

recruiting mercenaries after 1815, while the imperial latecomers Belgium, Germany, and Italy displayed little to no demands for foreign soldiers. The KNIL's main competitor on the transimperial military labour market was the French Foreign Legion. Second, the rise of nationalism in Europe led many states to dissolve their foreign regiments altogether, leaving large numbers of experienced but unemployed mercenaries available for colonial service.[63] Owing to these circumstances, the Dutch Colonial Army was able to supplement its ranks of Dutch soldiers with the enlistment of foreign European volunteers, in particular if it faced a temporally increased demand for military personnel in times of war.

Between 1815 and 1909, of roughly 174,000 Europeans who served in the KNIL, 24,000 came from Belgium, 23,000 from the German States and Empire, and approximately 7,500 each from Switzerland and France, with a further 7,500 hailing from various other regions in Europe.[64] In recruiting colonial mercenaries, the Dutch Colonial Army relied on a dense network of consuls and ambassadors spread across various European countries on the one hand, as well as on official recruitment agencies on the other. Many of these agencies were run by retired soldiers. For instance, in the 1860s the Dutch recruitment office in Altona, which enlisted Danish and Norwegian volunteers, was managed by a former captain of the British-Swiss Legion.[65]

Following the revolutions of 1848 in Europe, however, newly founded nation states such as Switzerland began to introduce stricter laws against the recruitment of soldiers for foreign military services, forcing most official agencies to shut down.[66] Yet, as Philipp Krauer's research on Swiss mercenaries in the Dutch Colonial Army demonstrates, such recruitment continued informally well into the early twentieth century.[67] The KNIL replaced formal recruitment channels with a web of local intermediaries, encompassing innkeepers, veterans, or local officials, who discreetly guided prospective recruits to Dutch agents.[68] As various documents

[63] See P. Krauer, *Swiss Mercenaries in the Dutch East Indies: A Transimperial History of Military Labour, 1848–1914* (Leiden: Leiden University Press, 2024), 31–9.

[64] Numbers based on M. Bossenbroek, *Volk voor Indië: De Werving van Europese Militairen voor de Nederlandse Koloniale Dienst 1814–1909* (Amsterdam: Van Soeren, 1992). Also see Krauer, *Colonial Mercenaries*, 38.

[65] See documents held in NL-HaNa, Inventaris van het Archief van het Nederlandse Gezantschap in Denemarken, 1815–1863 (1909), 1920–1940, Ingekomen en Minuten van Uitgaande Brieven Betreffende de Nederlandse Keuringscommissie te Altona voor de Werving van Noordse en Zweedse Vrijwilligers voor het Nederlands-Indische Leger, nummer toegang 2.05.45, inv. nr. 70.

[66] See Bossenbroek, *Volk voor Indië*, 158–9; P. Krauer, "Welcome to Hotel Helvetia! Friedrich Wühtrich's Illicit Mercenary Trade Network for the Dutch East Indies, 1858–1890," *BMGN – Low Countries Historical Review* 134:3 (2019), 129–30.

[67] See Krauer, *Swiss Mercenaries in the Dutch East Indies*, 51–2.

[68] See Krauer, "Welcome to Hotel Helvetia!"

held in the Dutch National Archives in Den Haag suggest, Krauer's findings can be extended to the German Empire, that was numerically even more important for the KNIL's foreign recruitment.[69]

An illustrative example of this is found in an 1882 letter from R. Klinkenberg, a German restaurant owner and recruitment agent in Harderwijk, to the innkeeper of the tavern *Zur Heimath* in Lower Saxony. Klinkenberg writes that he had heard the innkeeper served "many young people who go to Holland to be recruited for the Indies," and proposed a collaboration: if the innkeeper sent him candidates' papers for review, he would receive money so that "the young man can travel to Neuhaus, where I will pick him up."[70]

The sources on recruits from Habsburg Austria are more fragmentary. The files in the Austrian State Archives dealing with foreign services (*Fremde Dienste*) contain no direct evidence of Austrians joining the KNIL, though they do include examples of Austro-Hungarian citizens serving in the German colonial army and, even more prominently, in the French Foreign Legion, which may suggest that the Austrian-Hungarian authorities did not necessarily oppose the foreign colonial services of their citizens.[71] A report from the Austrian consulate in Batavia in 1911 notes between 184 and 400 Austro-Hungarian citizens residing in the Dutch East Indies. According to consul Quellhorst, most of them were likely employed as lower-ranking soldiers with the KNIL but never reported with the consulate.[72] Their records appear in the *stamboeken*, the Dutch Colonial Army's personnel register.[73] Unlike for Swiss and German recruits, no separate archival collection on Austrian enlistments exists in The Hague, and their overall numbers seem to have been smaller. This pattern does however not hold for the medical corps, where Austro-Hungarian volunteers were comparatively numerous.

[69] See, for example, documents held in NL-HaNa, Ingekomen en Minuten van Uitgaande Brieven Betreffende de Inlichtingen over Pruisische Vrijwilligers bij het Nederlands-Indisch Leger 1876–1878, nummer toegang 2.05.10.14, inv. nr. 236. Also see M. Bossenbroek, "'Dickköpfe' und 'Leichtfüsse': Deutsche im niederländischen Kolonialdienst des 19. Jahrhunderts," in K. Bade (ed), *Deutsche im Ausland – Fremde in Deutschland: Migration in Geschichte und Gegenwart* (Munich: Beck'sche Verlagsbuchhandlung, 1992), 249–54.

[70] Letter from R. Klinkenberg to the innkeeper of the inn 'Zur Heimath', Harderwijk, 5. November 1887, in NL-HaNa, Werving Militairen voor het Ned.-Indische Leger 1879–1918, nummer toegang 2.05.03, inv. nr. 286, dossier A 136.

[71] See Österreichisches Staatsarchiv, AT-OeSta/KA ZSt MfLV HR Politischer Teil, 1868–1903 358 Reisebewilligung und Fremde Dienste.

[72] Consul Quellhorst: Abschrift eines Berichts des k.u.k. Consulates in Batavia an die k. Gesandtschaft im Haag dd. 6. Juli 1911, No 214, in Österreichisches Staatsarchiv, AT-OeStA/HHStA GKA Den Haag 24 Gesandtschaftsarchiv Den Haag, Administrative Akten, Konsularwesen (österreichisch-ungarisches) C V/12b-15.

[73] See NL-HaNA, 2.10.50, inv. Nrs. 121–215.

Historians generally agree that most European mercenaries in the KNIL, regardless of their nationality, came from the lower-class strata of society and joined out of poverty coupled with a desire for adventure, motivations that aligned with contemporary expectations of lower-class masculinity.[74] Volunteers typically applied through local authorities or directly at Dutch diplomatic delegations or consulates. In their application letters, some even emphasised their denomination, perhaps to highlight their cultural affinity with the Netherlands. The Prussian Johann Gottfried Jeczawitz, for instance, stressed his "Protestant belief" in his application to the Royal Dutch delegation in Berlin.[75]

Such notions of a shared German-Dutch heritage and kinship also circulated in the press. In 1898, the *Norddeutsche allgemeine Zeitung* emphasised the high number of Germans in the KNIL, claiming that "The core of the Dutch East Indian troops consists of Dutch, Germans and Swiss, thus of members of *related nations of Germanic descent*." In contrast to the "brutal" French Foreign Legion, the author portrays the KNIL troops as civilised and disciplined, a quality that he attributes to the high German presence: "The Germans form the backbone of the Dutch Colonial Army, since most of them received their military education in their home country and distinguish themselves above all others by their sobriety, sense of duty and usefulness."[76]

Recruitment of Physicians for the Dutch Colonial Army

The recruitment patterns for medical mercenaries in Dutch colonial services closely mirrored the KNIL's approach to attract foreign soldiers. According to Teichfischer, between 1816 and 1884, several Germans physicians independently contacted authorities in the Netherlands to seek employment in Dutch colonial service. At the same time, Dutch authorities appeared to have actively promoted the recruitment of physicians within the territories of the German States. Given the educational background of physicians, their knowledge of employment opportunities in the Dutch Colonial Army often circulated through interpersonal networks between Dutch officials and faculty members of German universities.

[74] See Bossenbroek, "'Dickköpfe' und 'Leichtfüsse;'" Krauer, *Swiss Mercenaries in the Dutch East Indies*, 60–9.

[75] Letter from Johann Gottfried Jeczawitz to the Royal Dutch Legation in Berlin, Bartenstein, 2 January 1885, in NL-HaNa, Ingekomen en Minuten van Uitgaande Brieven Betreffende de Aanwerving in Pruisen van Vrijwilligers voor het Nederlands-Indisch Leger 1854–1890, nummer toegang 2.05.10.14, inv. nr. 212B, bestanddeel 2. The Protestant denomination might have been an advantage but was not a necessary pre-condition in Dutch recruitment practices. To an admittedly much lesser extent, the KNIL also accepted Jewish or Catholic mercenaries.

[76] H. Hirsch, "Aus Niederländisch Ostindien," *Norddeutsche allgemeine Zeitung*, 18 September 1898. Emphasis by the author.

A striking example is the Alsace-born physician Franz Joseph Harbaur, inspector-general of the Dutch military medical service. In 1821, Harbaur wrote to Andreas Metz, professor of philosophy and mathematics at the University of Würzburg, asking him to "recommend to him 10–12 well-mannered academic surgeons, who would be willing to ship to Java", a request that Metz readily fulfilled.[77] Another example of recruitment through university networks was the case of the German physician and botanist Johann Lukas Schönlein, who in 1819 was appointed professor of internal medicine at Würzburg while maintaining a keen interest in palaeobotany. Schönlein actively encouraged his students to enter the Dutch Colonial Army as medical officers, hoping they would send him zoological and botanical specimens from the tropics to enrich his collections. Several of his former pupils followed this call and subsequently joined the KNIL.[78] One of them was Ludwig Horner, a Swiss physician who had studied under Schönlein in Würzburg. Shortly after enlisting in the colonial army, Horner became a member of the *Natuurkundige Commissie voor Nederlands-Indië*.[79] Like Horner, nearly all Swiss medical officers who joined the KNIL throughout the nineteenth century had spent at least parts of their studies at German universities, where many first learned of the professional and financial opportunities that service in the Dutch East Indies could offer. Such trajectories point to the transimperial nature of both academic mobility and colonial recruitment in the nineteenth century that easily crossed the German and Swiss borders.

In the second half of the nineteenth century, the Dutch colonial government adopted a more proactive recruitment strategy for medical officers, especially during periods of war. The final major wave of recruitment of foreign physicians occurred between 1873 and 1890. At that time, the Dutch colonial government was engaged in a resource-intensive, imperialist war with the Sultanate of Aceh in northern Sumatra, where hundreds of troops succumbed to tropical and infectious diseases. To strengthen its medical corps, the Dutch Ministry of War (*Ministerie van Oorlog*) sent several copies of a "Call for Young Doctors" (*Aufruf für junge Ärzte*) to the Ministry of Foreign Affairs (*Ministerie van Buitenlandse Zaken*), which then forwarded them to local Dutch delegations in Germanophone Europe. The call outlined the qualifications expected of applicants and detailed their prospective remuneration.[80]

[77] Teichfischer, "Transnational Entanglements in Colonial Medicine," 75.

[78] See P. Teichfischer, "'Bin ich aber nur einmal auf Java!' – Johann Lukas Schönleins ostindische Schatztruhe: Grenzüberschreitender Naturalienhandel im 19. Jahrhundert," in F. Steger (ed), *Medizin- und Wissenschaftsgeschichte in Mitteldeutschland: Beiträge aus fünf Jahren Mitteldeutscher Konferenz* (Leipzig: Leipziger Universitätsverlag, 2016), 121–32.

[79] See Horner, "Briefe und Tagebuchskizzen," 184–5.

[80] See "Aufruf an junge Ärzte," in NL-HaNA 2.05.03, inv. nr. 287, dossier A. 137.

These recruitment efforts peaked around 1878, following two costly and inconclusive military campaigns in Aceh in 1876 and 1877, which reinforced the perception that the war would not end soon.[81] Again, the Ministry of Foreign Affairs circulated calls among Dutch embassies and consulates in the German Empire, stating that

> The Royal Dutch Colonial Ministry is seeking, by July 1, 1879, twenty unmarried Doctors of Medicine, entitled to practice medicine in their fatherland, who are not over 35 years of age, and who wish to serve as 2nd class medical officers (assistant physician, premier lieutenant) for five years in the East Indian Army.[82]

The call added that proficiency "in the German or Dutch language" was required for prospective applicants. In addition, they would have to be "found physically fit for military service in the Dutch East Indies," pass "a short examination to be held in The Hague," and send in official documents that prove "their entitlement to medical and surgical practice," the fact that "they are no longer liable to serve in their country of origin," their "good conduct," as well as a birth certificate. In return, recruits were promised a gratification of 4,000 gulden (6,666 reichsmark) and a per annum salary of 1,300 gulden (2,166 reichsmark) before departure, free first class passage to the Indies, a per annum salary of 2,700 gulden (4,500 reichsmark) during their journey, a per annum salary of 3,300 gulden (5,500 reichsmark) in the Indies, another gratification of 2,000 gulden (3,333 reichsmark) after the end of their service as well as a lifetime pension of 900 gulden per annum in case of invalidity.[83] These numbers match those offered to Swiss physicians, suggesting that the KNIL made no distinction in pay according to national origin.[84]

In several cases, German and Swiss authorities directly collaborated with the Dutch recruiting medical officers for the KNIL. For much of the nineteenth century, applications were addressed to the Ministry of War in The Hague. After 1878, following administrative restructuring, the responsibility for the recruitment of medical personnel was transferred to the Ministry of Colonies (*Ministerie van Koloniën*).[85] The Ministry of Colonies collaborated closely with the Ministry

[81] The literature on the Aceh War is discussed in more detail in chapter 2. For now, see A. Reid, *The Contest for North Sumatra. Atjeh, the Netherlands and Britain 1858–1898* (London: Oxford University Press, 1969), 180–8.

[82] See unnumbered file with the title "Königreich der Niederlande" in NL-HaNA 2.05.10.14, inv. nr. 211.

[83] See ibid.

[84] See letter from the general consul of the Netherlands Suter-Vermeulen to the president of the Swiss Federal Counsil Hammer, Lausanne – Bern, 24 February 1879, in BAR E27#1000/721#5748.

[85] See General Secretary of the Ministry for the Colonies to L. Mittelshöfer, Dutch delegate in Vienna, Den Haag 13 August 1878, in NL-HaNA 2.05.03, inv. nr. 287, dossier A. 137.

of Foreign Affairs, which tasked Dutch representatives in Berlin with screening potential recruits.[86] These delegates conducted meticulous inquiries into each applicant's credentials, verifying the legitimacy of their medical degree, their overall credibility, financial stability, and physical well-being. In 1879, for example, the Bavarian representative (*Chargé d'Affaires*) in Berlin wrote to the Dutch delegate in Berlin, De Constant-Rebecque – likely a son of the Swiss mercenary Jean Victor De Constant-Rebecque, who had previously served in the Dutch National Army –[87] to inform him of the background check of the physician Placidus Engelmayer from Munich, who had applied to join the Dutch Colonial Army with the Ministry in The Hague. The letter concludes, in the lingua franca French, that "Il jouit d'une parfait reputation, il possèsse quelque peu de fortune et il est doué d'une parfaite et rigoureuse santé" – "he enjoys a perfect reputation, he possesses some fortune, and he is blessed with a perfect and rigorous health."[88] In a similar vein, "the German government confirmed that […] Dr. Stammeshaus has proved to be of good name and reputation in Duhr, from where he originates."[89] The German authorities seemed to have had their own interests at play in investigating recruits. A newspaper snippet filed in the archives of the Dutch delegation in Berlin reveals that there seem to have been "repeated cases […] in which Dutch and Belgian advertising agents have fraudulently used identity papers of German nationals, which they had obtained through direct correspondence with German authorities, in order to procure entry into the Dutch Colonial Army under a false name […]." As a measure to counter these activities, "the Ministers of the Interior and of War have arranged for applications for identity [papers], emigration, and military papers, that are addressed to Prussian authorities from the Netherlands or Belgium […] to be answered […] through the intermediary of the responsible [local] German Imperial Consular Offices." Through these measures, the ministers hoped to control every individual case of enlistment.[90]

In Switzerland, prospective recruits typically directly contacted the Swiss Federal Council – the highest executive organ of the Swiss Federal State. The recruitment process was often strategically coordinated by Dutch diplomats in Switzerland.

[86] For the diplomatic process surrounding recruitments in the German Empire, see correspondences in NL-HaNA 2.05.03, inv. nr. 287, dossier A.137.

[87] See B. De Montmollin, "Constant de Rebecque, Jean-Victor," in *Historisches Lexikon der Schweiz (HLS)*, 20.08.2001, online: https://hls-dhs-dss.ch/de/articles/023445/2001-08-20/ [accessed: 31.03.2023].

[88] Letter from the Bavarian Chargé d'affaires in Berlin to Mr de Constant-Rebecque, Dutch Chargé d'Affaires in Berlin, Berlin September 8, 1879, in NL-HaNA 2.05.10.14, inv. nr. 211.

[89] See "Antecedenten Dr. Stammeshaus," Berlin, 2 November 1878, in NL-HaNA 2.05.10.14, inv. nr. 211.

[90] See untitled and undated newspaper snippet (probably from the 1880s), in NL-HaNA 2.05.10.14, inv. nr. 212A.

On 3 January 1879, for example, J. G. Suter-Vermeulen, the Consul General of the Netherlands in the Swiss Confederation, presented to Federal President Bernhard Hammer and Vice-President of the Federal Military Department Emil Welti a "question very urgent to the Dutch government." Suter-Vermeulen inquired "whether the high Swiss Federal Council would permit Swiss physicians to serve as medical officers in the Dutch Colonial Army for a period of five years by granting them a six-year leave of absence" and wished to know "whether the same [Federal Council] would have no objections to an announcement in Swiss newspapers in the affirmative case." Following a positive informal exchange, Suter-Vermeulen reiterated his request in an official letter of 24 February 1879, enclosing a draft newspaper advertisement and copies of the employment conditions issued by the Ministry of Colonies; the same documents circulated in the German Empire.[91] Two weeks later, the Federal Council discussed the matter in a regular session. A particular concern was whether Suter-Vermeulen's request conflicted with the *Federal Act on Recruitment and Entry into Foreign Military Service* of 1859, officially banning "foreign services" (*Fremde Dienste*) for so-called non-national troops. After consulting the Military and Justice Departments, the Council concluded that Art. 1 of the Act "did not apply here," since the KNIL was composed of "national troops."[92] Indeed, Art. 1 only criminalised joining "foreign military units which are not to be regarded as national troops of the state concerned" such as foreign regiments, while allowing exceptions of foreign enlistments "for further training for the purposes of national defence."[93] Suter-Vermeulen cleverly invoked this clause, emphasising "that the foreigners in said service do not form their own, specially organized corps and therefore do not form a foreign legion."[94] Since the KNIL integrated foreign European, Dutch and colonised soldiers under a single command,[95] the Federal Council accepted this reasoning. The only remaining issue concerned Art. 3 of the Act, which prohibited advertising for foreign service; yet the Council argued, without going into any detail, that the proposed newspaper notice "does not qualify as advertising," and therefore approved the publication and all

[91] Letter from the general consul of the Netherlands Suter-Vermeulen to the president of the Swiss Federal Counsil Hammer, Lausanne – Bern, 24 February 1879, in BAR E27#1000/721#5748*.

[92] Auszug aus dem Protokoll der 40. Sitzung des Schweizerischen Bundesrathes, Bern 26 April 1879, in BAR E27#1000/721#5748*.

[93] See "Bericht der Minderheit der Kommission des Ständerathes, betreffend die Anwerbung für fremden Kriegsdienst vom 28. Juli 1859," in *Schweizerisches Bundesblatt (BBL)* II:467 (1859); H. R. Fuhrer and R. P. Eyer, "Das Ende der 'Fremden Dienste,'" in idem (eds): *Schweizer in 'Fremden Diensten:' Verherrlicht und verurteilt* (Zurich: Verlag Neue Zürcher Zeitung, 2006), 256.

[94] Letter from the general consul of the Netherlands Suter-Vermeulen to the president of the Swiss Federal Counsil Hammer, Lausanne – Bern, 24 February 1879, in BAR E27#1000/721#5748*.

[95] See Bossenbroek, *Living Tools of Empire*, 36.

subsequent applications.[96] In the end, the Federal Council granted all applications from physicians seeking permission to serve the Dutch Colonial Army.

As in the case of the combatant troops, no systematic collections have been found in Austrian archives concerning the recruitment of medical officers for KNIL services. Nonetheless, a letter from the Dutch Consul in Vienna, preserved in the archives of the Ministry of Foreign Affairs, notes the "considerable number of Austrian doctors in the Dutch East Indies military service" and states that "enquiries about the conditions of this service are not uncommon at His Excellency's Ministry, including from people who are not based in Vienna and are looking for a written answer." The consul therefore requested additional copies of the recruitment notice to distribute locally from the Ministry in The Hague.[97] Another letter from the Ministry of Colonies to the Dutch delegate in Vienna, L. Mittelshöfer, praises the latter's "great efforts" in recruiting physicians within Austrian-Hungarian territories.[98] These documents point to an active collaboration between Dutch colonial authorities and their diplomatic representatives in Austria-Hungary.

The archival collection of the Dutch Ministry of Foreign Affairs also includes applications and inquiries from physicians who contacted the Dutch embassies in Paris and Lisbon in the 1880s.[99] However, none of the candidates can be identified in the KNIL's personnel records. Perhaps they lacked sufficient proficiency in Dutch or German, both explicitly required by the Ministry of Colonies. Notably, none of the Swiss volunteers came from the country's French or Italian-speaking regions, with the exception of Ernest Guglielminetti from the bilingual canton Wallis, whose mother-tongue was German as becomes evident in his private correspondences with his parents (see chapter 2). Similarly, all Hungarian recruits from the Habsburg Empire submitted their applications to the KNIL in German, underscoring the importance of linguistic borders in the recruitment of physicians for Dutch services more broadly.[100]

[96] Auszug aus dem Protokoll der 40. Sitzung des Schweizerischen Bundesrathes, Bern 26 April 1879, in BAR E27#1000/721#5748*.

[97] Letter from the Dutch Consulate in Vienna to the Ministry of Foreign Affairs in Den Haag, Vienna, 28 August 1877, in NL-HaNA 2.05.03, inv. nr. 287, dossier A. 137.

[98] See General Secretary of the Ministry for the Colonies to L. Mittelshöfer, Dutch delegate in Vienna, Den Haag 13 August 1878, in NL-HaNA 2.05.03, inv. nr. 287, dossier A. 137.

[99] See NL-HaNA 2.05.03, inv. nr. 287, dossier A.137, folios 4853 and 5555.

[100] See, for example, letter from Dr. Anton Carl Desëo to the Dutch Ministry of Foreign Affairs, Budapest, 25 January 1876, in NL-HaNA 2.05.03, inv. nr. 287, dossier A. 137.

From Military Medicine to Civil Health Care: Shifting Demands for Medical Expertise

The Dutch Ministry of War and Colonies' collaborations with German, Swiss, and Austrian authorities ultimately proved effective. Between 1873 and 1904, a total of sixty-five German, thirty-four Austrian, and six Swiss physicians served the KNIL as medical officers – even though, from the 1880s onwards, the German Empire had begun to violently expand its own colonial territories in the Pacific, East and in Southwest Africa. The proportion of German-speaking physicians in the Dutch Colonial Army reached its peak in 1880, when they accounted for nearly 30 per cent of the entire medical corps (17.2 per cent German, 10.2 per cent Austrian, 1.9 per cent Swiss), with an additional 8.9 per cent originating from Denmark. Their share remained between 20 and 30 per cent until 1890, before declining to roughly 15 per cent and gradually diminishing thereafter.[101]

The end of foreign recruitment around the turn of the twentieth century was no coincidence. On the one hand, Dutch efforts to enlist non-Dutch Europeans, whether combatant soldiers or medical officers, repeatedly provoked diplomatic friction and drew the attention of German, Swiss, and Austrian authorities throughout the latter half of the nineteenth century. On the other hand, these tensions intensified as nationalist sentiments and transimperial rivalries grew towards the fin de siècle.

National Competition and the End of Military Recruitment

Not all contemporary observers viewed Dutch military recruitment practices across German-speaking Europe with sympathy. A telling example is the case of the illicit Swiss recruiter Friedrich Wüthrich. Born into a poor family, Wüthrich joined a Swiss regiment in Naples at the age of seventeen. After ten years of service, he enlisted with the KNIL in 1858 as a combatant mercenary, serving for another six years in the Dutch East Indies. In 1866, he opened the hotel *Helvetia* in Harderwijk, a small Dutch town that served the Dutch Colonial Army as a hub to recruit, gather, examine, and transport prospective soldiers for colonial services. From there, Wüthrich operated an illicit recruitment agency through which he persuaded young Swiss men looking for military employment to join Dutch colonial services. Following the foundation of the Swiss Federal State in 1848, however, promoting mercenary service became

[101] See NL-HaNA, 2.10.50, inv. nrs. 8–19, folios 2160–4897. For the total numbers of medical officers in 1880 see "Nederlandsch Oost-Indisch Leger. Formatie en Sterke op 31 December 1880," in *Koloniaal Verslag*, Bijlage C, 's Gravenhage: Algemeene Landsdrukkerij 1881, 2. For 1890 see "Nederlandsch Oost-Indisch Leger, Formatie en Sterke op 31 December 1890," in *Koloniaal Verslag*, Bijlage B, 's Gravenhage: Algemeene Landsdrukkerij 1891, 2.

legally restricted in Switzerland. Consequently, in 1888, Wüthrich was arrested by the Swiss police, putting an end to his illegal recruitment network.[102]

Similar caution surrounded the inn *Zur Heimath* in Lower Saxony, where the German recruiter R. Klinkenberg, also based in Harderwijk, secretly enlisted German mercenaries for the KNIL. Across German-speaking Europe, inns named *Zur Heimath* or *Zur Heimat* had become notorious in the late nineteenth century as shelters for unemployed workers, vagrants, and other socially marginalised men – essentially turning them into ideal sites for military recruitment.[103] In his letter to the innkeeper of *Zur Heimath*, Klinkenberg explicitly warned against using the word "agent" in correspondence, "so that we do not arise any suspicion in Germany."[104] His concern was justified: an 1894 article in the *Haderslebener Kreisblatt* reported that the Prussian *Landrath* Mauve had noticed the "strikingly large number of applications for dismissal from the Prussian state association […] in which the applicants stated that the reason for their emigration was to join the Dutch military service or the colonial army." Mauve suspected "that agents […] are recruiting for Dutch colonial service in this process." He therefore urged the "local police authorities of the district […] to make appropriate enquiries and, in the event of an investigation, to bring about the punishment of these people concerned on the basis of Section 144 of the Reich Penal Code."[105]

Although the recruitment of medical officers was seen as less politically sensitive than that of combatants, both because of their smaller number and their professional status, Dutch authorities nonetheless proceeded with caution. In 1878, the Dutch minister of Foreign Affairs informed the special envoy and minister of the Dutch legation in Berlin, Willem Frederik Rochussen, that he "was informed orally by the German *Gerant* [administrator] here that his government would not exactly oppose the recruitment of German physicians as medical officers in the Dutch East Indies Army, but that it would be less agreeable to publish the conditions of recruitment in German newspapers."[106]

[102] See Krauer, "Welcome to Hotel Helvetia!," 142.

[103] See, for example, B. Althammer, *Vagabunden: Eine Geschichte von Armut, Bettel und Mobilität im Zeitalter der Industrialisierung, 1815–1933* (Essen: Klartext, 2017). I thank Marino Ferri for pointing out the relationship between inns named "Zur Heimath" and lower-class deviancy.

[104] Letter from R. Klinkenberg to the innkeeper of the inn 'Zur Heimath,' Harderwijk, 5. November 1887, in NL-HaNa 2.05.03, inv. nr. 286, dossier A 136.

[105] Der Königliche Landrath Mauve: "Auswanderung zwecks Eintritts in den holländischen Militärdienst bzw. in die Colonialarmee," *Haderselebener Kreisblatt* 25:44, 1 November 1894, NL-HaNa 2.05.03, inv. nr. 286, dossier A. 136.

[106] Letter from the Ministerie van Buitenlandsche Zaken in Den Haag to Mr. Rochussen, special envoy and minister of the Dutch legation in Berlin, Den Haag 2 October 1878, in NL-HaNA 2.05.10.14, inv. nr. 211.

By the turn of the twentieth century, rising nationalism and growing unease about transimperial loyalties effectively ended the recruitment of foreign Europeans for the Dutch Colonial Army. Symbolic of this is an anonymous article published in the *Leipziger Nachrichten* from 1898 that mocked the high number of German physicians, soldiers, and officers in the KNIL. The article's publication caused a small scandal in the Dutch press, where it was perceived as a direct attack on Dutch national pride.[107] The text was widely attributed to the medical officer Heinrich Breitenstein, who was an Austrian national, but often referred to as "German" in both historical sources and secondary literature. Even though Breitenstein himself publicly denied authorship of the piece, Dutch distrust towards foreign medical officers and soldiers intensified in the aftermath of its publication.[108] In 1904, the *Indische Gids* concluded dryly:

> As foreigners do not even make up a fifth of the army, we do not need them. […] It is necessary that Dutch soldiers defend the Dutch colonies, while it is not in our interest that tons of paid pensions go abroad and then people, treated entirely as Dutchmen, make untiring remarks after their return to their homeland. They can become soldiers in their own colonies and then speak badly of their own government and their own institutions.[109]

The recurring frictions between Dutch recruiters and authorities in German-speaking Europe, along with growing resentment toward foreign recruits in the Dutch East Indies, directly translated into declining recruitment numbers. By 1900, the proportion of foreign mercenaries – both combatant and medical – had dropped sharply, reaching negligible levels by 1914. Instead, the KNIL increasingly recruited soldiers and physicians among the local populations in the Dutch East Indies.[110] Yet, even after official recruitment had ended, the Indies retained their allure. Applications from Swiss, Austrian, and German physicians continued to trickle in well into the early twentieth century, as evidenced by various documents held in the Dutch national archives.[111] With the military recruitment halted, physicians had no other option than to seek out alternative opportunities in the civil medical sector.

[107] See, for example, "Tot zoover Insulinde," *Bataviaasch Nieuwsblad*, 29 July 1898; "Uit de Deutsche Wochenzeitung," *Arnhemsche Courant*, 30 June 1898.

[108] See "Een Rectificatie ten Behoeve van Dr. Breitenstein," *De Locomotief*, 18 January 1899.

[109] "Vreemdelingen bij het Indische Leger," *De Indische Gids. Tijdschrift voor Nederlandsch-Indië* 20:2 (1904), 1881.

[110] See Krauer, *Swiss Mercenaries in the Dutch East Indies*, 106.

[111] See documents held in NL-HaNA, Militaire Geneeskundige Dienst in de Koloniën 1898–1913, nummer toegang 2.05.03, inv. nr. 288, dossier A. 137.

From Military to Civil Medicine

Medical mercenaries typically served an average of seven years in the KNIL, and, other than the combatant soldiers, most survived their service. Once discharged, a significant number of Swiss, German, and Austrian doctors attempted to continue their careers within the Dutch East Indies' expanding civil medical administration.

The Swiss physician Otto Gelpke, for instance, joined the Dutch Colonial Army in 1876 after serving in a Bavarian battalion during the Franco-Prussian War of 1870/71. He was deployed in the Aceh War in northwestern Sumatra and honourably discharged in 1880 due to an injury. He subsequently received a government license to practice civil medicine and opened a medical practice in Batavia.[112] From 1894 to 1900, he was employed with the government-controlled Civil Medical Service (*Civiel Geneeskundigen Dienst*) in Pekalongan. In 1902, Gelpke became company physician for a Dutch mining enterprise in Lebong Soelit, Sumatra, where he remained until approximately 1906.[113] He passed away in Zurich in 1917, likely having returned to Europe before World War I.[114] Similarly, Gelpke's colleague, the Austrian Leo Prochnik, who joined the KNIL as a medical officer in 1874, transitioned into the civil medical sector after his discharge. In 1896, he was appointed director of the Selabatoe sanatorium in Soekaboekmi, Java,[115] but later died of dysentery in Jeddah in 1906 while serving the Austro-Hungarian imperial army.[116]

Not all medical mercenaries were equally successful in translating their military service into a career in the civil medical sector. One such example is the Swiss physician Conrad Kläsi, who joined the KNIL in 1879. After completing his five-year service, mostly in Aceh, he returned to Switzerland, where he submitted his dissertation on lung diseases and married Salome Stüssi in 1886.[117] Following their marriage, the couple emigrated to Java, where Kläsi opened a medical practice.[118] Their son, Hans Emil, was born in Batavia in 1887.[119] Shortly afterward, the young family returned to Switzerland. In 1891, they made a second attempt to

[112] See "Otto Gelpke, Concordaats Aarts," *Java-Bode*, 9 November 1880; "Dr. Otto Gelpke," *Correspondenz-Blatt für Schweizer Ärzte* 47: 16 (1917) 564–5.

[113] See "Mijnbouw-mededeelingen," *De Locomotief*, 22 March 1902.

[114] See "Dr. Otto Gelpke," *Correspondenz-Blatt für Schweizer Ärzte* 47: 16 (1917) 564–5.

[115] See "Telegrammen aan de Locomotief," *De Locomotief*, 30 March 1896.

[116] See "Offizielles Protokoll der k. k. Gesellschaft der Aerzte in Wien," *Wiener Klinische Wochenschrift* 18 (1906), 547.

[117] See "Officieel Gedeelte," *Nederlandsche Staatscourant*, 19 November 1885; H. Erni, "Nekrolog Konrad Kläsi," *Schweizerische Medizinische Wochenschrift* 48 (1935), 1152.; Genealogienwerk des Johann Jakob Kubly-Müller, GE 15 Luchsingen, Nr. 111 Kläsi Conrad.

[118] See "H. S. Pinkhof, Tandarts en Dr. C. Kläsi, arts," *Java-Bode*: 28 March 1887.

[119] See "Hans Emil, Zoon van Dr. Med. C. Kläsi," *Bataviaasch Handelsblad*, 03 December 1887.

emigrate to the Dutch East Indies, but once again returned to Switzerland after only four years, eventually settling in Glarus and later in Küsnacht in the canton of Zurich.[120] In a letter to his friends Anna and Marguerite Streiff, Kläsi attributes his failure to settle in the Indies as a civil physician to one main reason: the "riffraff of colleagues" ("Collegen-Wäärli") in the Indies, whom he describes as a "disgusting assortment" of people, and who were "as dishonest as gallows [...] all the more so towards a foreigner."[121] Indeed, in the late nineteenth century, civil physicians in the Dutch East Indies faced severe competition as the medical system was still largely controlled by the military, and it was not until 1911 that the colonial civil medical service finally gained complete independence from the army. European colonial officials and KNIL-employees received free or massively discounted treatment in the military government hospitals, leaving them with little incentive to seek care from private practitioners like Kläsi.[122]

In his letter to the Streiffs, Kläsi mentions a second "inconvenience" he faced in his medical practice in the Dutch Indies: his dependence on ethnically Chinese patients, whom he regarded as a lucrative clientele, particularly the prosperous Chinese mestizo elite (*peranakan*) that had established itself in Java.[123] At the same time, the Chinese community in the Dutch East Indies was widely stigmatised as "amoral" and "deceitful,"[124] and Kläsi's remarks reveal that he, too, adopted such prejudices. He described "the Chinese" as a "rare breed," claiming that "they don't need a doctor to observe or monitor; they don't care [...]." To satisfy his Chinese patients, Kläsi noted, medication was indispensable: "What could be given effectively in 10 pills is better given in 100 pills [...]; it pleases the Chinese heart – they feel they're getting value for their money!" If the prescribed medication failed to produce immediate results, Kläsi complained, "Chinese doctors would offer the same [treatment] within a few days." He further observed that his Chinese patients deeply distrusted European physicians and ignored medical advice, citing,

[120] See "Stoomvaartberichten," *Haagsche Courant*, 05 November 1891; Erni, "Nekrolog Konrad Kläsi."

[121] Letter from Conrad Kläsi to Anna und Marguerite Streiff, Batavia, 18.07.1892, Wirtschaftsarchiv Glarus, GWA, Archiv Streiff, STRE P 1/6.

[122] See Tan, *Zur Geschichte der Pharmazie,* 61–98; Kerkhoff, "The Organization of the Military and Civil Medical Service," 9–24; H. Erni, "Die Krankenfürsorge in Niederländisch-Indien," *Archiv für Schiffs- und Tropenhygiene* 3, 146.

[123] See K. Strassler, "Modelling Modernity: Ethnic Chinese Photography in the Ethical Era," in S. Protschky (ed), *Photography, Modernity and the Governed in Late-colonial Indonesia* (Cambridge: Cambridge University Press 2015), 196.

[124] See D. Kwartanada, "The Tiong Hoa Hwee Koan School: A Transborder Project of Modernity in Batavia, c. 1900s," in S. Sai and C. Hoon, *Chinese Indonesians Reassessed: History, Religion and Belonging* (London: Routledge, 2012), 29–30.

for instance, a diabetic patient who refused to give up sugar, despite a doctor's recommendations.[125]

While reproducing common stereotypes about the Chinese minority in the Dutch East Indies, Kläsi's derogatory comments also underscore the agency of non-European patients, who did not passively submit to European medical authority. At the same time, they expose the strong competition posed by local – in this case Chinese – medical traditions within the Dutch East Indies' medical market, which could undermine European physicians' efforts to establish themselves in the colonial civil medical sector.[126]

Interpersonal Networks and the German-speaking Diaspora

In general, those foreign physicians who managed to build lasting civil careers in the Dutch East Indies often did so by relying on interpersonal networks in German-speaking Europe or among the Germanophone diaspora in the colony itself. The interpersonal recruitment of physicians was particularly common around the infamous "plantation belt" on Sumatra's east coast, where German and Swiss planters had established a strong presence since the mid-nineteenth century. After liberal criticism mounted over the poor working conditions on European-owned plantations in the late nineteenth century, European planters in the Dutch East Indies were legally obliged to provide basic healthcare for their indentured labourers ("coolies") on their estates. The plantation hospitals established within this legal framework created novel employment opportunities for German-speaking physicians eager to join Dutch services at a time when Dutch military recruitment had declined.[127]

One of the earliest to capitalise on these diasporic networks was the German physician Bernhard Hagen. In 1879, shortly after earning his medical degree in Munich, Hagen allegedly met a man known as "Dr. M." in a local tavern, who

[125] Letter from Conrad Kläsi to Anna und Marguerite Streiff, Batavia, 18.07.1892, GWA STRE P2.

[126] See Hesselink, *Healers on the Colonial Market*; H. Pols, "European Physicians and Botanists, Indigenous Herbal Medicine in the Dutch East Indies, and Colonial Networks of Mediation," *East Asian Science, Technology and Society: An International Journal* 3:2/3 (2009), 173–208; H. Pols, "Healing Traditions and Medicinal Products in the Market of Health, Healing, Beauty, and Vigor in the Dutch East Indies," in A. Bala, R. W. K. Lau, and J. Mei, (eds), *Multicivilizational Exchanges in the Making of Modern Science* (Singapore: Palgrave Macmillan, 2024), 273–97.

[127] The German-speaking diasporic community on Sumatra's east coast as well as the role of German-speaking physicians in the establishment of a "coolie" health care system and its biopolitical implications are discussed in more detail in chapter 4. For now, see Zangger, *Koloniale Schweiz*, 169–286; H. Pols, "Quarantine in the Dutch East Indies," in A. Bashford (ed), *Quarantine: Local and Global Histories* (London: Palgrave Macmillan, 2016), 85–102.

connected him to the German-Swiss plantation company *Näher & Grob*. Soon after, Hagen signed a three-year contract to serve as a physician at the company's hospital in Tandjong Morawa, Sumatra, which marked the beginning of his decade-long career in the Dutch East Indies.[128] By 1886, he had been appointed by the Dutch colonial government as head of civil health and vaccination for the entire Deli region.[129]

Hagen was followed by a succession of German-speaking doctors employed by European plantation companies in Sumatra. Among them was W. A. P. Schüffner, later celebrated as a pioneer of "plantation hygiene." Recruited in 1897 by C. W. Janssen, director of the *Senembah Company*, Schüffner's appointment reflected the deep entanglements between Sumatra's plantation belt and academic and professional networks between the Netherlands and German-speaking Europe. Janssen had learned of Schüffner's excellent reputation through Heinrich Curschmann, Schüffner's former professor at the University of Leipzig.[130] Janssen appeared to have known Curschmann personally, as he had previously completed parts of his higher education in the German States, including grammar school in Hannover and studies in Geneva, Leipzig, Heidelberg, and Strasbourg.[131]

Such transimperial patterns of recruitment extended beyond the Dutch Colonial Empire. The German physician Gustav Baermann, born in Breslau, Silesia (now Wrocław), in 1877, completed his doctorate in 1905 and joined his former professor Albert Neisser on a research mission to Java to study the spread of syphilis among apes in 1906. The project was initiated by the German government, which sought to address its growing demands for scientific research into disease spread in the tropics as a result of its colonial conquests in East Africa and the Pacific.[132] The expedition brought Baermann into contact with the planter community in Sumatra, and he was ultimately hired by the *Serdang Doktor Fonds (SDF)* as chief physician of the central plantation hospital at Petoemboekan.[133]

[128] See B. Hagen, "Neun Jahre auf der Ostküste Sumatras," unpublished manuscript, c. 1889, in Institut für Stadtgeschichte Frankfurt a. M. (ISG), S1–175, 272.

[129] See "Benoemingen," *Deli Courant*, 25 August 1886.

[130] See W. A. Kuenen, "Prof. Dr. W.A.P. Schüffner," *Nederlandsch Tijdschrift voor Geneeskunde* III:28 (1937), 3282–95; N. H. Swellengrebel, "Wilhelm August Paul Schüffner. January 2, 1867–December 24, 1949," *The Journal of Parasitology* 36: 4 (1950), 394; C. W. Janssen, *Senembah Maatschappij, 1889–1914* (Amsterdam: Roeloefzen-Hübern en van Santen, 1914), 31.

[131] See "Dr. C. W. Janssen," *Algemeen Handelsblad*, 14 December 1927.

[132] See "Soerakarta 23 Januari 1905," *De Nieuwe Vorstenlanden*, 23 January 1905; "Prof. Dr. Baermann," *Deli Courant*, 13 January 1934.

[133] See "Passagiers Vertrokken," *De Sumatra Post*, 11 December 1906; G. Baermann, "Die Assanierung der javanischen und chinesischen Arbeiterbestände der dem Serdang-Doctor-Fond, Deli-Sumatra, angeschlossenen Pflanzungsgebiete," *Beiheft zum Archiv für Schiffs- und Tropenhygiene* 16:5 (1912), 509.

The careers of Hagen, Schüffner, and Baermann demonstrate how, after the formal end of military recruitment, the Dutch East Indies continued to attract German-speaking medical men through commercial, scientific, and diasporic networks. Their work not only supplied the plantation economy with medical expertise but also helped shape the emerging discipline of tropical medicine, a topic that will be examined in greater depth in Chapter 4.

Conclusion

The employment of over 300 physicians from the German-speaking parts of Switzerland, the German States and Empire and Habsburg Austria for Dutch colonial services was shaped less by national allegiance or belonging than by a set of transimperial networks linking European medical training, Dutch recruitment practices, and colonial administrative processes. These physicians were drawn into the KNIL and later the civil medical services through a combination of institutional demand, personal ambition, and professional networks: university professors encouraged students to enlist; Dutch diplomatic and consular agents coordinated applications across borders; and colonial military hospitals offered both material security and the chance to gain experience with tropical diseases. At the same time, service in the Indies promised physicians to perform and consolidate a specific form of bourgeois medical masculinity: disciplined, worldly, and scientifically authoritative.

On a broader scale, the careers of medical mercenaries in Dutch colonial services shed light on the transimperial markets for scientific and medical expertise that flourished across Europe's empires. The demand for medical personnel in the Dutch East Indies met the aspirations of university-trained men from German-speaking Europe who sought to travel, study nature, and build careers abroad. Their recruitment was not merely a result of the absence or late establishment of German, Swiss, or Austrian colonies. Rather, it drew on shared linguistic and educational traditions rooted in the Humboldtian university model, and on a perceived "Germanic" kinship that fostered mutual intelligibility between Dutch and German-speaking Europeans. These affinities made the "Germansphere" an especially attractive reservoir of medical expertise for the Dutch colonial government.

The decision to enter Dutch colonial service was also a deeply social and gendered one. For many physicians, a colonial career offered a stage on which to perform bourgeois ideals of masculine respectability through discipline, learning, and service to empire. The KNIL promised not only a steady income and professional advancement but also the honour and adventure associated with world-travelling naturalists and medical "men of science." For others, the colonies offered a chance to escape debt, failure, or social constraints at home. In all cases, the pursuit of

colonial employment reflected attempts to consolidate one's social standing and masculine identity within the gender order of German-speaking bourgeois culture. The story of medical mercenaries thus exposes the entanglement of class, gender, and imperial ambition that underpinned the transimperial mobility of Europe's educated middle class.

Lastly, the trajectories of German-speaking physicians in Dutch colonial services reveal the central role of the colonial military in circulating scientific and medical knowledge across imperial borders. The Dutch Colonial Army, which monopolised European health care in the Dutch East Indies, became a key node in the global exchange of medical and scientific expertise. Its recruitment of university-educated foreigners drew upon older networks of mercenary labour from northern and central Europe, transforming the army into both an employer of university educated Europeans and a producer of scientific knowledge. Medical mercenaries in the KNIL exemplify how military structures functioned as conduits for the movement of people, skills, and ideas in the Age of Empire. Even after the emergence of German colonies, Germanophone physicians continued to enter Dutch service, demonstrating the enduring appeal of transimperial careers. By the turn of the twentieth century, however, as nationalist sentiments intensified, formal recruitment of foreigners declined. Physicians increasingly sought employment in the emerging civil medical sector, relying on interpersonal networks and diasporic connections to secure positions. This shift from formal to informal modes of recruitment brought both new opportunities and uncertainties, as they faced competition from European rivals and indigenous practitioners in a diversifying colonial medical marketplace.

CHAPTER 2

Medical Mercenaries and Dutch Colonial Warfare: Negotiating Race, Class, Gender, and Medicine in Aceh, c. 1880s–1890s

Abstract

This chapter examines the testimonies of five medical officers from German-speaking Europe who served in Aceh, northwestern Sumatra, during the 1880s and 1890s. Zooming in on their everyday lives and encounters in the Dutch military camps, it reconstructs the ambivalent position of foreign physicians within the Dutch Colonial Army. The chapter shows how medical discourse became a powerful tool for asserting and contesting class, gender, and racial boundaries, revealing both the authority and the fragility of European medicine and its practitioners in the tropics.

Keywords: Aceh War; Colonial medicine; Military medicine; Dutch colonial army

> It will not be long before a question must be decided in Atjeh, one that will prove decisive for the sanitary condition of this land [the Dutch East Indies] in the years to come. The grim gravediggers will soon arrive and ask: 'Where shall we bury our corpses?'[1]

"Where shall we bury our corpses?" It was with this rather morbid question that the physician Dr. Otto Gelpke commented on the high death toll caused by the beriberi disease among Dutch troops stationed in Aceh, northwestern Sumatra, in the late 1870s. Gelpke, a Swiss national, was a firsthand witness to the devastating impact of disease during the violent Dutch war against the Sultanate of Aceh. From 1877 to 1880, he served as a second-rank medical officer in the Dutch Colonial Army.

The Aceh War (1873–1904/14) is remembered as a particularly momentous war theatre in the history of Dutch imperialism. It took the colonial army more than four decades to violently subjugate the Sultanate of Aceh in northwestern Sumatra, costing an estimated 50,000 to 100,000 Acehnese lives.[2] In addition to struggling

[1] O. Gelpke, "Beri-Beri," *Geneeskundig Tijdschrift voor Nederlandsch-Indië (GTNI)* XIX (1879), 256.

[2] For an overview of the Aceh War and its aftermath see A. Reid, *The Contest for North Sumatra: Atjeh, the Netherlands and Britain, 1858–1898* (London: Oxford University Press, 1969); A. Graf, S. Schroter, and E. P. Wieringa (eds), *Aceh: History, Politics, and Culture* (Singapore: Institute of Southeast Asian Studies, 2010); P. van 't Veer, *De Atjeh-oorlog* (Amsterdam: Uitgeverij de Arbeiderspers, 1969).

against the Acehnese's sophisticated guerrilla tactics, the Dutch forces were faced with the devastating impact of what was considered tropical diseases such as malaria, cholera, or beriberi, which wiped out entire regiments. Of the roughly 12,500 European, African, Javanese, and Ambonese KNIL soldiers who died in the war, 10,000 succumbed to diseases.[3]

The high disease-inflicted mortality rate in Aceh resulted in an increased demand for medical officers to safeguard the soldiers' lives and health. As discussed in the previous chapter, the KNIL's demands for European physicians could not be met within the Netherlands alone. Throughout the nineteenth century, the KNIL turned to the German-speaking regions of Europe for recruits. During the Aceh War, the recruitment of foreign medical officers reached a final peak. Yet, with a few exceptions, the role of medicine in general – and that of non-Dutch European medical officers specifically – has received sparse attention in the historiography on the Aceh War so far.[4]

The present chapter addresses this gap by turning to the writings and private papers of five medical mercenaries stationed in northwestern Sumatra during the 1880s and 1890s: the Swiss physicians Heinrich Erni and Ernest Guglielminetti, the Austrian Heinrich Breitenstein, the Czech Pavel Durdík, and the Prussian Friedrich Wilhelm Stammeshaus. Their accounts provide a rare insight into the everyday realities, professional practices, and self-perceptions of foreign physicians in a tropical, colonial war.

Two central aims guide the analysis: First, the chapter reconstructs the roles, daily lives, and medical practices of medical mercenaries in Aceh, while also critically examining their self-fashioned image as neutral and disinterested observers of the Dutch war. Far from being detached men of science, they emerge as active

For the violent and expansionist nature of Durch colonial warfare in the late nineteenth century more broadly, see E. Locher-Scholten, "Dutch Expansion in the Indonesian Archipelago around 1900," *Journal of Southeast Asian Studies* 25:1 (1994), 91–111; M. Kuitenbrouwer, *The Netherlands and the Rise of Modern Imperialism: Colonies and Foreign Policy, 1870–1902* (New York: Berg, 1991); P. Groen et al. (eds), *Krijgsgeweld en Kolonie: Opkomst en Ondergang van Nederland als Koloniale Mogenheid* (Amsterdam: Boom Uitgevers, 2021); E. Locher-Scholten, *Sumatran Sultanate and Colonial State: Jambi and the Rise of Dutch Imperialism, 1830–1907* (Ithaca: Cornell University Press, 2003); P. Groen, "Colonial Warfare and Military Ethics in the Netherlands East Indies, 1816–1941," *Journal of Genocide Research* 14:3 (2012), 277–96.

[3] See H. Wesseling, "Imperialism & the Roots of the Great War," *Daedalus* 134:2 (2005), 103.

[4] Important contributions on the role of medicine and medical experts in Aceh are L. van Bergen, *The Dutch East Indies Red Cross, 1870–1950: On Humanitarianism and Colonialism* (Lanham: Lexington Books, 2019), 2–40; H. den Hertog, *De Militair-Geneeskundige Verzorging in Atjeh 1873–1904* (Amsterdam: Thesis Publishers, 1991); J. A. De Moor, "An Extra Ration of Gin for the Troops: The Army Doctor and Colonial Warfare in the Archipelago, 1830–1880," in G. M. van Heteren, A. De Knecht-van Eekelen, and M. J. D. Poulissen (eds*), Dutch Medicine in the Malay Archipelago 1816–1942* (Amsterdam: Rodopi, 1989), 133–52.

members of the colonial army who, at least passively, aligned themselves with the presumed blessings of European "civilisation" in tropical Sumatra, while simultaneously upholding and performing their regional, class, and professional identities, embodying a form of bourgeois imperial cosmopolitanism. At the same time, their position as non-Dutch Europeans allowed for a degree of critical distance: their writings often contain pointed critiques of the KNIL's brutality and of Dutch paternalistic attitudes toward local populations, views largely absent from Dutch accounts.

Second, the chapter examines how these men positioned themselves as foreign, middle-class, medically trained Europeans within the racially and socially stratified environment of the colonial military camps. They treated soldiers and labourers of diverse ethnic backgrounds and encountered Asian women who formed an integral part of military life in the tropics – whether as healers, caregivers, or as sexual and romantic partners of European men. These encounters are analysed from an intersectional perspective to reveal how medicine served as a key instrument for negotiating and reproducing distinctions of race, class, and gender.[5] At the same time, the supposed superiority of European medicine proved inherently fragile in the tropics: In the Dutch East Indies, physicians were confronted with unfamiliar diseases and environments as well as the persistent competition of alternative medical practitioners and healing traditions. In other words, the accounts of medical mercenaries in Aceh reveal how tropical environments and guerrilla warfare challenged and reshaped the professional and gendered self-understanding of medically trained European men.

The analysis is structured around three interconnected arenas in which medical mercenaries articulated, performed, and contested their roles and positionality in Aceh. The first section reconstructs their perspectives, everyday roles and practical struggles, including their shifting positions toward the Dutch war effort, their ambivalent relationship to the Acehnese "enemy," and their encounters with the unpredictable challenges of tropical disease and guerrilla warfare. The second and third sections shift from the institutional context to the social worlds of the camps and kampongs. Section two explores how medical mercenaries pathologised the "immoral" drinking and sexual practices of lower-class European soldiers, and how thereby medicine transformed into a powerful tool to reinforce ideals of bourgeois masculinity, including temperance, restraint, and moral self-discipline in the tropics. The third section turns to the complex web of social hierarchies within the multilingual and multicultural Dutch Colonial Army. It analyses the interplay of Europeanness, religion and regional belonging alongside the various racialised

[5] Also see M. Ligtenberg, "(Re-)negotiating Masculinities in the Kampoeng: Medical Mercenaries and the Aceh War, c. 1880–1890," *The Journal of Imperial and Commonwealth History* 52:2 (2024), 303–25.

and gendered encounters of physicians in the tropics, from Javanese, Ambonese and West African soldiers, relationships with Asian concubines to the competition posed by indigenous women healers.

Medical Mercenaries and the Aceh War

Dutch imperialism in Aceh dates back to the eighteenth century, when the VOC – driven by a desire to monopolise the spice trade in Western Southeast Asia – came into conflict with the Acehnese Sultan, who attempted to impose high taxes on the lucrative pepper trade in Sumatra.[6] In an effort to circumvent the Sultan's regulations, the Dutch traded directly with the local *ulèëbalang*, the economically powerful, local Acehnese elites.[7] In the course of the nineteenth century, foreign policy interests complemented Dutch attempts to profit from trading opportunities in northwestern Sumatra.[8] This became even more pressing in the aftermath of the opening of the Suez canal in 1869 that significantly reduced trade and travel routes between Europe and Southeast Asia. From the perspective of the Dutch Empire, the independent Sultanate of Aceh, situated in-between the Dutch, British, and Ottoman Empires, represented a power vacuum that could be occupied at any time by neighbouring imperial powers. In the first half of the nineteenth century, there were repeated tensions between the Netherlands and the British, as the latter were able to expand their influence in the Southeast Asian spice trade in the aftermath of the occupation of Padang, Malacca, and Java during and after the Napoleonic Wars (1795–1815). After France and the USA had increasingly attempted to establish themselves as potent economic and political players in the region, the Sultanate of Aceh was perceived to become the "Achilles' heel" of the Dutch Colonial Empire,[9] resulting in increased paranoia among Dutch colonial officials regarding a potential foreign military intervention. The final "casus belli" occurred when, in the

[6] For an overview of early modern Dutch expansionism in Southeast Asia and beyond, see D. Onnekink and G. Rommelse, *The Dutch in the Early Modern World: A History of Global Power* (Cambridge: Cambridge University Press, 2019); S. Huigen, J. L. De Jong, and E. Kolfin (eds), *The Dutch Trading Companies as Knowledge Networks*, (Leiden: Brill, 2010); P. Emmer, and J. Gommans, *The Dutch Overseas Empire, 1600–1800*, (Cambridge: Cambridge University Press, 2021); C. Antunes and J. Gommans (eds), *Exploring the Dutch Empire: Agents, Networks and Institutions, 1600–2000* (London: Bloomsbury, 2015).

[7] See A. Missbach, "The Aceh War (1873–1913) and the Influence of Christiaan Snouck Hurgronje," in Graf/Schroter/Wieringa, *Aceh: History, Politics, and Culture*, 40–1.

[8] See T. Lindblad, "Economic Aspects of the Dutch Expansion in Indonesia, 1870–1914," *Modern Asian Studies* 23:1 (1989), 1–24.

[9] See Reid, *The Contest for North Sumatra*, 21.

early 1870s, rumours circulated that the Sultan of Aceh had contacted the USA to negotiate trade treaties and military protection. In 1871, the Netherlands and Great Britain signed the Anglo-Dutch Sumatra Treaty, in which the Dutch relinquished their claims to the African Gold Coast. In exchange, the British formally recognised Sumatra, including Aceh, as falling entirely within the Dutch sphere of influence. The Sultan of Aceh was neither consulted nor involved in the diplomatic process preceding the agreement. In 1873, the Dutch sent the first military "expedition" to Aceh, expecting it to be a short, punitive military intervention sending a message rather than the beginning of a forty-year war.[10] In the eyes of the Acehnese, however, both the agreement and the expedition were a public declaration of war. During the first expedition, the Dutch conquered the Sultan's palace in Kota Radja that they considered to be the political-administrative centre. In doing so, they overestimated the power of the Sultan, who was merely a symbolic leader of a confederated territory: the Acehnese resistance against the Dutch invasion persisted, and the Netherlands responded with further military expeditions. Peace was declared several times during this period, but the uprisings on the Acehnese side continued well into the 1880s.[11]

Meanwhile, after the Dutch declaration of war in 1873, the Acehnese Sultan asked several Western powers – the British, French, United States as well as Italy – for military aid. These calls were unsuccessful until the Ottoman Empire finally assured the Acehnese its military and financial support in fighting the Dutch. The Acehnese-Ottoman ties date back to the sixteenth century when the Ottoman Sultans guaranteed Aceh military protection. In practice, the Acehnese-Ottoman alliance waned throughout the following centuries; however, it remained strong in the Acehnese cultural memory. The nineteenth-century Acehnese anti-colonial struggle against the Dutch was ideologically oriented towards the Ottoman Empire rather than towards Java and can be understood in the context of early "Pan-Islamic" solidarity between Southeast and Western Asia.[12] Accordingly, in

[10] See J. de Jong, "'Negotiations in Bismarckian Style.' The Debate on the Aceh War and its Legitimacy, 1873–1874," *Itinerario* 29:2 (2005), 38–52.

[11] For an overview of the course of the Aceh War see Reid, *The Contest for North Sumatra*; Missbach, "The Aceh War," 40–9; Groen, "Colonial Warfare and Military Ethics in the Netherlands East Indies, 1816–1941," 283–6; van 't Veer, *De Atjeh-oorlog*. For Dutch colonial military expeditions more broadly see J. de Moor, "Warmakers in the Archipelago: Dutch Expeditions in Nineteenth Century Indonesia," in J. de Moor and H. Wesseling (eds): *Imperialism and War: Essays on Colonial Wars in Asia and Africa* (Leiden: Brill, 1989), 50–71.

[12] See A. Reid, "Aceh and the Turkish Connection," in Graf/Schroter/Wieringa (eds), *Aceh: History, Politics, and Culture*, 26–32; A. Peacock and A. Teh Gallop (eds), *From Anatolia to Aceh: Ottomans, Turks, and Southeast Asia (*Oxford: Oxford University Press, 2015); I. Hakkı Kadı and A. Peacock, "Documents on 16th Century Ottoman Contacts with Aceh," in idem (eds), *Ottoman-Southeast Asian Relations (20 vols): Sources From the Ottoman Archives* (Leiden: Brill, 2020), 33–74; I. Hakkı Kadı "An Old Ally

the 1880s, the Acehnese fight against the Dutch invasion was increasingly united under religious leadership. In the 1870s, members of the Acehnese aristocracy and economic elite (*ulèëbalang*) attempted to enter peace negotiations with the Dutch.[13] The negotiations failed, and from 1880 onwards, the Acehnese aristocracy withdrew resignedly from the conflict with the Netherlands. Dutch attempts to forge alliances with Acehnese military leaders were, in turn, largely unsuccessful.[14] The "power vacuum" left by the retreat of the *ulèëbalang* was filled by Islamic *ulama*, religious scholars and leaders, who tried to unite the resistance against Dutch imperialism under the guise of *jihad*, the Holy War, or Perang Sabil in Malay.[15] The ideology of the Jihad was, among others, spread via Islamic songs and poetry such as the *Hikayat Perang Sabil* ("Tale of the Holy War") from around 1881, commonly attributed to the Acehnese *ulama* Teungku Chik Pante Kulu. The *Hikayat* not only condemns the inactivity of the *ulèëbalang* but also calls on the Acehnese to fight against the Netherlands, a task that is presented as a religious duty.[16] The religious component of the *ulama* leadership both fascinated and alarmed European observers. The gradual end of the war has been attributed to the research of the Dutch Orientalist Christiaan Snouck Hurgronje, a theologian by training. In 1884, he joined Acehnese pilgrims on the Haj, claiming to have converted to Islam, to study the role of religion in anti-colonial radicalisation. In 1889, he became adviser for Islamic affairs to the colonial government in Batavia. In 1891, Snouck Hurgronje recommended continuing military operations while avoiding intervention in religious affairs, as he found no cohesive unity among Acehnese Muslims.[17]

As the war continued, the Dutch general Van Heutsz increasingly resorted to brutal counter-insurgency campaigns and "extreme violence" to smash the

Revisited: Diplomatic Interactions Between the Ottoman Empire and the Sultanate of Aceh in the Face of Dutch Colonial Expansion," *The International History Review* 43:5 (2021), 1080–97.

[13] See A. Reid, "Habib Abdur-Rahman Az-Zahir (1833–1896), *Indonesia 13* (1972), 36–59.

[14] The Dutch furthermore attempted to build alliances with Acehnese power holders, most famously Teuku Umar, who had served them as a spy. Teuku Umar however betrayed the Dutch in 1896, rejoining the Acehnese resistance. See M. Kitzen, "Between Treaty and Treason: Dutch Collaboration with Warlord Teuku Uma during the Aceh War, a Case Study on the Collaboration with Indigenous Power-Holders in Colonial Warfare," *Small Wars & Insurgencies* 23:1 (2012), 93–116; J. Rohmana, "Colonial Informants and the Acehnese-Dutch War," *Indonesia and the Malay World* 49:143 (2021), 63–81.

[15] On the power dynamics between the *uléëbalang* and *ulama* in the Aceh War, see D. Kloos, "Dis/connection: Violence, Religion, and Geographic Imaginings in Aceh and Colonial Indonesia, 1890s–1920s," *Itinerario* 45:3 (2021), 396–99.

[16] See C. M. A. Sari, K. Aboo Talib, and S. A. Hamzah, "From 'Song of War' to 'Song of Peace:' The Role of Hikayat Prang Sabi for Acehnese Ethnonationalism," *Cogent Arts & Humanities* 9:1 (2022), online, DOI: 10.1080/23311983.2022.2062894; D. Kloos, "From Acting to Being: Expressions of Religious Individuality in Aceh, ca. 1600–1900," *Itinerario* 39:2 (2015), 437–61.

[17] See Missbach, "The Aceh War," 44–59.

Acehnese's guerrilla tactics.[18] In total, the Aceh War cost the lives of approximately 75,000 Acehnese, 12,500 colonial soldiers, and 25,000 "coolies."[19] Following the surrender of Sultan Muhammad Daud Syah in 1903, a leading figure in the Acehnese resistance, the war was officially declared over. In 1907, the Dutch exiled Sultan Daud, along with other Acehnese elites, to the island of Ambon, fearing that his continued networks within (former) Acehnese guerrilla fighters might spark further conflict.[20] These fears were not unwarranted: the Acehnese anti-colonial struggle that formed during the war persisted for another ten years, and smaller, local revolts continued far into the 1920s. After the Indonesian independence in 1945, separatist movements would reignite calls for an independent Acehnese state.[21]

The accounts of medical mercenaries from German-speaking Europe reflect an ambivalent position towards Dutch imperialism in Aceh as they oscillate between a certain sense of rational distance from this foreign and violent war and a simultaneous sense of belonging to European civilisation seen as diametrically opposed to the one embodied by the Acehnese "enemy." The Swiss medical officer Heinrich Erni does express a certain sympathy for the Acehnese guerrilla fighters when he admires their "tall, husky figure" and utters his "greatest respect for [their] bravery and endurance,"[22] while criticising the Dutch troops who "did not treat the Acehnese people who fell into their hands very gently either."[23] His admiration for the Acehnese can however just as well be interpreted as a dramatising element in his published memoirs, serving as a means of self-elevation towards his readership: For all that matters, a strong enemy also makes for a stronger self. Moreover, at the

[18] See T. Menger, "'Press the Thumb onto the Eye:' Moral Effect, Extreme Violence, and the Transimperial Notions of British, German, and Dutch Colonial Warfare, ca. 1890–1914," *Itinerario* 46:1 (2022), 84–108; Wesseling, "Imperialism & the Roots of the Great War," 103–4; E. Kreike, "Genocide in the Kampongs? Dutch Nineteenth Century Colonial Warfare in Aceh, Sumatra," *Journal of Genocide Research* 14:3/4 (2012), 297–315; P. Bijl, "Saving the Children? The Ethical Policy and Photographs of Colonial Atrocity during the Aceh War," in S. Protschky (ed), *Photography, Modernity and the Governed in Late-colonial Indonesia* (Amsterdam: Amsterdam University Press, 2015), 103–32; Kloos, "Dis/connection."

[19] See Groen, "Colonial Warfare and Military Ethics in the Netherlands East Indies, 1816–1941," 284.

[20] See J. Gedacht, "Exile, Mobility, and Re-territorilisation in Aceh and Colonial Indonesia," *Itinerario* 45:3 (2021), 364–88.

[21] See F. Schulze, "From Colonial Times to Revolution and Integration," in Graf/Schroter/Wieringa (eds), *Aceh: History, Politics, and Culture*, 63–80; D. Kloos, "A Crazy State: Violence, Psychiatry, and Colonialism in Aceh, Indonesia, ca. 1910–1942," *Bijdragen tot de Taal-, Land- en Volkenkunde* 170:1 (2014), 25–65.

[22] H. Erni-Greiffenberg, *Die Behandlung der Verwundeten im Kriege der Niederländer gegen das Sultanat Atjeh*, (Basel: Benno Schwabe, 1888), 39.

[23] Ibid., 21.

same time, Erni explicitly expresses his sympathy with Dutch colonialism when he admires the hospitals, railways, and other infrastructures established by the Dutch in Sumatra.[24] In assessing Dutch failure to occupy Aceh, he further states that:

> Atjeh [sic!] is a voracious boil for Holland that defies all firm calculation. Either Holland must give up the occupation of Atjeh altogether since the finances are in disarray and the Dutch East Indies Army in Atjeh is melting like snow in the face of the constant attacks by the enemy population and the devastation wrought by the beri-beri disease. It is becoming more and more difficult to fill the gaps [in the military ranks], since advertising in Europe is obstructed, and even in Holland itself no one feels any desire to run into the jaws of his certain doom as a soldier in the Indies […]. But that is not all. All the Muhammadans of the Indies follow the struggle in Atjeh with the greatest interest. As we were sitting in the centre of Sumatra, the [native] people had already heard the reports of battles that had taken place faster than we did, because we only read about them later in the newspapers. If Holland is defeated in Atjeh, then the moment will come when the other peoples may believe that they too can shake off Dutch rule. With Atjeh, the glory of Holland in the Indies will fall.[25]

Considering Erni's positionality as a non-Dutch European in Aceh, two notable aspects emerge in this assessment. First, his reference to Holland's "glory in the Indies" suggests a belief in the superiority of European civilisation, with which Erni appears to have aligned himself. Second, Erni draws a stark distinction between "Europe" and the so-called "Muhammadan [sic] peoples," whom he perceives as bound together by a powerful sense of religious solidarity across the Dutch East Indies. Moreover, while he acknowledges their bravery and perseverance, he simultaneously labels the predominantly Muslim Acehnese as "fanatical," attributing to them a misguided belief that dying in battle guarantees entry into paradise. For Erni, this conviction renders them "foolhardy":

> The fanaticism, the idea of the Muhammadans that it would be pleasing to Allah if they went into battle against the unbelievers, and that they would go directly to paradise if they died on the battlefield, made them so foolhardy. In addition, there is the fatalism, which is peculiar to the Muhammadan peoples in general and is also present among the Acehnese, such that they […] walked calmly and evenly through even the fiercest fire of a Dutch company or consecrated themselves to death and stormed into it.[26]

[24] Ibid., 14.
[25] Ibid., 74–5.
[26] Ibid., 14.

Figure 2: The German medical officer F.J.M. Fiebig (third from right) alongside the Dutch Orientalist C. Snouck Hurgronje (left) and the Dutch general J.B. van Heutsz (fifth from left) – infamously known as the "Butcher of Aceh" – in Aceh, 1891. Leiden University Libraries Digital Collections, KITLV 31910.

Erni's contemporary, the Austrian physician Heinrich Breitenstein, comes to similar conclusions regarding the Acehnese's religious beliefs, additionally pointing to the "despotic" character of the *ulèëbalang* rulers in justifying the Dutch war:

> Just as in Java and on the other islands of the Indian archipelago the great multitude of the people wish to maintain and achieve not only peace, but also the domination of the Dutch government, because they can enjoy personal security under its sceptres, and have nothing to fear for their buffalo, for their wife and daughter, while their own prince is and remains a despot, and in Atjeh it is not only the princes but also the priests who suck the people dry under all possible and impossible pretexts.[27]

By referring to the indigenous powerholders in the Dutch East Indies, both secular and religious, as "despots," Breitenstein followed the wide-spread European trope of "Oriental Despotism," or the conception that the political systems of "Oriental"

[27] H. Breitenstein, *21 Jahre in Indien: Aus dem Tagebuch eines Militärarztes, Dritter Theil: Sumatra* (Leipzig: Th. Grieben's Verlag, 1902), 160.

societies were primarily formed by tyrannical, authoritarian, and violent modes of governance.[28] Discourses on the "despotic" nature of (middle) Eastern peoples date back to the eighth century, when Islam was increasingly perceived as serious competition and even a threat to the Christian gospel. With the rise of the Ottoman Empire in the sixteenth century, "Islamic countries were seen as a military and political as well as religious threat, despite the lure of profit from Eastern trade and diplomatic relations. Islam continued to be viewed as at least partly responsible for Oriental despotism, the degradation of women, slavery, and a passive, obedient population subject to cruelty and violence."[29] For Breitenstein, the "despotic" nature attributed to Islamic rulers in European discourse served as a compelling rationale for European rule in the Dutch East Indies, where most of the indigenous population adhered to a variety of Islam. Meanwhile, from the perspective of the Acehnese, the fight against the Dutch was not only a religious duty but also part of a larger anticolonial struggle. Within this struggle, the Acehnese positioned themselves in solidarity with a broader Muslim alliance opposing European imperialism, reaching as far as the Ottoman Empire, and in doing so directly challenged European claims of civilisational and religious superiority as well as their asserted political dominion.

The Daily Life of a Medical Mercenary

While medical mercenaries often styled themselves as detached, neutral observers of the war, it is important to remember that, as medical officers, they were also active participants in the Dutch military campaigns in Aceh. The published memoir *Die Behandlung der Verwundeten im Kriege der Niederländer Gegen das Sultanat Atjeh* by the Swiss physician Heinrich Erni offers a particularly vivid glimpse in the everyday practice and working conditions of medical mercenaries in Aceh.

Erni recalls that the "medical staff faced an exceedingly difficult task" as "there was no shortage of the sick and wounded." He arrived in the Dutch East Indies in 1879 and was stationed in the central military hospital of Kota Radja in 1881, where he initially found a provisional complex of bamboo barracks accommodating over five hundred patients. Each ward, he writes, contained "thirty to forty beds placed in two rows, so that the patients lay head-to-head, with a narrow walkway around

[28] In the twentieth century, the trope of "Oriental Despotism" was popularised by the German Marxist Karl August Wittfogel. See K. Wittfogel, *Die Orientalische Despotie: Eine vergleichende Untersuchung totaler Macht* (Frankfurt am Main: Ullstein, 1981).

[29] M. Curtis, *Orientalism and Islam: European Thinkers on Oriental Despotism in the Middle East and India*, (Cambridge: Cambridge University Press, 2009), 31–2. Also see J. P. Rubiés, "Oriental Despotism and European Orientalism: Botero to Montesquieu," *Journal of Early Modern History* 9:1/2 (2005), 109–80; Y. Zou, "The Concept of 'Oriental Despotism' in Modern Japanese Intellectual Discourse," *The International History Review* 45:3 (2023), 462–77.

Figure 3: Ward for Javanese patients at the military hospital in Kota Radja, ca. 1930. Leiden University Libraries Digital Collections, KITLV 35199.

them. The walls, made of flattened bamboo, contained the necessary number of shuttered windows."[30]

The year of Erni's arrival in Aceh however also saw the inauguration of a new military hospital in Kota Radja, described by Erni as "the finest one could imagine,"[31] built according to a pavilion system that was regarded as the height of hygienic design in the tropics at the time.[32] Raised on stone pillars to allow air circulation and to prevent "noxious vapours," the hospital held some 1,200 beds and was surrounded by lush gardens.[33] As Erni notes, the hospital was strictly segregated according to race and class of the patients. While European soldiers and non-commissioned officers were housed in separate wards, "a number of rooms were reserved exclusively for prisoners," and officers were treated privately "in their own quarters."[34]

[30] Erni, *Die Behandlung der Verwundeten*, 17–18.

[31] Ibid., 19.

[32] See Y. N. Lukito and F. Miranda, "The Earlier Era of Eco-Technology: Pavilions at the Colonial Exhibition of Pasar Gambir and the 'Eastern-Western' Architectural Influences in the Netherlands Indies," *E3S Web of Conferences* 67 (2018), online, DOI: https://doi.org/10.1051/e3sconf/20186704042.

[33] Erni, *Die Behandlung der Verwundeten*, 19.

[34] Ibid., 19, 24.

Outside Kota Radja, smaller infirmaries and makeshift hospitals were established wherever larger military units were stationed. "Everywhere that troops were quartered," Erni writes, "one had to erect wards for the sick." As officers, medical mercenaries lived in relative comfort. "As doctors we lived and dined with the other [combatant] officers," Erni notes, "which greatly fostered camaraderie."[35]

According to Erni, the physician's authority extended beyond the hospital compound. "Inside the wooden Dutch forts," Erni observes, "the doctor is an important man, for amidst the constant skirmishes [*Scharmützeleien*] with the Acehnese, his help is only too often needed."[36] When accompanying expeditions, medical officers were responsible for first aid treatment of battle wounds. Erni recounts how, in one instance, a "native" soldier's lower leg was "shattered, the blood spouting high into the air, so that an Esmarch bandage [*Esmarch'sche Schlinge*] had to be applied immediately."[37]

In a lengthy passage devoted to the *klewang*, the curved Acehnese sword, Erni dwells on its gruesome effects, recalling how a single blow "severed the spine of a European soldier" or "took off an arm at the shoulder."[38] Such descriptions likely catered to European readers' fascination with the perceived ferocity of the "Oriental enemy." Nevertheless, Erni himself conceded that disease, rather than the *klewang*, posed the greater threat. "However numerous the wounds inflicted by the enemy," he writes, "they were not as significant as the illnesses brought about by the exhaustion of the troops." He describes repeated outbreaks of fever and cholera, which he treated mainly with sodium salicylate and quinine, that appeared to be available to medical officers most of the time.[39]

At the same time, the decentralised medical system in Aceh depended on just a small number of European physicians, and according to the accounts of medical mercenaries, the hospitals and outposts were chronically understaffed. European medical officers were hence assisted by apothecaries and nurses, the latter of whom were mainly recruited among European soldiers, as well as by Dokter Djawa – European-trained Javanese physicians trained in European medicine whose expertise was often doubted by their European superiors.[40] In the outer posts, convict labour was used to transport the wounded: "For carrying the injured,

[35] Ibid., 20–2.

[36] Ibid., 22.

[37] Ibid., 32.

[38] Ibid., 39.

[39] Ibid., 35–6.

[40] For the Dutch colonial government's medical training programmes directed at Javanese elites, the so-called STOVIA, see L. Hesselink, *Healers on the Colonial Market: Native Doctors and Midwives in the Dutch East Indies* (Leiden: KITLV Press, 2011), 163–224.

one usually employed prisoners serving their sentence in Aceh."[41] Thus, despite the important role medical mercenaries often claimed for themselves in treating the sick and wounded in Aceh, it was a heterogenous and hierarchically organised workforce of lower-class Europeans, Javanese physicians, and convicts that kept the machinery of colonial military medicine functioning.

Medical Masculinities and Invisible Enemies

As non-combatant officers living among combatant troops, medical officers occupied an ambivalent position within the ethnically diverse, yet homosocial, masculine, and highly violent military camps in Aceh. Their daily interactions with working-class European and racialised soldiers – the overwhelming majority of the colonial army – often heightened anxieties about authority, status, and bodily vulnerability. John Tosh's observation that late nineteenth-century Victorian masculinity rested on a "declining investment in physical violence"[42] sat awkwardly with the reality of a tropical guerrilla war in which violence and danger appeared omnipresent. Meanwhile, as Philippa Levine argues, "the colonial experience figured prominently as a place where one's manliness could be forged and tested in rigorous but heroic conditions."[43] Medical mercenaries thus found themselves positioned between two competing expectations: a metropolitan ideal of masculine restraint and a colonial ethos that celebrated the forging of masculinity through bravery and adventure.

In their writings, medical officers repeatedly underlined their authority as university-trained men. As Jessica Meyer has noted, medical officers "held positions which gave them access to important forms of masculine authority, particularly over young working-class rankers, through officer status and professional expertise."[44] At the same time, physicians in Aceh adopted elements of military masculinity by stressing that they too endured hardship, faced enemy fire, and displayed forms of courage and military honour comparable to combatant troops. The Austrian medical officer Heinrich Breitenstein even claims that the physician, in fact, was the bravest member of the army when he writes that:

> The doctor […] must suppress the storm in his soul; he must not defend his life; he must save the lives of those close to him, he lets the bullets whiz around his ears, he does not

[41] Erni, *Die Behandlung der Verwundeten*, 30.

[42] J. Tosh, "Masculinities in an Industrializing Society: Britain, 1800–1914," *Journal of British Studies* 44:2 (2005), 333.

[43] Also see P. Levine, *Prostitution, Race & Politics: Policing Venereal Disease in the British Empire* (New York: Routledge, 2003), 258.

[44] See J. Meyer, "Medicos, Poultice Wallahs and Comrades in Service: Masculinity and Military Medicine in Britain during the First World War," *Critical Military Studies* 6:2 (2020), 165.

> think of his life – he must remain calm; he is braver because he does not have to fight, he is braver because he cannot fight […].[45]

Breitenstein's view reveals how the doctor's refusal to engage in physical violence acted as a marker of superior bravery, and with that a way of elevating his own moral and masculine standing within the military hierarchy. There was, of course, also a practical side to this rhetorical elevation. Thousands of European and indigenous soldiers in Aceh died from enemy attacks and disease, and medical officers were often directly exposed to these dangers.[46] Heinrich Erni recalls how physicians stationed at outposts were also responsible for neighbouring posts, requiring them to move through contested terrain. "Visiting the neighbouring posts," he notes, "was often dangerous when the Acehnese attacked the convoys, which happened to me four times in 1882."[47] According to Erni, even the central hospital in Kota Radja was surrounded by a "tall palisade fitted with firing embrasures and required nightly guard detachments."[48]

Such experiences shaped how medical officers often fashioned themselves as military men. Their accounts demonstrate how proximity to the battlefield, despite their non-combatant status, became integral to their self-representation as disciplined, brave, and active members of the army. The insistence on their professional importance was equally central. As Breitenstein puts it:

> In its principles, the modern science of war is as much dependent on the performance of dead material as it is on that of living material; military hygiene is therefore an important part of war science, and its representatives – the military doctors – are for this reason alone an equal part of the army system.[49]

Breitenstein's insistence on the "scientific nature" of both war and medicine reflects the broader rationalisation of warfare that historians have identified as a hallmark of European modernity.[50] At the same time, his portrayal of the military physician as a scientific expert aligns well with the elevated confidence of European medical experts at the onset of the laboratory revolution in the late nineteenth century (also see chapter 3).

[45] Breitenstein, *Sumatra*, 151.

[46] See den Hertog, *De Militair-Geneeskundige Verzorging in Atjeh*, 83–102.

[47] Erni, *Die Behandlung der Verwundeten*, 29–30.

[48] Ibid., 17.

[49] Breitenstein, *Sumatra*, 151.

[50] See J. L. Martin, "The Objective and Subjective Rationalization of War," *Theory and Society* 34:3 (2005), 229–75; D. Pick, *War Machine: The Rationalisation of Slaughter in the Modern Age* (New Haven: Yale University Press, 1993).

The epistemic authority of medical mercenaries was however repeatedly shaken by the perceived health-related dangers of the tropical environment in Aceh – dangers that, in their view, far exceeded the threat posed by the Acehnese "enemy" and their *klewang*. Heinrich Erni, for instance, describes the Aceh River as an "enemy […] just as dangerous as the Acehnese," particularly during the rainy season when it "regularly overflows its banks."[51] In a letter to his brother-in-law, Friedrich Wilhelm Stammeshaus compares the war in Aceh with his experiences in the Franco-Prussian War, noting that:

> Once again, I find myself on the battlefield, as I did 10 years ago, but the circumstances are somewhat different. Back then, a national war with a national army to defend the fatherland, here a colonial war to subjugate a […] tribe with a mercenary army in a tropical country where, in addition to the fanatical enemy, the climate must be defeated too."[52]

Erni, too, emphasises that the "unhealthy tropical climate" claimed "way more victims than the enemy's bullet."[53] Indeed, the tropical environment, and more specifically, "tropical" diseases such as malaria and beriberi, deeply troubled European physicians in Aceh.[54] While malaria – though still fatal in many cases – could be more or less effectively treated with quinine, a medication extracted from the cinchona bark, beriberi, today known as a vitamin B1 deficiency, displayed diverse and contradicting symptoms that often resulted in death and left physicians in the 1880s and 1890s largely clueless.[55]

As a glimpse into the official reports (*Koloniaal Verslag*) by the Dutch colonial government reveals, beriberi caused the most illness-related absences and fatalities among the Dutch forces in Aceh. In 1880, for example, 3,290 soldiers stationed in Aceh fell ill with beriberi, among whom 366 succumbed to the disease, as opposed to 303 suffering from dysentery (with ninety-nine deaths) and a mere eight cases of "gewalddadige dod" ("violent killing").[56] In a rather pessimistic manner, Heinrich Breitenstein comments:

[51] Erni, *Die Behandlung der Verwundeten*, 20.

[52] Letter from Friedrich Wilhelm Stammeshaus to brother-in-law, 5 December 1880, private collection.

[53] Erni, *Die Behandlung der Verwundeten*, 13.

[54] See D. Arnold, "Introduction: Tropical Medicine before Manson," in idem (ed), *Warm Climates and Western Medicine: The Emergence of Tropical Medicine, 1500–1900* (Amsterdam: Rodopi, 1996), 1–19.

[55] See D. Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India*, (Berkeley: University of California Press, 1993); D. Arnold, "British India and the 'Beriberi Problem'," *Medical History* 54:3 (2010), 295–314; K. Carpenter, *Beriberi, White Rice, and Vitamin B: A Disease, a Cause, and a Cure* (Berkeley: University of California Press, 2000).

[56] *Koloniaal Verslag*, Bijlage D, ('s Gravenhage: Algemeene Landsdrukkerij, 1881), 2–6.

> If, therefore, […] 25% [of native soldiers who had fallen ill with beri-beri] had died, it can be understood that a constant change of troops had to take place to be able to hold out against the brave and courageous Acehnese. […] Unfortunately, the Indian army was too small to be able to send fresh and healthy soldiers to Aceh. […] With such heavy loss of life, *everything stood helpless in the face of this invisible enemy*; public opinion, the Dutch government and the Indian government loudly demanded a remedy, because otherwise the army would be worn out in Aceh or Sumatra's north coast would have to be abandoned. *Since the military medical corps in Aceh itself knew of no remedy for this dreadful condition*, the inspector of the civil medical service was sent to Aceh in September to study the disease and make suggestions for its improvement.[57]

What is striking about Breitenstein's analysis is the ease with which he adopts a military idiom, describing beriberi as an "invisible enemy" that, like the Acehnese, resisted defeat.[58] At the same time his framing also exposes the limits of the self-image cultivated by medical mercenaries in Aceh. Although they fashioned themselves as heroic officers and as agents of modernity in the age of the laboratory revolution and the rise of "scientific" medicine, their experiences with the pathogenic specificities of the tropics in general, and with beriberi in particular, rendered them vulnerable. The rationalised, medicalised ideal of modern warfare did not hold up to the reality of colonial wars, and neither did the seamless authority of medical masculinity in tropical Aceh.

Medicalising Virtues and Vices in the Camps and *Kampongs*

In the context of asymmetric guerrilla warfare in Aceh, European soldiers and officers lived in a state of constant vigilance against surprise attacks. Yet, daily life in the *kampongs* of northwestern Sumatra was also characterised by long stretches of monotony and boredom. To pass the time, European soldiers frequently gathered to sing songs and drink alcohol.[59] The KNIL troops received a daily ration of alcohol to help them endure the hardships of their day-long expeditions through Sumatra. As historian Jaap de Moor notes, "There was no setting out without the morning

[57] H. Breitenstein, "Briefe aus Indien: Die Beri-Beri-Epidemie auf Atjeh," *Internationale Klinische Rundschau* 1 (1887), 904. Emphasis added by the author.

[58] For military rhetoric in medical language see S. M. de Souza Correa, "Contre les 'ennemis invisibles:' récits de deux médecins militaires sur le Sud-Ouest Africain Allemand (1904–1905)," *Histoire, médecine et santé* 10 (2016), 79–93; C. Gradmann, "Invisible Enemies: Bacteriology and the Language of Politics in Imperial Germany," *Science in Context* 13:1 (2000), 9–30.

[59] See P. Krauer, *Swiss Mercenaries in the Dutch East Indies: A Transimperial History of Military Labour, 1848–1914* (Leiden: Leiden University Press, 2024), 72–6.

ration of gin. In the course of the morning, a second drink was passed out, an extra tot of gin, intended to renew the troops' energy."[60] Others sought distraction by visiting prostitutes living as "camp followers" in the vicinity of the military posts.[61] Meanwhile, many upper- and middle class Europeans in the colonies observed the "licentious" behaviour of these "white subalterns" – in particular lower-class European soldiers and sailors – with a high degree of concern, fearing that drunkenness, disorder, and "illicit" sex threatened the fragile myth of European superiority on which colonial authority depended.[62]

Medical officers shared, and often even amplified, these anxieties. As Erica Wald observes, "[m]ost officers held strong class assumptions that meant that they viewed the soldiers as brutish, barely controllable louts."[63] Such worries were sharpened by the broader nineteenth-century hostility toward alcohol, in the context of which temperance, whether moderate or total, had come to signify self-discipline and respectability.[64] At the colonial frontier, alcoholism among rank-and-file troops was presented as not merely a matter of public health but a potential breach of the colonial order. Excessive alcohol consumption by lower-class Europeans threatened to collapse the hierarchical distinction between a morally superior European "civilisation" and the "uncivilised" tropics.[65] It also risked exposing that

[60] De Moor, "An Extra Ration of Gin for the Troops," 138.

[61] See L. Hesselink, "Prostitution: A Necessary Evil, Particularly in the Colonies. Views on Prostitution in the Netherlands Indies," in E. Locher-Scholten and A. Niehof (eds), *Indonesian Women in Focus: Past and Present Notions* (Leiden: KITLV Press, 1992), 205–24. For the broader South and Southeast Asian context see D. Pivar, "The Military, Prostitution and Colonial Peoples," *The Journal of Sex Research* 17:3 (1981), 256–69; S. Mondal, "Women in Cantonments: Evolution of Regulated Military Prostitution in Colonial India," *Indian Journal of Gender Studies* 29:3 (2022), 384–93.

[62] See H. Fischer-Tiné, *Low and Licentious Europeans: Race, Class, and "White Subalternity" in Colonial India* (New Delhi: Orient Blackswan, 2009); H. Fischer-Tiné, "Liquid boundaries: Race, Class, and Alcohol in Colonial India," in H. Fischer-Tiné and J. Tschurenev (eds), *A History of Alcohol and Drugs in Modern South Asia* (London: Routledge, 2013), 89–115.

[63] E. Wald, *Vice in the Barracks: Medicine, the Military and the Making of Colonial India, 1780–1868* (London: Palgrave Macmillan, 2014), 3. Also see P. Stanley, *White Mutiny: British Military Culture in India* (New York: New York University Press, 1998); D. Peers, "Imperial Vice: Sex, Drink and the Health of British Troops in North Indian Cantonments, 1800–1858," in D. Killingray and D. Omissi, David (eds): *Guardians of Empire: The Armed Forces of the Colonial Powers, c. 1700–1964*, (Manchester: Manchester University Press, 1999), 25–52; Fischer-Tiné, "Liquid Boundaries."

[64] See Levine, *Prostitution, Race & Politics*, 274.

[65] For the history of late nineteenth-century temperance from a global perspective see J. Pilley, R. Kramm, and H. Fischer-Tiné (eds), *Global Anti-Vice Activism, 1890–1950: Fighting Drinks, Drugs, and "Immorality"* (Cambridge: Cambridge University Press, 2016); N. Kamenov, *Global Temperance and the Balkans*: *American Missionaries, Swiss Scientists and Bulgarian Socialists, 1870–1940* (Cham: Palgrave Macmillan, 2020).

virtues such as rationality, restraint, and respectability were neither innate nor firmly embodied by all Europeans in the colonies.

Some medical mercenaries embraced the abstinence cause with particular fervour. In 1895, a group of "noble officers" established the *Amethysten Vereeniging* (Amethyst Association), a society dedicated to uplifting "mindere militairen" (lower-rank soldiers) in the Dutch Colonial Army. The first paragraph of the Association's statutes defines its core mission that was "to counteract alcoholism in society and especially the abuse of alcoholic beverages by the Dutch East Indies Army and Navy and thus to contribute to the eradication of alcoholism."[66] One of its leading figures was the German medical officer Dr. Fiebig, who emphasised the "scientific" (sic!) foundations of abstinence in the colonial army in public lectures and in the colonial press.[67] To Fiebig, emphasising the scientific basis of medicine served as a powerful discursive tool in asserting his authority within the complex social space of the colonial army,[68] as he positioned himself as a guardian of both military health and moral order among the lower-class soldiers.

Yet, as in Europe, total abstinence remained a minority position.[69] Heinrich Breitenstein dismisses Fiebig's radical stance as unrealistic, arguing that excessive prohibition would alienate those groups whose cooperation was needed to tackle the alcohol problem:

> I doubt whether this association can put its theories into practice. Dr. Fiebig condemns the use of alcohol in any form, at any time and under any circumstances, i.e. he finds alcohol not only superfluous but even harmful, even in the hands of doctors. Dr. Fiebig therefore goes too far, he misses the point and loses a large part of his supporters among precisely those circles which are called upon to support his plans to counteract the harmful

[66] Red. D. C. "Open Brief aan de mindere Militairen in Nederlandsch-Indië," *Deli Courant*, 24 August 1895.

[67] See, for example, F. J. M. Fiebig, "Alcoholisme en Amethysme. Een Woord ter Opheldering," *De Nieuwe Vorstenlanden*, 15 July 1896; "Lezing over het Amethysme te houden door Dr. Fiebig in de Militaire 'Sozieteit Concordia'," *Java-Bode*, 5 May 1897.

[68] For tensions surrounding lay vs. professional/medical opinions on alcohol consumption see S. Goodman, "Unpalatable Truths: Food and Drink as Medicine in Colonial British India," *Journal of the History of Medicine and Allied Sciences* 73:2 (2018), 205–22. For the medicalisation of anti-alcohol movements see F. Spöring, *Mission und Sozialhygiene: Schweizer Anti-Alkohol-Aktivismus im Kontext von Internationalismus und Kolonialismus 1886–1939* (Göttingen: Wallstein Verlag, 2017), 56–65; Kamenov, *Global Temperance and the Balkans*, 107–113.

[69] For so-called Teetotalism and its relationship to bourgeois masculinity, morals, and respectability, see Spöring, *Mission und Sozialhygiene*, 53–6; H. Yeomans, *Alcohol and Moral Regulation: Public Attitudes, Spirited Measures and Victorian Hangovers* (Bristol: Policy Press, 2014), 35–64; G. Blok, "Gentle Knights: Masculinity, Teetotalism and Aid for Alcohol Abuse c. 1900," *BMGN – Low Countries Historical Review* 127:1 (2012), 101–26.

> influence of the abuse of alcohol, which he would have had if he had stuck to the actual circumstances.[70]

In contrast to Fiebig, Breitenstein believes that moderate drinking could even support a healthy life in the tropics. Reflecting on his service in Borneo, he recalls: "When I had annoyance upon annoyance in Muarah Teweh I lost my appetite; but a little glass of wine stimulated it to such an extent that I could eat something […]."[71] Echoing this logic, his colleague Heinrich Erni notes that "One may oppose the use of liquor as much as one wishes, but it is nonetheless true that a glass of it before a meal promotes digestion that is very slack due to the warm climate and requires stimulation" and that even military officers "drank their occasional liquor, usually before lunch or dinner."[72]

Still, neither man denied the dangers of excess. Erni warns that "abuse is harmful, especially in a climate where the liver is already suffering enough,"[73] while Breitenstein describes chronic alcoholism as a "bogey man" (*Schreckensgespenst*).[74] Crucially, however, both framed their own drinking habits as largely unproblematic. Breitenstein justifies his occasional alcohol consumption by insisting that if "one has […] the strength of character [*Charakterstärke*] to drink wine with pleasure, and his means allow him to drink wine in any quantity, and yet he makes only moderate use of it, then I may cautiously appeal to everyone else to do the same."[75] In other words, moderation was not merely presented as a personal choice but as a performance of respectability: it signalled self-discipline, moral fortitude, and mastery over bodily impulses to restrain from alcohol abuse despite having the (financial) means to drink excessively. By presenting controlled drinking as a mark of character, Breitenstein positioned himself – and medical officers more broadly – as men whose self-control allowed them to navigate temptations in ways unavailable to lower-ranking soldiers, whose excesses often were interpreted as evidence of moral inferiority.

Not only the quantity, but also the quality of the alcohol consumed became a strong marker of class distinction in Aceh. As Sam Goodman has shown, "the act of drinking [had] as much to do with social performance as […] with personal taste, with space in each instance a governing influence on choice of beverage, intent,

[70] H. Breitenstein, *21 Jahre in Indien: Aus dem Tagebuche eines Militärarztes, Erster Theil: Borneo* (Leipzig: Th. Grieben's Verlag, 1899), 25.

[71] Ibid., 26.

[72] Erni, *Die Behandlung der Verwundeten*, 26.

[73] Ibid.

[74] Breitenstein, *Sumatra*, 99.

[75] Breitenstein, *Borneo*, 27.

behavior, and the perceived identity of the drinker themselves."[76] Local liquors, though inexpensive, were commonly condemned as unhealthy or morally suspect by colonial authorities and frequently became subject to prohibition or heavy regulation,[77] whereas imported European beverages, especially low-alcohol wine or beer, were associated with refinement.[78] The KNIL attempted to regulate soldiers' drinking habits by closely monitoring the military canteen system. In 1890, the Dutch colonial military administration investigated inflated beer prices in remote outposts. By lowering beer costs, the KNIL hoped to reduce "cases of drunkenness," which had noticeably declined "in the more conveniently located canteens where beer prices are affordable for the soldier, from which it can be deduced that the soldier makes less use of the poor, harmful alcoholic drinks available outside in the pubs at low cost."[79] Respectable alcohol consumption was thus spatially and socially circumscribed: European beer belonged in the supervised canteens, cheap liquor belonged to the "unruly" world beyond the palisade.

The close connection between alcohol consumption and bourgeois, European respectability is reflected in the letters of the Swiss medical mercenary Ernest Guglielminetti. He repeatedly complained bitterly to his parents about the low quality of alcohol – especially the beer and gin – available in the Dutch camps. It was therefore "with great joy" that he reports the arrival of a parcel from Switzerland containing, among others, "12 bottles of white wine Fendant (8% Alcohol)", "1 Pair slippers blue", "1 sausage salami", "6 tablecloths", "30 bottles export Pilsen beer", "1 tin English biscuits", "1 tin Basler Lekerli", and "3 bottles Odeurs." "It's a lovely souvenir," he writes, "that I'll be able to gnaw on with pleasure for more than a year." He empha-sises in particular his anticipation for the imported beverages: "I will report on how the taste of the wines and the liquors [in a] later [letter], as soon as they have rested and my taste has become somewhat accustomed again to such good, real things."[80]

Two aspects of this parcel stand out. First, the presence of quintessential Swiss products from *Basler Leckerli*, a traditional spice biscuit from the Basel region, to Fendant, a white wine produced in Guglielminetti's home Canton of Wallis, suggests

[76] S. Goodman, "Spaces of Intemperance & the British Raj 1860–1920," *The Journal of Imperial and Commonwealth History* 48:4 (2020), 595.

[77] See D. Hardiman, "From Custom to Crime: The Politics of Drinking in Colonial South Gujarat," *Subaltern Studies* 4 (1985), 165–228; Fischer-Tiné, "Liquid Boundaries," 93–4.

[78] See E. Wald, "Governing the Bottle: Alcohol, Race and Class in Nineteenth-Century India," *The Journal of Imperial and Commonwealth History* 46:3 (2018), 398–9; S. Groeneveld, "'A Hotbed of Sins' or 'Just like Home'? Drinking Cultures in Colonial Quingdao (1897–1914)," in W. Ernst (ed), *Alcohol Flows Across Cultures: Drinking Cultures in Transnational and Comparative Perspective* (London: Routledge, 2020), 139–58.

[79] *Koloniaal Verslag*, Bijlage C (s' Gravenhage: Algemeene Landsdrukkerij, 1890), 36.

[80] Letter from Ernest Guglielminetti to his mother, Rau, 5 May 1888, UB NL 175, Aa 1–27, A19.

that consumption functioned as a form of emotional anchoring and performative belonging. Through food and drink, Guglielminetti seems to have cultivated a sense of national and regional identity amid his deployment in Aceh. Second, the "conspicuous consumption" of high-quality, low percentage alcoholic beverages signalled class distinction. Drinks often served as a marker of differentiation between middle-class and lower-class Europeans in the colonies.[81] The latter's preference for cheap local gin served as a foil against which men like Guglielminetti could fashion themselves as refined and morally superior.

If alcohol threatened the health and discipline of the European soldiers in Aceh, sexually transmitted diseases – referred to as "venereal diseases" (VD) at the time – provoked even greater anxieties surrounding European respectability in the tropics. Syphilis, in particular, was viewed as a threat to both the health and morale of the European "race."[82] In the 1880s, every single issue of the *Koloniaal Verslag* listed syphilis among the most common causes of illness among soldiers.[83] Medical officers in Aceh often interpreted the disease's prevalence through the same class-related and moralised framework applied to alcohol. Erni, for example, argues that "Aceh is a fertile ground for venereal diseases," attributing their spread primarily to so-called "soldier's women" (*Soldatenfrauen*) – Asian and Indo-European *njai* who lived with European men as housekeepers or concubines,[84] and who were largely tolerated in the Dutch military camps.[85]

Breitenstein, however, rejected the view that *njai* were primarily to blame. Referring to them as "barrack women" (*Kasernefrauen*), he considered barrack concubinage only a "minor source of syphilis." Instead, he locates the principal danger in solders' encounters with "priestesses of free love" – Malay, Indo-European, and Chinese prostitutes from "the lowest strata of the population."[86] From the perspective of the European middle-class in the colonies, such sexual interactions posed a threat not only to the soldiers' health, but also to European ideals of male respectability.[87] At the same time, prostitution was regarded as a "necessary evil"

[81] On the "conspicuous consumption" of alcohol in colonial settings see Fischer-Tiné, "Liquid Boundaries," 93–5.

[82] Levine, *Prostitution, Race & Politics*, 2.

[83] See Koloniaal Verslag ('s Gravenhage: Algemeene Landsdrukkerij, 1880–1890).

[84] Erni, *Die Behandlung der Verwundeten*, 37.

[85] See U. Bosma and R. Raben, *Being 'Dutch' in the Indies: A History of Creolisation and Empire, 1500–1920* (Athens: Ohio University Press, 2008); R. Baay, *De Njai: Het Concubinaat in Nederlands-Indië* (Amsterdam: Athenaeum-Polak & Van Gennep, 2008); A. L. Stoler, *Carnal Knowledge and Imperial Power: Race and the Intimate in Colonial Rule* (Berkeley: University of California Press, 2010); H. Ming, "Barracks-Concubinage in the Indies, 1887–1920," *Indonesia* 35 (1983), 65–94.

[86] H. Breitenstein, "Die Circumcision in der Prophylaxe der Syphilis," *Versammlung deutscher Naturforscher und Ärzte in Karlsbad im September 1902*, 480–1.

[87] See Levine, *Prostitution, Race & Politics*, 8.

that allowed men to "satisfy their natural sexual appetite" by many contemporary observers in the Netherlands and the Dutch East Indies. Consequently, prostitution was legally permitted under the condition that measures were implemented to contain the spread of VD.[88]

The Dutch colonial government's approach to venereal disease control mirrored global trends such as the British Contagious Diseases Acts, that mainly targeted women engaging in sex work rather than holding men accountable.[89] Other than the British, however, who established separate lock hospitals to isolate infected prostitutes from European soldiers, the Dutch government integrated syphilis control into its existing biopolitical structures. The 1853 Regulation to counteract the harmful consequences of prostitution (*Reglement tot wering van de schadelijke gevolgen, welke uit de prostitutie voortvloeijen*) required prostitutes to register with the police and to undergo regular medical examinations. Those found to be infected were legally obliged to enter hospital until they fully recovered. Nevertheless, unregulated forms of prostitution continued to evade state control.[90]

By 1883, colonial officials urged stricter implementation and insisted that "the medical examination of prostitutes and the treatment of the sick among them" should "as far as possible, be the task of the local European doctors" and "only be left to Dokter Djawa in exceptional cases."[91] The accompanying decree further stipulated that, where no other facilities existed, "the sick prostitutes – on condition that they are properly separated – can be admitted for treatment to the military hospitals, and if these do not exist or do not offer room, to the local prisons."[92] Medical officers thus became central agents in the biopolitical control of prostitution in the Dutch Colonial Army, responsible not only for diagnosing venereal disease but also for supervising and, at times, treating the women themselves. Heinrich Breitenstein, for example, recorded numerous examinations of prostitutes in his memoirs. He however sharply criticises the colonial government's singular focus

[88] Hesselink, "Prostitution: A Necessary Evil," 206–7.

[89] See Levine, *Prostitution, Race & Politics*, 40–2; Wald, *Vice in the Barracks*; P. Levine, "Venereal Disease, Prostitution, and the Politics of Empire: The Case of British India," *Journal of the History of Sexuality* 4:4 (1994), 579–602; K. Ballhatchet, *Race, Sex and Class under the Raj: Imperial Attitudes and Policies and their Critics, 1793–1905* (London: Weidenfeld and Nicolson, 1980). For the control of venereal diseases in the German Colonial Empire see D. J. Walther, *Sex and Control: Venereal Disease, Colonial Physicians, and Indigenous Agency in German Colonialism, 1884–1914* (New York: Berghahn, 2015). For colonialism and VD in Africa see M. Vaughan, *Curing their Ills: Colonial Power and African Illness* (Cambridge: Polity Press, 1991), 129–54. For a more general overview see M. Rodríguez García, L. Heerma van Voss, and E. van Nederveen Meerkerk (eds), *Selling Sex in the City: A Global History of Prostitution, 1600s–2000s*, (Leiden: Brill, 2017).

[90] See Hesselink, "Prostitution: A Necessary Evil," 206.

[91] *Koloniaal Verslag*, Bijlage C, ('s Gravenhage: Algemeene Landsdrukkerij, 1884), 105.

[92] Ibid.

on women, arguing instead that venereal diseases followed Europeans "as they penetrate into the interior" of an island, driven above all by the promiscuity of enlisted men.[93] As with alcohol abuse, he frames venereal disease primarily as a class problem; as an affliction tied to the undisciplined habits of lower-ranking European soldiers. In making this argument, Breitenstein implicitly challenges the Dutch administration's approach to venereal disease control. His position as a non-Dutch European – publishing almost exclusively with German-speaking publishing houses – may have afforded him greater latitude to criticise official policies, even though he acquired Dutch citizenship in 1895.[94] The more critical sections of his published memoirs were consistently downplayed in Dutch reviews, which accused him of misinterpreting the "true" conditions in the Dutch East Indies.[95]

Despite the prevalence of what they described as vices in the military camps, medical mercenaries never acknowledged in their published writings or private letters any personal engagement in excessive drinking or illicit sexual activity. Whether this silence reflects reality remains an open question. What is clear, however, is that in their self-fashioning, they positioned themselves as rational, disciplined observers of soldiers' licentious behaviours. From this imagined vantage point, they contrasted the rationality, respectability and temperance of a medical man with the intemperance of lower-class Europeans who could not resist the various temptations Europeans allegedly encountered in tropical Sumatra.[96]

"European" Doctors in the Tropics: Between Religion, Region, and Race

In Aceh, medical mercenaries found themselves within a complex web of social hierarchies, where class intersected with gender, race, religion, and both national and regional identities. The KNIL brought together soldiers and officers from a striking range of backgrounds. Even as they shared a sense of Europeanness, medical mercenaries remained acutely aware of the transregional, transreligious, and

[93] See H. Breitenstein, "Die Syphilis in Indien," *Wiener Medizinische Presse* 25 (1884), 1435–7.; H. Breitenstein, "Die Circumcision in der Prophylaxe der Syphilis," 480–1.

[94] See "Naturalisatie van Heinrich Breitenstein," *Staatsblad van het Koninkrijk der Nederlanden* 115, 13 July 1895.

[95] See reviews in *Algemeen Handelsblad*, 14 December 1902; *De Sumatra Post*, 21 December 1899.

[96] On the construction of bourgeois, European respectability in the Dutch East Indies see Stoler, *Carnal Knowledge and Imperial Power*. For the construction of bourgeois masculinities vis-à-vis "brutish" lower-class soldiers see S. Murphy, "Making (Protestant) Men: *Alfred and Galba* and the East India Company Soldiers," in H. Ellis and J. Meyer (eds), *Masculinity and the Other: Historical Perspectives* (Newcastle: Cambridge Scholars, 2009), 219–35; J. Banister, *Masculinity, Militarism and Eighteenth-Century Culture, 1689–1815* (Cambridge: Cambridge University Press, 2020).

transnational composition of the Dutch Colonial Army in Aceh, where Dutchmen, Germans, Austrians, Javanese, and West Africans served side by side.

The Swiss medical officer Ernest Guglielminetti, for instance, observed this diversity in remarkable detail. In a letter to his mother, he describes his patients as coming "from all nations, a Parisian next to a Prussian or Swabian, in perfect harmony […], then an African with whom we speak Malay, next to him an Italian […] then some Dutchmen […] next to them some Malays (from Sumatra) or Javanese […]."[97] Despite the army's ethnic and linguistic heterogeneity, he notices a strong sense of camaraderie among European soldiers that, in his view, bridged even the tensions still lingering from intra-European conflicts such as the fairly recent Franco-Prussian War of 1870/1871.

At the same time, Guglielminetti's letters also reveal his strong attachment to the Catholic faith. Born to a Swiss mother and an Italian father in the Swiss canton of Wallis,[98] he expresses particular sympathies for the soldiers recruited among "Roman Catholics from the north of Borneo, where missions still exist" and observes with pleasure "how they all come to mass on Sunday in their own famous colourful paillettes."[99] Shortly before Easter, he wrote of his longing to "reach a priest" or even to "kiss the ring of the Bishop in Batavia." Lamenting the scarcity of "Catholic physicians in the Indies," he reassures his mother that he could "do many good deeds in the hospitals for our [Catholic] faith and save many poor souls." He criticises the European soldier-nurses for neglecting patients' spiritual well-being and makes a point of calling "for a priest or pastor" whenever a patient was nearing death. "The poor, fatally ill," he writes, "are often unaware that the end is near and may feel embarrassed in front of their fellow soldiers, yet they never refuse when I urge them to settle their accounts with heaven – for added security and peace of mind."[100]

His attachment to home extended beyond faith. Raised in the small Alpine town of Brig, Guglielminetti repeatedly expressed a deep yearning for his *Heimat*. In one letter to his mother, he pleads:

> Let me remain silent this time, dearest Mother, about India […] but today let us chat about Brig and tell me, dear Mother, why you write to me so seldomly about Brig and its people, why don't I hear about [my brother] Guillaume […] – it is not very kind of people to let me

[97] Letter from Ernest Guglielminetti to his mother, Fort de Cock, 15 August 1887, in Universitätsbibliothek Basel (UB), Nachlass (NL) 175, Aa 1–27, A9.

[98] See P. Heldner, "Guglielminetti, Ernest," in *Historisches Lexikon der Schweiz (HLS)*, 04.12.2006. Online: https://hls-dhs-dss.ch/de/articles/014394/2006-12-04/, [accessed: 11.04.2023].

[99] Letter from Ernest Guglielminetti to his mother, Fort de Cock, 15 August 1887, in Universitätsbibliothek Basel (UB), Nachlass (NL) 175, Aa 1–27, A9.

[100] Letter from Ernest Guglielminetti to his mother, Rau, 24 March 1888, in UB NL 175, Aa 1–27, A18.

> hear so little [news] about them. No one writes about the Simplon Tunnel, no one about the season etc. Yes, I do receive the Walliser Bote, but there is nothing written in it but about illness, about school correspondence from Goms and the First Mass [Primizfeier] […].[101]

Guglielminetti's request for news from Brig reminds us that national origin alone cannot fully capture the positionality of non-Dutch Europeans in the KNIL. His keen interest in the construction of the Simplon Tunnel – a monumental infrastructure project completed in 1906 that connected Brig with Domodossola in Italy –[102] illustrates the continuing relevance of regional identity in the lives of Europeans in the Dutch East Indies.

The press appeared to have played a crucial role in sustaining connections between medical mercenaries' hometowns in German-speaking Europe and Aceh.[103] By reading the *Walliser Bote*, Guglielminetti kept himself informed about the latest developments at home. Similarly, the Prussian medical officer Friedrich Wilhelm Stammeshaus relied on reading to maintain his "Germanness" in Sumatra. In a letter to his brother-in-law, he explains how he and a small circle of officers kept a "communal board" and a reading society that subscribed to European publications: "In this way we receive several German publications (Leipziger Zeitung, […] fliegende Blätter, Deutsche Rundschau), as well as Dutch and French magazines and newspapers, once a week with every arriving steamship, ensuring we never lack reading material."[104]

That both men were able to send and receive letters, newspapers, and periodicals from home underscores the crucial role of transportation and communication infrastructures in sustaining emotional, cultural, and intellectual ties across vast distances in the age of empire.[105] Knowledge of the Aceh War – or at least European

[101] Letter from Ernest Guglielminetti to his mother, Hospital Padang, undated, in UB NL 175, Aa 1–27, A13.

[102] For the significance of the Simplon Tunnel in transnational transportation in Central Europe, see W. Leimgruber, "Small Regional Centres at the Periphery of Switzerland," in J. Bański, *The Routledge Handbook of Small Towns* (New York: Routledge, 2021), 248–50; H. P. Bärtschi, "Bern-Lötschberg-Simplon-Bahn (BLS)," *Historisches Lexikon der Schweiz (HLS)* 03.07.2002. Online: https://hls-dhs-dss.ch/de/articles/041999/2002-07-03/, [accessed 19.05.2023].

[103] For the role of the print press in nineteenth-century nationalism see B. Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London: Verso, 1993), 37–46; H. Harrison, "Newspapers and Nationalism in Rural China 1890–1929," *Past & Present* 166 (2000), 181–204; P. B. Mukharji, *Nationalizing the Body: The Medical Market, Print and Daktari Medicine* (London: Anthem Press, 2011).

[104] Letter from Friedrich Wilhelm Stammeshaus to brother-in-law in spe, Olegli, 5 December 1880, private collection.

[105] See L. Ishiguro, *Nothing to Write Home About: British Family Correspondence and the Settler Colonial Everyday in British Columbia* (Vancouver: UBC Press, 2019); N. Sinha, *Communication and*

interpretations of it – circulated far beyond imperial metropoles, reaching even remote Alpine valleys or rural Prussian towns. Conversely, these networks allowed medical mercenaries to preserve and perform their national, religious, and regional identities while stationed in Aceh.

Their presence in the KNIL was also visible in the European press. In 1884, for example, the *Norddeutsche allgemeine Zeitung* published a letter from a German soldier in Aceh who reported that

> the numerous German elements who are unfortunately among the ranks of the Dutch Colonial Army remain loyal and devoted to their fatherland even in foreign countries and in circumstances that are felt to be oppressive by every single one of them, and that they even strive to create space for German associations [Vereine]. Thus, among the approximately 1000 German soldiers in Atschin, there are no less than three German associations with the name 'Germania', which have made it their task to cultivate and promote Germanism [Deutschthum] according to the prevailing conditions. They seek to achieve this goal through social endeavours and by establishing a spiritual connection with their homeland.[106]

Associations (*Vereine*) such as the "Germania" mentioned in the article played a vital role in the social and cultural life of German-speaking Europeans in colonial Southeast Asia. As historian Andreas Zangger has shown, Swiss national associations (*Schweizervereine*) in colonial Sumatra and Singapore allowed émigrés to maintain a distinctly Swiss identity abroad.[107] In Aceh, similar associations allowed physicians and soldiers from Germanophone Europe to express their regional or linguistic identities despite service under a foreign empire.

The diversity of regional backgrounds among medical mercenaries in Aceh is further exemplified by the Czech medical officer Pavel Durdík. Born in 1843, in Hořice, then part of the Habsburg Empire, Durdík served the Dutch Colonial Army from 1877 to 1883 and published a Czech language memoir on his experiences in Aceh in 1893. In striking contrast to many of his European colleagues, Durdík expresses open admiration for the Acehnese fight against the Dutch invasion. "A nation can only succeed," he writes, "if it can defend its independence at the

Colonialism in Eastern India: Bihar, 1760s–1880s (London: Anthem Press, 2012); R. Wenzlhuemer, *Connecting the Nineteenth-Century World: The Telegraph and Globalization* (Cambridge: Cambridge University Press, 2014); R. Wenzlhuemer, "Globalization, Communication and the Concept of Space in Global History," *Historical Social Research* 35:1 (2010), 19–47; D. Headrick, "A Double-Edged Sword: Communications and Imperial Control in British India," *Historical Social Research* 35:1 (2010), 51–65.

106 "Osten," *Norddeutsche allgemeine Zeitung, Abend-Ausgabe*, 20 November 1884.

107 See A. Zangger, *Koloniale Schweiz: Ein Stück Globalgeschichte zwischen Europa und Südostasien (1860–1930)*, (Bielefeld: Transcript, 2011), 171, 415–32.

cost of its life and fortune." Drawing parallels between the Acehnese struggle and European cases – from Montenegro and the Netherlands in the Middle Ages to the Italians and Hungarians in his own time – he argues that the Acehnese resisted Dutch conquest with remarkable resolve:

> The Acehnese started their 'little war' [guerrilla] without operational plans, without cavalry and without modern firearms. The Dutch soldiers, when unable to use their repeating rifles properly to escape from hand-to-hand combat, fell under the *klewang* like pears or tried to run away in the bush – they said so themselves.[108]

Durdík further explicitly connects Aceh to the Czech nationalist cause:[109] "Let's get back to Europe […] and talk about it in general and about us Czechs in particular." He laments that the Czech nation had become "submissive, obedient, and servile," lacking the pride and courage shown by the Acehnese.[110] Referring to the Czech "heroes of Blaník," a well-known story from fifteenth-century Czech mythology that was rediscovered in the context of Czech nationalism towards the late nineteenth century,[111] he observes that, unlike his own people, the Acehnese "do not need these heroes […] for they are brave and courageous themselves."[112]

The juxtaposition between the Czech struggle for independence and the Acehnese fight against the Dutch invasion reveals the somewhat unexpected political alliances and solidarities that could emerge within the multilingual and multicultural environment of the KNIL. The fact that Durdík's account entirely omits his own participation in the Dutch invasion as a medical officer for the Dutch Colonial Army only highlights the complex and sometimes contradictory identities medical mercenaries embodied in colonial Sumatra.

Racial Hierarchies in a "Creole Empire"

The military camps in the Dutch East Indies were deeply marked by the ethnic diversity of the KNIL itself. In fact, most of the soldiers in the colonial army were

[108] P. Durdík, *Un Médecin Militaire à Sumatra: Récits de la Guerre d'Atjeh (1877–1883)*, translated by L. Kalus and C. Guillot (Paris: L'Harmattan, 2010), 43.

[109] For Durdík's rhetoric comparison between the Acehnese and the Czech struggle for independence, also see J. Mrázek, "Czech Army Doctor in Sumatra: Native Soil, Miasmatic Mud, Russian Hallucinations, All the Empires," in idem (ed), *Escaping Kakania: Eastern European Travels in Colonial Southeast Asia* (Budapest: Central European University Press, 2024), 59–92.

[110] Durdík, *Un Médecin Militaire à Sumatra*, 53.

[111] See S. Holubec, "Between the Czech Krkonoše and the German Riesengebirge: Nationalism and Tourism in the Giant Mountains, 1880s–1930s," in *Nationalities Papers* 52:2 (2021), 337–59.

[112] Durdík, *Un Médecin Militaire à Sumatra*, 53.

recruited among the indigenous populations of the Dutch colonies. Ambonese, Javanese, West African, or Malay soldiers filled the lower ranks and lived side by side with their European colleagues.[113] The racialised order of the colonial army unfolded in everyday encounters in the barracks and military hospitals.

The Dutch practice of recruiting non-European troops dates to the seventeenth century when the VOC enlisted Japanese and Chinese soldiers, as well as freed enslaved people and Pampangas from the Philippines. The recruitment patterns of the VOC were largely shaped by the availability of military manpower. During the nineteenth century, military recruitment was increasingly tied to a preference for soldiers from specific ethnic groups. Following the Java War (1825–1830), Dutch distrust of Javanese soldiers led to a "recruitment crisis." Since the ranks could not be filled by Europeans alone, in 1831, the Dutch government established a recruitment station on the West African Gold Coast. The men recruited or abducted from West Africa for service in the Dutch East Indies became known as *Belanda Hitam*, the Black Dutch. Dutch recruitment of African soldiers mirrored British practices in the West Indies, where, after the abolition of the transatlantic slave trade in 1807, the British army enlisted liberated enslaved people from Sierra Leone. Although the *Belanda Hitam* were always fewer in number than the Javanese soldiers, Dutch officers praised them for their endurance and stamina. They were granted "European" legal status, but remained subordinated to European soldiers; their pay was equal, but their equipment inferior.[114] A similar ambivalence marked Dutch attitudes toward the so-called "Ambonese," a category that – despite its "racial" certainty in colonial writing – was in fact highly artificial, encompassing not only men from Ambon but also recruits from the Kei islands and North Sulawesi.[115] Their supposed loyalty and bravery made them especially sought-after for military service. By 1904, at the height of the Aceh War, Ambonese troops numbered more than 4,200 men, about 12 per cent of the army, compared to some 3,000 West Africans.[116]

In actively recruiting ethnic groups that were imagined as particularly "warlike," "brave," or "loyal," the Dutch followed broader transimperial discourses of the so-called "martial races." After the Indian Rebellion of 1857–59, British administrators, eugenicists and race scientists claimed to have identified South Asian "races," who possessed (inherited) physical and mental qualities that deemed them

[113] See Ming, "Barracks-Concubinage in the Indies," 66–7.

[114] See I. van Kessel, "'Courageous but Insolent:' African Soldiers in the Dutch East Indies as seen by Dutch Officials and Indonesian Neighbours," *Ocean of Stories: Communication & Contested Identities across the Indian Ocean* 4:2 (2009), 61–75.

[115] De Moor, "The Recruitment of Indonesian Soldiers," 62–4. Quote from 64.

[116] See van Kessel, "African Soldiers in the Dutch East Indies," 56.

particularly fit for military service: Gurkhas, Sikhs, Marathas, and Rajputs.[117] Even though historian Jaap de Moor argues that the "British colonial discourse of the 'martial races,' with their inherited attributes, never existed in Dutch Indonesia" and that the Ambonese "were not praised primarily for their military skills but for their loyalty to the Dutch, devotion to the House of Orange, and attachment to the Christian faith,"[118] accounts from medical mercenaries blur the line between "loyalty" and "racial" or "cultural" qualities as they repeatedly celebrate what they understood as the Ambonese capacity to endure pain, fatigue, and suffering. Heinrich Breitenstein, for example, remembers how, in 1893, "an Ambonese soldier from the Moluccas came to my treatment and, incredible as it may seem, he had served as a soldier up to that day, even though he had a large tumour in his abdominal cavity."[119] Ernest Guglielminetti, whose Catholic faith seemed to have shaped his impressions throughout his time in Aceh, expressed particular admiration for the Ambonese soldiers' religious resilience. Their devotion, in his eyes, confirmed both their moral strength and their reliability as soldiers.[120]

The position of the Javanese soldiers within the Dutch Colonial Army was very different. Despite constituting the largest proportion of the KNIL's recruits, they occupied the lowest position in the army's racial hierarchy. Their pay, quality of food, and equipment were markedly inferior.[121] Other than the Ambonese and West African soldiers, they were completely denied even the possibility of embodying military masculinity. This discursive emasculation of the Javanese soldiers is reflected in Pavel Durdík's memoir. While being full of admiration for the Acehnese, he describes the Javanese as:

> a good, docile, considerate people, extraordinarily respectful of their people and of the elderly, remarkably modest, sincere and simple in their behaviour. The Javanese would deserve a better fate if justice prevailed in the world, if in the world everyone was judged by his actions. The Javanese are like good children, not yet spoiled by their parents and they remain so all their lives. That is why they are oppressed by their monks and the Dutch and largely robbed by the Chinese. They are the exact replica of Leon Tolstoi's characters:

[117] See P. Barua, "Inventing Race: The British and India's Martial Races," *The Historian* 58:1 (1995), 108–11; H. Streets-Salter, *Martial Races: The Military, Race, and Masculinity in British Imperial Culture, 1857–1914* (Manchester: Manchester University Press, 2011); D. Omissi, *The Sepoy and the Raj: The Indian Army, 1860–1940* (Basingstoke: Palgrave Macmillan, 1998); D. Killingray, "Guardians of Empire," in Killingray/Omissi, *Guardians of Empire*, 14–16.

[118] De Moor, "The Recruitment of Indonesian Soldiers," 59.

[119] Breitenstein, *Sumatra*, 97.

[120] See letter from Ernest Guglielminetti to his mother, Hospital Padang, undated, UB NL 175, Aa 1–27, A13.

[121] See De Moor, "The Recruitment of Indonesian Soldiers," 61.

> they do not oppose evil, do not like evil and do not defend themselves against evil. Because of their goodness and simple spirit, they do not even belong to the present world order, where the law of 'woe to the good', i.e., to the weak, to the defenceless and to those who do not defend themselves, is verified at every moment.[122]

Unlike the Acehnese, whom he pictures as brave and determined fighters, he characterises the Javanese as kind and respectful, yet also childlike, defenceless, and with that fundamentally opposed to the ideals of military masculinity. He even warns his Czech readers against taking the Javanese as role models, for their alleged submissiveness, he argues, explained their oppression under Dutch rule.[123]

Another stereotype that circulated widely among European observers, and that appears frequently in the writings of medical mercenaries, is closely linked to transimperial discourses surrounding the phenomenon of *amok*. Derived from the Malay word *amuk*, meaning rampage or rage, Europeans reported numerous cases of what they perceived as sudden, irrational outbursts of violence by ethnic Malays in British Malaya and the Dutch East Indies, labelling these incidents as acts of amok. From the outset, such depictions of erratic violence were deeply gendered, as only men were thought capable of "running amok," reinforcing colonial assumptions about masculine volatility among colonised populations.[124] By the early twentieth century, the trope of Malay men being predisposed to amok was increasingly psychologised, recast as evidence of racial inferiority, and used as a legitimisation strategy to justify European rule in Southeast Asia.[125]

Almost every travelogue written by Europeans in the Dutch East Indies, including those of medical mercenaries, includes at least one dramatic encounter with amok. Such episodes were often rendered in distinctly Orientalising tones, shaped as much by metropolitan expectations as by colonial experience. Breitenstein, too, recounts witnessing "a case of amok" near his post in Aceh: "The furious man had wounded four people before he could be subdued; an Acehnese and a Chinese were killed; a second native received five wounds and the fourth victim only a stab to the

[122] Durdík, *Un Médecin Militaire à Sumatra*, 46f.

[123] See ibid.

[124] See J. C. Wu, "Disciplining Native Masculinities: Colonial Violence in Malaya, 'Land of the Pirate and the Amok,'" in P. Dwyer and A. Nettelbeck (eds), *Violence, Colonialism and Empire in the Modern World* (Cham: Springer, 2018), 175–96; J. Saha, "Madness and the Making of a Colonial Order in Burma," *Modern Asian Studies* 47:2 (2013), 406–35; S. C. Bolton, *Crip Colony: Mestizaje, US Imperialism, and the Queer Politics of Disability in the Philippines* (Durham: Duke University Press, 2023), 131–61; E. Tay, *Colony, Nation, and Globalisation: Not at Home in Singaporean and Malaysian Literature* (Hong Kong: Hong Kong University Press, 2011), 15–30.

[125] See H. Pols, "Psychological Knowledge in a Colonial Context: Theories on the Nature of the 'Native Mind' in the Former Dutch East Indies," *History of Psychology* 10:2 (2007), 111–31.

left forearm." What makes Breitenstein's account notable is not the violence itself, which largely conforms to the European stereotypes, but rather his interpretation of the event. Instead of invoking the racialised explanations of amok circulating across the Dutch and British empires, he writes that

> this case disputes all previous theories that have been put forward about the Malay custom of running amok. This man did not smoke opium, he was not seized by any religious madness, he did not want to take his own life in this unusual way in order to partake of the joys of heaven despite the prohibition of suicide; he was a sick man who was delirious in a fever.[126]

Rather than attributing the man's outburst to racial predispositions, cultural fanaticism, or moral deficiency, Breitenstein reframes the event as a fever-induced delirium. By contesting established cultural and racial theories of amok, he casts himself as a corrective voice of scientific reason. And still, his critique is not a complete break from colonial stereotypes. Even as he rejects essentialist claims about the Malay "race," his analysis continues to hinge on the assumption that amok is a specifically *Malay* phenomenon, now explained not by racial traits but by reactions to bodily vulnerability.

Gendered Knowledge and the Limits of European Medical Authority

Racial stereotypes shaped how medical mercenaries classified, treated, or wrote about the colonised population of the Dutch East Indies they encountered in the military hospitals and outposts. These classificatory schemes extended into the intimate and domestic domain, where relationships between European soldiers and officers and indigenous women, as well as tensions between European medicine and local healing traditions, became central arenas in which colonial hierarchies were negotiated, enforced, and, at times, contested.

The Dutch colonial government exhibited a comparatively high tolerance for interracial relationships. The historians Remco Raben and Ulbe Bosma even go as far as to characterise the Dutch East Indies as a "Creole Empire," where the category of "Europeanness" rather than strictly defined notions of "whiteness" played an exceptionally important role in determining one's social and legal position.[127] People of mixed European and indigenous descent could potentially obtain the legal status of "European," provided that they were legally acknowledged by their European father. The so-called Indo-Europeans played a crucial role in the colonial economy,

[126] Breitenstein, *Sumatra*, 95–6.

[127] See Bosma/Raben, *Being 'Dutch' in the Indies*.

industry, and (local) governance, which distinguished Dutch rule from the more rigid racial boundaries characteristic of the British Empire. This, of course, did not mean there was no racial segregation in place. The Dutch East Indies legal system divided its population into three categories: *Europeanen* ("Europeans"), *Inlanders* ("natives"), and *Vreemde Osterlingen* ("Foreign Orientals," mainly of Chinese or Arabic descent).[128]

As part of the relatively broad acceptance of Indo-Europeans and interracial relationships, the Dutch largely tolerated the presence of so-called *njai* in the colonial military camps. *Njai* were women of Malay, Javanese, Chinese or Indo-European descent who lived with European soldiers as housekeepers or as concubines. While legal, marriage for rank-and-file soldiers was tightly restricted and required explicit permission from a superior that was only rarely granted, barrack concubinage was both legal and socially accepted until the early twentieth century. It is important to stress that these relationships were not entered on equal terms. Sexual encounters between *njai* and their European employers were highly asymmetrical and subjected to severe power imbalances within the racialised colonial social order. Europeans could dismiss or abandon their *njai* at any time without repercussions.[129]

While medical officers often expressed their concerns about prostitution, they were far more ambivalent, and often even approving, when writing about the *njai*. Heinrich Breitenstein, who served for more than two decades in the KNIL and was well acquainted with the colonial social norms, describes the significance of the *njai* for upholding the European soldiers' morale and health in the Aceh war:

[128] See B. Luttikhuis, "Beyond Race: Constructions of 'Europeanness' in Late-colonial Legal Practice in the Dutch East Indies," *European Review of History* 20:4 (2013), 539–58; B. Luttikhuis, *Negotiating Modernity: Europeanness in Late Colonial Indonesia, 1910–1942*, PhD thesis, European University Institute, Florence 2014; C. Coppel, "The Indonesian Chinese: 'Foreign Orientals,' Netherlands Subjects, and Indonesian Citizens," in M. Hooker (ed), *Law and the Chinese in Southeast Asia* (Pasir Panjang Singapore: ISEAS Institute of Southeast Asian Studies, 2002), 131–49; A. Claver, "From Denial to Opportunity: Chinese Access to Colonial Law in the Netherlands Indies (1800–1942)," in S. Dauchy (eds), *Colonial Adventures: Commercial Law and Practice in the Making* (Leiden: Brill, 2020), 221–44. For a general overview of the Dutch East Indies' legal history see A. Dekker and H. van Katwiljk, *Recht en Rechtspraak in Nederlands-Indië* (Leiden: KITLV, 1993). For the legal, racial division in the British Empire see E. Kolsky, *Colonial Justice in British India* (Cambridge: Cambridge University Press, 2010). For the category of "Eurasians" in British India see Fischer-Tiné, *Low and Licentious Europeans*, 58–74. For anxieties surrounding inter-ethnic sexual encounters in the British Empire see P. Levine, "Sexuality, Gender and Empire," in idem, *Gender and Empire*, 134–55.

[129] See Ming, "Barracks-Concubinage in the Indies;" Groen, "Zedelijkheid en martialiteit;" Baay, *De Njai*.

> In the years of guerrilla warfare, his housekeeper is a truly faithful and careful nurse. Weary from the heavy patrol duty through the swampy rice fields, he finds a bowl of tea, coffee and soup on his return and can devote himself to rest while his 'wife' cleans his clothes and weapons. He would not be able to 'be deployed' from time to time if it were not for the fact that his housekeeper leaves him the scarcely allotted time to rest, and takes care of his bodily needs. If he is ill or wounded, she takes care of him. Last but not least: Any control of venereal diseases is necessary and possible.[130]

For Breitenstein, the *njai* contributed not only to soldiers' comfort but also to the military's medical regime, as he believed in barrack concubinage to facilitate the containment of venereal diseases. This belief led him to advocate for broader access to marriage among soldiers, arguing that a "'soldatesca' [untamed/unmarried soldier] did not fit into the framework of colonial policy and even less into modern state life" and the "professional soldier in the colonies represents the preserving, protecting, and propagating part of European civilization."[131] Marriage, in his view, was an important mechanism to discipline lower-class Europeans and to thereby preserve European "civilisation" in the tropics.[132] However, in the eyes of the colonial government, financial concerns overrode such arguments, as married *njai* could lead to additional costs, such as widow's pensions. Marriage permissions were consequently granted only to non-commissioned officers or soldiers who could prove their financial stability.[133]

Despite Breitenstein's endorsement of interracial relationships and marriages in principle, he made it clear that he would never consider a romantic relationship with a *njai*. His memoirs contain repeated disparaging remarks about the women who worked in his household. Referring to the "superstitious nature" of his *njai* in Aceh, he writes:

> I rarely entered the kitchen; this was the domain of my housekeeper, who was a Christian from the island of Ambon. Only for a short time was I able to keep this native woman in my service because, despite her Christian faith, she was not a whit better than all her Mohammedan colleagues.[134]

[130] Breitenstein, *Borneo*, 215.

[131] Breitenstein, *Sumatra*, 121. On marriage as a 'civilised' alternative to prostitution also see Levine, *Prostitution, Race & Politics*, 269–70.

[132] For the role of marriage in the domestication of male sexuality in the nineteenth century, see Tosh, "Masculinities in an Industrializing Society."

[133] See Ming, "Barracks-Concubinage in the Indies," 69–71.

[134] Breitenstein, *Sumatra*, 7.

Rather than entering a romantic relationship with an Asian woman, Breitenstein married the Dutch Margarethe van Leenhoff in 1886, whom he had met while on leave in the Netherlands.[135] After their wedding, Margarethe accompanied him back to Aceh. Despite living in what he described as the "remote," and tropical environment of northern Sumatra, the couple made a strong effort to cultivate a bourgeois European lifestyle. Breitenstein praises his wife's ability to recreate a sense of metropolitan domesticity in Aceh, admiring how his "small but energetic wife succeeded in turning this 'stable' [where they lived in Aceh] into a sweet home [...]."[136] Moreover, even amid the ongoing war, Breitenstein recalls that he and Margarethe regularly attended the numerous receptions organised for officers in the Dutch Colonial Army, and on at least one occasion joined the audience for a performance of the operetta "Grande Duchesse."[137]

Moving away from memoirs like Breitenstein's and turning to more intimate sources, particularly private correspondences, complicates the image of clear-cut racial boundaries that medical mercenaries emphatically upheld in their published writing. In a letter to his mother from 1888, Ernest Guglielminetti complains about the lack of Europeans in the remote military camp in Rau, West Sumatra, while noting the conspicuously high presence of Indo-European women:

> The girls of this mixture have something Italian about them, which is why they sometimes look very nice. They are often bought by the bored European civil servants, who are stationed in such dull posts for several years. These so-called housekeepers are sold by their mother for little money (circa 60 to 70 frs [Swiss francs] what costs more must be an extra fine girl) and then dressed and fed. The housekeepers also have the right to half a bed and a piece of love from their owner.[138]

While Guglielminetti does highlight the slave-like conditions under which *njai* were employed, his letter is also fuelled with sexist depictions of Indo-European women. In a lengthy passage, he characterises the *njai* as clingy and manipulative, accusing them of tricking their "employers" into having children or getting married for nothing else but their personal benefit and social advancement.[139] He

[135] "Ondertrouwd: H. Breitenstein en E. Margarethe van Leenhoff," *Java-Bode*, 12 June 1886.

[136] Breitenstein, *Sumatra*, 119.

[137] Ibid., 130.

[138] Letter from Ernest Guglielminetti to his mother, Rau, undated [1888], UB NL 175 Aa 1–27, A20.

[139] For the negative portrayal of Indo-European children in the Dutch East Indies see P. Boudewijn, "'You Must Have Inherited This Trait from Your Eurasian Mother:' The Representation of Mixed-race Characters in Dutch Colonial Literature," *Dutch Crossing: Journal of Low Countries Studies* 40:3 (2016), 239–60.

expresses deep disdain for the practice of concubinage, despite its social acceptance, noting:

> Whether it is that a European woman would hardly be able to live in this unhealthy climate or bare the strenuous journeys required, or whether the Dutch have become used to it throughout the centuries – I don't know, but the fact is that even […] among the best and most distinguished families such marriages are judged most gently […] and they make no secret of it even in larger places.[140]

What appears to trouble Guglielminetti most is not concubinage per se, but the fact that even "the most distinguished families" engaged in what he regarded as improper racial mixing. This indignation further points to the class dimension inherent in many medical officers' judgements. Relationships between lower-class European men and *njai* could be tolerated, indeed, often justified on grounds of morale, health, and discipline, while middle-class men were expected to avoid such entanglements, as they seemed to transgress both racial and class boundaries.

Guglielminetti's harsh judgement can however also be read as a case of cultural misunderstanding. Within Dutch colonial society, concubinage had long formed part of the fabric of respectable bourgeois life, only becoming increasingly stigmatised with the increasing migration of European women to the Indies in the early twentieth century.[141] Even so, Guglielminetti found a range of reasons why higher-ranking military men might nonetheless be "tempted" by such arrangements, explaining to his mother:

> So you see, dear mother, that external circumstances – the impossibility of obtaining European women, the necessity of placing at the head of many servants a housewife who knows how to talk to people and how to buy cheap goods – almost force one to look for a foreign woman […] if he has to live for a long time in a small nest; who can blame him if, in order not to be robbed by his housekeeper and to gain her trust, he treats her as well as possible, even takes her to bed with him! If the government sends an officer […] in his prime to such a lost post, will the good Lord hold it against him if he, in perhaps immoral ways, gets hold of that little bit of sexual pleasure that nature allows the poorest scoundrel in the city and every dog in the street? Thank God, I do not yet find myself in this terrible dilemma, in this difficult struggle between nature and duty, because I often travel to larger places […] and can marry [one of the many] European women if I have the need.[142]

[140] Letter from Ernest Guglielminetti to his mother, Rau, undated [1888], UB NL 175 Aa 1–27, A20.

[141] See F. Gouda, *Dutch Culture Overseas: Colonial Practice in the Netherlands Indies, 1900–1942* (Amsterdam: Amsterdam University Press, 1995), 112–17.

[142] Letter from Ernest Guglielminetti to his mother, Rau, undated [1888], UB NL 175 Aa 1–27, A20.

Rather than holding officers accountable for what he considers "immoral" behaviour, Guglielminetti shifts responsibility to the Dutch colonial government, which, in his view, failed to consider the "nature" of men sent to remote outposts without European women. Moreover, he links bourgeois notions of respectability to environmental factors, suggesting that prolonged exposure to tropical remoteness, combined with the proximity of racialised Others, might erode European men's moral discipline.

At the same time, his framing pre-emptively excuses any future "immoral" behaviour of his own. Despite his performative outrage at interracial relationships, Guglielminetti does not refrain from sexualising Asian and Indo-European women he encountered in the Dutch East Indies. In a letter to his siblings, he even jokingly comments that

> Some of the [native] ladies in the choral society are not bad either – ask Guillaume whether I should bring all the women back with me, or just some, he should have them selected in Brig, most of them are easy to have, some of them of good race.[143]

In some – albeit rare – instances, medical mercenaries openly admit to cultivating sexual relationships with a *njai*. A striking example is the Prussian medical officer Friedrich Wilhelm Stammeshaus, who entered into a relationship with an ethnically Chinese *njai* whose name is, unfortunately, not recorded in his personal testimonies. In 1881, she gave birth to a son, whom Stammeshaus openly acknowledged and named Friedrich Wilhelm after himself. Paternal recognition secured the child full legal status as European. Friedrich Wilhelm Stammeshaus Jr. went on to follow in his father's footsteps: he served in the Aceh War in 1904, joined the colonial government's domestic administration and was ultimately promoted to *controleur* of Aceh after the region's "pacification." Owing to his Indo-European heritage and fluency in several local languages, he became a well-regarded figure among both Europeans and Acehnese in northwestern Sumatra. He also assembled what would become the largest ethnographic collection from Aceh, now located in the Wereldmuseum (formerly Tropenmuseum) in Amsterdam.[144]

Stammeshaus senior, however, never married the mother of his firstborn son. Instead, in 1886, he wed the Dutch Gretchen Ruyssenaers. In a letter to his father, he reports on the wedding with great enthusiasm:

[143] Letter of Ernest Guglielminetti to his sister Mathilde, Paloe, 13 December [year missing],UB NL 175 As 56–7, A57.

[144] The fascinating story of F.W. Stammeshaus Jr. has been uncovered by the Dutch historian John Klein Nagelvoort. See J. K. Nagelvoort, *Toean Stammeshaus: Leven en Werken in Koloniaal Atjeh* (Volendam: LM Publishers, 2019).

> As you will have seen from further letters, my wedding with Gretchen Ruyssenaers took place on 5 May in Lahat, in the house of Captain Platt. The marriage was performed by the civil registrar, Assistant Resident Larive, who also later excused the parents of the bride and groom at the banquet. It was a pity that, apart from Gretchen's brother, none of our mutual relatives could be present at the wedding. On 3 June I left Lahat with Gretchen and *little Wilhelm*.[145]

Stammeshaus thus mentions, almost in the same breath, a marriage that fully conformed to bourgeois European domestic ideals and the existence of a son from what would have been considered an "immoral" and socially unacceptable relationship with an ethnically Chinese woman by Prussian standards, yet was largely unremarkable within the social norms of the Dutch East Indies. His parents' reaction remains unknown. Still, Stammeshaus's open acknowledgement of his earlier relationship underscores the porous and situated nature of racial boundaries in the colonies, that were performatively articulated in the travelogues of Breitenstein and others but regularly crossed in everyday life.

A second group of women who deeply unsettled European medical men were indigenous medical practitioners referred to as *dukun* – traditional healers widely present throughout the Malay Archipelago. Their authority rested on forms of botanical and therapeutic knowledge that were traditionally feminised. As historian Francis Gouda puts it, "expertise about the medicinal properties of nature's herbs and roots, whether real or imagined, was a fund of feminine knowledge and thus a source of Indies women's superior power and ability to cope with their natural environment."[146] Across the colonised world, indigenous medical traditions bore a similar gendered connotation as folk medicine in Europe, in which women often served as the primary custodians of plant-based healing knowledge.[147]

By the nineteenth century, however, scientific medicine had become increasingly professionalised, and institutionalised medical authority in the colonies was claimed almost entirely by university-educated physicians who were, with the exception of missionary nurses, overwhelmingly middle-class men. Against this

[145] Letter from Friedrich Wilhelm Stammeshaus to his father, 22 August 1886, private collection. Emphasis by the author.

[146] F. Gouda, "Nyonyas on the Colonial Divide: White Women in the Dutch East Indies, 1900–1942," *Gender & History* 5:3 (1993), 335; H. Pols, "European Physicians and Botanists, Indigenous Herbal Medicine in the Dutch East Indies, and Colonial Networks of Mediation," *East Asian Science, Technology and Society* 3:2/3 (2009), 173–208.

[147] See, for example, Mukherjee, *Gender, Medicine, and Society*; O. Yakushko, "Witches, Charlatans, and Old Wives: Critical Perspectives on History of Women's Indigenous Knowledge," *Women & Therapy* 41:1/2 (2018), 18–29.

backdrop, feminised medical traditions appeared as a serious competition to the male monopoly on medical authority.[148]

This tension became particularly pronounced in military camps, where European medical officers held the main responsibility over the care of wounded and sick soldiers in the military hospitals. In their writings, they acknowledge little recognition for local healing traditions and practitioners. Heinrich Erni, for example, claims to have learned only little about indigenous medicine during his stay in Aceh, "because we were enemies to them [the local populations]."[149] He recalls only one encounter with a "native" who "sold medicine at the local markets," adding that the locals "had already realized that the European fever remedy, quinine, was better than their doctor's and often came to fetch quinine pills."[150] While quinine was indeed widely used, Erni's depiction does not correspond with the realities of medical preferences in the late nineteenth-century Indies. The chronic shortage of European physicians, particularly in the civil medical sector, meant that most healthcare continued to be provided by local medical practitioners. Moreover, patients of all backgrounds, including Europeans, were often deeply intrigued by indigenous medical practices.[151] In addition, many indigenous patients viewed European physicians with great suspicion. "The natives in the village", Guglielminetti writes, "do not quite trust the European doctors, they fear, that we will poison them […]. Rather, many indigenous patients would prefer to treat their illness with a local *dukun* instead."[152]

The popularity of the *dukun* posed a particular threat to the scientific authority and self-image of European medical officers. In his memoirs, Heinrich Breitenstein repeatedly marginalises the expertise of female indigenous healers. For example, he writes that:

> These ladies have absolutely no medical knowledge; they do not individualize at all; old or young, man or woman; first or last stage of the disease […] cause or consequence of […] diseases […] everything runs on the same template. The dosage is also very primitive; their herbs are dispensed 'by the handful', by the fingertip, and so on.[153]

[148] On the ways that gender "informed the cultures of medicine itself," see M. Brown, "'Like a Devoted Army:' Medicine, Heroic Masculinity, and the Military Paradigm in Victorian Britain," *Journal of British Studies* 49:3 (2010), 592–622.

[149] Erni, *Die Behandlung der Verwundeten*, 72.

[150] Ibid., 74.

[151] See Hesselink, *Healers on the Colonial Market*.

[152] Letter from Ernest Guglielminetti to his sister Mathilde, Rau, undated, Fort de Cock, 15 August 1887, UB NL 175, Aa 56–7, A56.

[153] Breitenstein, *Borneo*, 165.

What scandalised him even more than what he portrays as their methodological imprecision was that even other European physicians trusted indigenous treatments. "[T]he patient could not know" he writes, at "what a low level the Malay's medical tradition is […]", however "it is outrageous, how even *scientific men* switch from the post hoc to the propter hoc and join in the hymn to the arts of the dukun."[154]

The enduring appeal of feminised indigenous herbal medicine thus represented a persistent challenge to the gendered authority of European medical men. Their attempts to reinforce scientific superiority by pathologising, belittling, or dismissing the expertise of indigenous women were only partially successful. Despite their efforts, dukun remained central figures in everyday healthcare in the Dutch East Indies, and physicians like Breitenstein were ultimately unable to fully impose their supposed scientific hegemony on Indies society.[155]

Conclusion

When the Austrian medical officer Heinrich Breitenstein was stationed in Aceh in July of 1886, the Dutch war against the Acehnese Sultanate had already been "raging with all its horrors" for almost fourteen years. Nevertheless, Breitenstein observed how the violence unleashed in Aceh – claiming the lives of an estimated 50,000 to 100,000 Acehnese – "was unable to hinder the officers from their cheerful daily lives, and various opportunities were sought out to forget about the seriousness of life through celebrations and games."[156] While his account may appear rather cynical given the war's devastating human toll, it reveals how the Aceh War served medical officers as a means to embody and perform a specific expression of bourgeois, medical masculinity in the tropics, situated at the intersection of non-violent respectability and imperial adventure.

As a close analysis of their daily lives in the camps and *kampongs* of Aceh demonstrates, medical mercenaries were far from being neutral or disinterested observers. Though often presenting themselves as imperial outsiders or objective men of science, their accounts reveal the tensions embodied by Swiss, Austrian, and German physicians in a foreign colonial war. They aligned themselves, at least passively, with the presumed blessings of European "civilisation," while their position as non-Dutch Europeans allowed for pointed critiques of Dutch violence and paternalism. Their gendered positionality as medical officers was fundamentally ambivalent: as non-combatants in a tropical war, they oscillated between martial

[154] Ibid., 164. Emphasis added.

[155] See Pols, "Indigenous Herbal Medicine in the Dutch East Indies."

[156] Breitenstein, *Sumatra*, 130.

ideals of courage and violence, bourgeois norms of respectability, and the notion of colonial adventure as a key marker of imperial masculinity.

In Aceh, medical mercenaries navigated complex social hierarchies of the multiethnic Dutch military camps, treating soldiers of diverse "racial" backgrounds and interacting with Asian women who acted as caregivers or concubines to European troops. Within these encounters, the seemingly rigid colonial stereotypes of "martial" Ambonese, "effeminate" Javanese, or "amok running" Malays emerge as highly contingent, shaped by the regional, religious, and personal affiliations of the individual medical officers. At the same time, medicine emerged as a crucial arena in which distinctions of race, class, and gender were actively negotiated, reproduced, and at times contested. The pathologisation of soldiers' drinking and sexual behaviour allowed medical officers to present their own conduct in the tropics as rational, temperate, and morally superior. However, the authority of European medicine, and the masculine and moral status it supposedly conferred, proved deeply unstable. Physicians were constantly confronted with the unpredictability of tropical diseases, the dangers of guerrilla warfare, and the enduring expertise of indigenous medical practitioners, particularly female *dukun*, whose knowledge and agency disrupted the colonial and gendered hierarchies that European physicians sought to assert. The racial boundaries they constructed in published writing often collapsed in practice, as medical officers, like combatants, engaged in intimate relationships that contradicted their official claims to social and racial distinction. In this sense, military medicine in Aceh was not only a "tool of empire," but also a field in which the supposed hegemony of European medical men was repeatedly negotiated, challenged, and shown to be precarious.

CHAPTER 3

‘Men on the Spot’ and Dutch Colonial Medicine: Transimperial Tensions in Early Bacteriology (1880s–1900)

Abstract

This chapter shows how German-speaking medical mercenaries in the Dutch East Indies intervened in and contributed to the fields of bacteriology and tropical medicine in the late nineteenth century. It demonstrates how they leveraged their colonial field experience to assert authority over metropolitan laboratory science. Tracing their writings across German-language networks connecting Europe, Japan, and the Dutch East Indies, it reveals the contingent boundaries between laboratory science, environmental determinism, and racialised conceptions of the human body at the turn of the twentieth century.

Keywords: Bacteriology; Tropical medicine; Laboratory science; Colonial laboratory; Dutch colonial medicine

In 1890, the Swiss medical officer Heinrich Erni published a scathing critique in the German journal *Hygienische Tagesfragen*, in which he attacked Robert Koch’s bacteriological explanation of cholera. Drawing on observations from his service in the Dutch East Indies, Erni argued that the “facts” he acquired in the Dutch military camps contradicted the idea that cholera should be counted among epidemic diseases.[1] Like many colonial medical officers at the time, he remained unconvinced by the solutions the novel medical subdiscipline of bacteriology had to offer.[2] After ending his service with the Dutch Colonial Army, he became an active contributor to various medical journals in German-speaking Europe focusing on tropical diseases as well as the *Geneeskundig Tijdschrift voor Nederlandsch-Indië* (GTNI), the leading forum for medical research in the Dutch East Indies. Writing almost exclusively in German, he published extensively on ways to combat diseases such as cholera or beriberi, which posed an existential

[1] See H. Erni-Greiffenberg, “Die Cholera in Indien,” *Hygienische Tagesfragen* VII. (1890), 59–80.

[2] For the lack of acceptance of the bacteriological paradigm among colonial physicians in the Dutch East Indies, see L. van Bergen, *Uncertainty, Anxiety, Frugality: Dealing with Leprosy in the Dutch East Indies, 1816–1942* (Singapore: NUS Press, 2018), 103.

threat to the military conquest and eventual consolidation of colonial empires in the late nineteenth century.[3] Like Erni, dozens of German, Swiss and Austrian medical mercenaries employed by the KNIL engaged in debates in the emerging fields of bacteriology and tropical medicine, basing their findings on experimental research in the military hospitals or medical field investigations commissioned by the Dutch colonial government, where they experimented with colonised patients without major ethical concerns.

Despite their manifold contributions to medical research in the Dutch East Indies, the role of German-speaking medical officers in Dutch colonial medical discourse has not been systematically examined. With the exception of important recent work on indigenous medical expertise and practitioners,[4] studies of colonial medicine in the Dutch Empire have largely focused on Dutch actors, institutions, and sites.[5] Likewise, the place of the Dutch Empire within Germanophone medical discourse remains understudied. German-speaking Europe has been presented as a key locus in the making of "modern" bacteriology from the late nineteenth century to the First World War,[6] developments typically associated with the "laboratory

[3] See P. Curtin, *Death by Migration*: *Europe's Encounter with the Tropical World in the Nineteenth Century* (Cambridge: Cambridge University Press, 1989), 130–58; P. Curtin, "Disease and Imperialism," in D. Arnold, *Warm Climates and Western Medicine: The Emergence of Tropical Medicine, 1500–1900 (*Amsterdam: Rodopi, 1996), 99–107; M. Harrison, "Tropical Medicine in Nineteenth-Century India," *The British Journal for the History of Science* 25:3 (1992), 299–318; D. Headrick, *Power over Peoples: Technology, Environments, and Western Imperialism 1400 to Present*, (Princeton: Princeton University Press, 2009), 226–56; W. Anderson, *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines* (Durham: Duke University Press, 2008); P. Chakrabarti, *Medicine and Empire 1600–1960* (Basingstoke: Palgrave Macmillan, 2014), 43–5; J. Downs, *Maladies of Empire: How Slavery, Imperialism, and War Transformed Medicine* (Cambridge: The Belknap Press of Harvard University Press, 2021), 88–113; R. Zaugg, "Guerre, maladie, empire: Les services de santé militaires en situation colonial pendant le long XIXe siècle," *Histoire, médecine et santé* 10 (2016), 9–16; M. Bauche, *Medizin und Herrschaft: Malariabekämpfung in Kamerun, Ostafrika und Ostfriesland (1890–1919)* (Frankfurt am Main: Campus, 2017).

[4] See L. Hesselink, *Healers on the Colonial Market: Native Doctors and Midwives in the Dutch East Indies* (Leiden: KITLV Press, 2011); H. Pols, *Nurturing Indonesia: Medicine and Decolonisation in the Dutch East Indies* (Cambridge: Cambridge University Press, 2018).

[5] See, for example, L. van Bergen, *The Dutch East Indies Red Cross, 1870–1950: On Humanitarianism and Colonialism* (New York: Lexington Books, 2019); Van Bergen, *Uncertainty*, *Anxiety, Frugality*; H. Pols, "European Physicians and Botanists, Indigenous Herbal Medicine in the Dutch East Indies, and Colonial Networks of Mediation," *East Asian Science, Technology and Society* 3:2/3 (2009), 173–208; G. M. van Heteren, A. De Knecht-van Eekelen, and M. J. D. Poulissen, (eds), *Dutch Medicine in the Malay Archipelago 1816–1942* (Amsterdam: Rodopi, 1989).

[6] See P. Sarasin et al. (eds), *Bakteriologie und Moderne: Studien zur Biopolitik des Unsichtbaren 1870–1920* (Frankfurt am Main: Suhrkamp, 2007); S. Berger, *Bakterien in Krieg und Frieden: eine Geschichte der medizinischen Bakteriologie in Deutschland, 1890–1933* (Göttingen: Wallstein, 2009).

revolution" and hegemonic figures such as Robert Koch.[7] Only recently have historians begun to situate German bacteriology within its broader global context, yet this scholarship remains largely confined to the German Empire, its formal colonies, and the period of official German colonial rule. Even studies examining Koch's research expeditions in the colonial field tend to focus on German colonies, despite the fact that he made his key discoveries in British India and Egypt.[8] German-speaking bacteriological research in foreign empires, both before and after Germany's entry into the colonial race in 1884/85, remains largely unexplored.[9]

The present chapter addresses this gap by examining the role of German-speaking medical mercenaries in the transimperial production, contestation, and circulation of medical knowledge in and about the Dutch East Indies. It argues that the colonies functioned as arenas in which medical practitioners sought to assert epistemic authority over metropolitan laboratory scientists and where claims to expertise were closely intertwined with performances of scientific masculinity: colonial medical officers framed their embodied experience and proximity to disease as markers of professional legitimacy, contrasting their observations from the "colonial field" with what they perceived as the more detached, unpractical, or insufficiently reality-based work of "armchair" laboratory researchers. By focusing on medical researchers on the spot, situated at the intersection of military-medical practice and scientific knowledge production, the chapter demonstrates that early bacteriology exceeded conventional dichotomies between practical and experimental science, as well as the divisions between distinct national and imperial settings. It also highlights the central role of colonial armies as laboratories, revealing how colonial agendas and ideologies shaped "objective" European medical discourse during the laboratory revolution.

The first section expands the spatial framework of early bacteriology by proposing *Germanophoneness* as an analytical lens for examining the transimperial circulation of medical knowledge. It demonstrates how the German language operated as a scientific lingua franca, connecting researchers from Berlin to Batavia and Tokyo. The second section challenges historiographies centred on celebrated

[7] A good overview is A. Cunningham and P. Williams (eds), *The Laboratory Revolution in Medicine* (Cambridge: Cambridge University Press, 2002).

[8] See C. Gradmann, "Africa as a Laboratory: Robert Koch, Tropical Medicine and Epidemiology," in J. Vögele and K. Schulter (eds), *Epidemien und Pandemien in historischer Perspektive* (Wiesbaden: Springer, 2016), 325–35; M. Ogawa, "Uneasy Bedfellows: Science and Politics in the Refutation of Koch's Bacterial Theory of Cholera," *Bulletin of the History of Medicine* 74:4 (2000), 671–707.

[9] One important exception is the work of Irene Poczka, who has analysed the correspondences between Prussian physicians and German-speaking Russian medical experts on the cholera epidemics in Russia between 1829 and 1892. See I. Poczka, *Die Regierung der Gesundheit: Fragmente einer Genealogie liberaler Gouvernmentalität* (Bielefeld: Transcript, 2017), 217–357.

"pioneers" such as Koch, Eijkman, or Pasteur by foregrounding the medical intermediaries who shaped bacteriology and tropical medicine. Building on scholarship highlighting the ongoing contestation of bacteriological hypotheses into the early twentieth century,[10] it investigates why many colonial 'men on the spot' rejected bacteriological paradigms in medicine. Rather than attributing this rejection solely to contradictory observations or ideological biases, the chapter argues that it reflected struggles for epistemic authority, as colonial physicians leveraged their practical experience to claim a hegemonic position over metropolitan laboratory scientists. The third section examines the contingent relationship between bacteriological universalism and environmental determinism. While some medical mercenaries claimed an inherent "otherness" of diseases in the tropics, they nonetheless carried out experiments, dissections, and microbial investigations that aligned with laboratory methods. Conversely, metropolitan bacteriologists supplemented laboratory research with colonial fieldwork and were not immune to colonial ideologies. Despite bacteriology's universalist rhetoric, race hence remained a powerful marker of distinction in European medical understandings of the human body and its predisposition to disease. The concluding section traces how environmental determinism and notions of tropical "otherness" reverberated back into German-speaking Europe. After their KNIL service, several medical mercenaries established spa clinics marketed to patients returning from the Dutch East Indies, portraying European landscapes as restorative antitheses to the pathogenic tropical environment.

German-speaking Bacteriology in a Transimperial World

In 1899, the German bacteriologists Robert Koch travelled to Batavia (Jakarta) to study malaria. Upon his arrival in the Dutch East Indies, he was accommodated by members of the *Vereeniging tot Bevordering der Geneeskundige Wetenschappen in Nederlandsch-Indië* (Association for the Advancement of the Medical Sciences in the Dutch East Indies), of which Koch was a corresponding member.[11] Koch's visit was extensively reported and celebrated in the Dutch colonial press, that emphasised the prestige

[10] See, for example, Ogawa, "Uneasy Bedfellows," 671–707; M. Mann, "Kolonialismus in den Zeiten der Cholera: Zum Streit zwischen Robert Koch, Max Pettenkofer und James Cuningham über die Ursachen einer epidemischen Krankheit," *Comparativ* 15:5/6 (2017), 80–106; M. Worboys, "Was there a Bacteriological Revolution in Late Nineteenth-Century Medicine?," *Studies in History and Philosophy of Biological and Biomedical Sciences* 38:1 (2007), 20–42.

[11] See letter from Dr. G. Grijns to Robert Koch, 21 September 1899, Robert Koch Institut, Nachlass Robert Koch, as/b1/097.

gained by the "famous" bacteriologist's presence in the Dutch colony.[12] This enthusiasm may be easily explained by the fact that the development of bacteriology in the Dutch East Indies was closely linked to the "laboratory revolution" in the German Empire, where Koch became a formative figure in the careers of many Dutch colonial physicians. Well-known Dutch medical researchers such as Christiaan Eijkman or Cornelis Adrianus Pekelharing trained in Koch's laboratories in Berlin before launching their own microbiological investigations into diseases in the Dutch East Indies.

Yet the connections between bacteriological research in the Dutch Empire and German-speaking medical discourse were not limited to these celebrated figures. German-speaking medical officers serving in the Dutch Colonial Army had long been engaged in debates over the causes and control of epidemic and tropical diseases in the Dutch East Indies, well before Koch set foot in Batavia. As discussed in chapters 1 and 2, physicians from the German and Austro-Hungarian Empires, as well as Switzerland, made up the largest contingent of non-Dutch European medical experts in the colony. At the same time, throughout the nineteenth century, the colonial health care system was monopolised by the military, providing medical officers with privileged access to patients suffering from the colony's most prevalent diseases such as beriberi, cholera, or malaria. Seeking to capitalise on their first-hand experiences with diseases in the tropics,[13] and benefitting from advanced instruments, statistical records, and opportunities for post-mortem examinations in the Dutch colonial hospitals, they actively contributed to the pressing medical debates of the late nineteenth century.

The most important outlet for medical officers to disseminate the results of their medical research in the Dutch East Indies was the *Geneeskundig Tijdschrift voor Nederlandsch-Indië* (GTNI). The establishment of the GTNI was closely linked to the *Vereeniging tot Bevordering der Geneeskundige Wetenschappen in Nederlandsch Indië*, founded by the Dutch physician and chief of the Indies medical services Willem Bosch in 1851. The first issue of the GTNI was published in 1852 and continued until the Japanese occupation of Indonesia in 1942, producing approximately 4,500 articles. As the primary platform for medical research from the Dutch East Indies, the journal played a crucial role in shaping discussions about health and disease in the colony. In the second half of the nineteenth century, most of the contributions revolved around the causes and cure of beriberi, cholera, and the plague.[14]

[12] See "De beroemde Robert Koch," *De Locomotief*, 18 September 1899; "Robert Koch te Batavia," *De Locomotief*; 26 September 1899.

[13] For a discussion of the term "tropical diseases" as a discursive construction of the "tropics" rather than a descriptive category, see D. Arnold, "Introduction. Tropical Medicine before Manson," in idem (ed), *Warm Climates and Western Medicine,* 3–10.

[14] See S. N. Tan, *Zur Geschichte der Pharmazie in Niederländisch-Indien (Indonesien) 1602–1945* (Würzburg: jal-verlag, 1976), 74. For an overview of the history of the GTNI, see L. van Bergen, L.

The GTNI accepted articles in German and in Dutch, thereby lowering the linguistic threshold for German-speaking physicians to publish their findings from the Dutch East Indies. Moreover, the military monopoly on medical health care in the Indies was reflected in the professional and national background of the GTNI authors. In 1882, for example, eight out of fourteen articles published in the GTNI were authored by medical officers, two of whom originated from the German Empire and one from Habsburg Austria.[15] In addition to their substantial contributions to the GTNI, numerous medical mercenaries disseminated their observations from the Dutch East Indies in German-language medical journals and at specialised congresses across Europe. In 1896, the Austrian medical officer Carl Weintraub published his reflections on beriberi in the *Wiener Klinik*, an Austrian journal explicitly devoted to "practical experiences."[16] The Austrian medical officer Heinrich Breitenstein and the German KNIL physician Karl Däubler likewise reported on the aetiology of beriberi in Vienna-based periodicals such as the *Internationale Klinische Rundschau* or the *Wiener Klinische Rundschau*. One of Däubler's contributions drew partly on a presentation he delivered at the 68th *Versammlung deutscher Naturforscher und Ärzte* (Assembly of German Naturalists and Physicians) in Frankfurt am Main, a major forum for scientific exchange among German-speaking naturalists.[17] Earlier, in 1886, the Swiss medical officer Heinrich Erni had presented his hypothesis of a "beriberi worm" at the same assembly. His presentation attracted the attention of the Ceylon-based physician J. D. Macdonald, who translated it into English for publication in the 1887 *Report on Anaemia, or Beri-Beri, of Ceylon*.[18] Medical knowledge produced by medical mercenaries in the Indies therefore circulated not only within the Netherlands and its colonies but also across broader transimperial scientific networks.

At times, the KNIL formally commissioned medical officers to investigate diseases that were particularly prevalent among the colonial troops. In 1886, Leipzig-born medical officer Friedrich Joseph Max Fiebig was granted temporary leave from his military duties and sent to Padang to study the aetiology of beriberi.

Hesselink, and J. P. Verhave (eds), *The Medical Journal of the Dutch Indies 1852–1942: A Platform for Medical Research* (Jakarta: Indonesian Academy of Sciences, 2017).

[15] See "Inhoud," *GTNI* XXII. (1882), V.–VI.

[16] See C. Weintraub, "Aerztliche Erfahrungen über die 'Beriberi', eine Krankheit der tropischen und subtropischen Gegenden," *Wiener Klinik* 22 (1896), 265–328.

[17] See H. Breitenstein, "Briefe aus Indien: Die Beri-Beri-Epidemie auf Atjeh (Sumatra) 1885–1886," *Internationale Klinische Rundschau* 1 (1887), 902–5, 1000–2, 1030–1 and 1061–3; K. Däubler, "Die Beri-Berikrankheit," *Wiener Klinische Rundschau. Organ für die gesammte praktische Heilkunde sowie für die Interessen des ärztlichen Standes* X:40 (1896), 678–9.

[18] See W. R. Kynsey, *Report on Anaemia, or Beri-Beri, of Ceylon* (Colombo: Government Printing Office, 1887) 53–6.

He was accompanied by an unnamed Dutch colleague, who had recently spent several months in Amsterdam acquainting himself with the latest bacteriological methodologies.[19] During his research stay, Fiebig exchanged experimental results and hypotheses with other medical researchers stationed in Padang. Among his collaborators was the Japanese health officer Sugenoya, who soon thereafter accompanied the Inspector of Army Medical Services, J. J. Cornelissen, on a mission to Aceh to investigate the causes of beriberi.[20] Sugenoya's participation illustrates the presence of a further important node within the transimperial scientific networks that shaped bacteriological research in the Dutch East Indies: Japan.

It seems plausible that Fiebig and Sugenoya communicated in German when discussing the results of their bacteriological experiments. Like the Dutch colonial government, the Japanese Empire cultivated close ties with German medicine. The earliest documented encounter between Japanese physicians and German medical traditions dates back to the seventeenth century, when the German surgeon Engelbert Kaempfer visited Japan aboard a VOC ship. An even more prominent figure in early German-Japanese scientific entanglements was Philipp Franz von Siebold, a physician born in Würzburg, who joined the Dutch Colonial Army in 1822 and was posted to the Dutch trading hub in Dejima a year later. In addition to practicing medicine, Siebold assembled an extensive natural history collection and published widely on Japanese flora and fauna. He founded a school for the training of Japanese students in European medicine, while his students introduced him to Japanese botany and herbal medicine.[21] Siebold is also remembered for playing a notable role in diplomatic negotiations between Japanese, Dutch, and Russian officials and is credited with contributing to Japan's eventual opening to the West in the late nineteenth century.[22] Today, large parts of his ethnographic, zoological, and botanical collections are held in Leiden and in several German museums.[23]

[19] See "De Javabode schrijft," *De Maasbode*, 19 July 1886.

[20] See M. Fiebig, "Geschichte und Kritik der bacteriologischen Erforschung der Beri-Beri Krankheit," *GTNI* XXIX. (1889), 257; "Beri-Beri," *Het Nieuws van den Dag*, 22 November 1886.

[21] For an overview of von Siebold's scientific career, see J. Compton and G. Thijsse, "The Remarkable P.F.B. von Siebold, his Life in Europe and Japan," *Curtis's Botanical Magazine* 30:3 (2013), 275–314; A. Thiede, G. Keil, and Y. Hiki (eds), *Philipp Franz von Siebold and his Era: Prerequisites, Developments, Consequences and Perspectives* (Berlin: Springer, 2000).

[22] For Siebold's diplomatic career, see E. Franz, *Philipp Franz von Siebold and Russian Policy and Action on Opening Japan to the West in the Middle of the Nineteenth Century* (Munich: Iudicium, 2005); H. Plutschow, *Philipp Franz von Siebold and the Opening of Japan: A Re-Evaluation* (Folkestone: Global Oriental, 2007).

[23] See K. Vos, "The Composition of the Siebold Collection in the National Museum of Ethnology in Leiden," *Senri Ethnological Studies* 54 (2009), 39–48; B. Richtsfeld, "Die Sammlung Siebold im Staatlichen Museum für Völkerkunde, München," in P. Noever (ed), *Das alte Japan: Spuren und Objekte der Siebold-Reisen* (Munich: Prestel, 1997), 209–10.

In the Meiji period, Japanese entanglements with German science and medicine intensified significantly. Beginning in the 1870s, the Japanese Meiji regime undertook systematic efforts to "modernise" Japan according to a "Western" model, and the German educational system, particularly in the field of medicine, was accorded a central and exemplary role for Japanese modernisation efforts.[24] Dozens of German chemists, physicists, mathematicians, physicians, and social scientists were appointed to Japanese universities.[25] In 1871, the German physicians Benjamin Karl Leopold Müller and Theodor E. Hoffmann were tasked with reorganising the Tokyo medical school, introducing a curriculum modelled on the German educational system, including instruction in conversational as well as specialised medical German. At the same time, hundreds of Japanese medical students, among them the future bacteriologist Kitasato Shibasaburō,[26] were sent to Berlin to study under Robert Koch. By the late nineteenth century, German had become the dominant language of Japanese medical education and research,[27] and many Japanese bacteriologists published their work in German.[28]

[24] For the relationship between the German Empire and Meiji Japan, see J. M. Cho, L. M. Roberts, and C. W. Spang, "Introduction: German-Japanese Relations from Meiji to Heisei. A Case Study of Entangled History," in idem (eds), *Transnational Encounters between Germany and Japan* (New York: Palgrave Macmillan, 2016), 1–15; H. Kim, "Made in Meiji Japan: German Expatriates, German-Educated Japanese Elites and the Construction of Germanness," *Geschichte und Gesellschaft* 41:2 (2015), 288–320; M. Shibata, "Controlling National Identity and Reshaping the Role of Education: The Vision of State Formation in Meiji Japan and the German *Kaiserreich*," *History of Education* 33:1 (2004), 75–85; R. H. Wippich, "Infected with German Measles: Meiji Japan under German Cultural Influence," *History of European Ideas* 20:1–3 (1995), 399–403. For the Meiji Restoration more broadly, see R. Hellyer and H. Fuess (eds), *The Meiji Restoration: Japan as Global Nation* (Cambridge: Cambridge University Press, 2022); R. Sims, *Japanese Political History Since the Meiji Restoration, 1868–2000* (New York: Palgrave Macmillan, 2001), 1–68, and M. Ravina, *To Stand with the Nations of the World: Japan's Meiji Restoration in World History* (New York: Oxford University Press, 2017).

[25] See E. Grimmer-Solem, "German Social Science, Meiji Conservatism, and the Peculiarities of Japanese History," *Journal of World History* 16:2 (2005), 187–222; S. Nakatsuji, "German Chemists in Japan and Vice Versa in the Meiji Era," *Nachrichten aus der Chemie* 70:6 (2022), 18–23; S. Chikara, "The Adoption of Western Mathematics in Meiji Japan, 1853–1903," *The Intersection of History and Mathematics* 15 (1994), 165–86; G. Gooday and M. Low, "Technology Transfer and Cultural Exchange: Western Scientists and Engineers Encounter Late Tokugawa and Meiji Japan," *Osiris* 13:1 (1999), 99–128. For science in Meiji Japan more broadly, see M. Low (ed), *Building a Modern Japan: Science, Technology, and Medicine in the Meiji Era and Beyond* (New York: Palgrave Macmillan, 2005).

[26] In the case of Japanese names, the surname precedes the first name in this article, as is customary in Japan.

[27] See H. Kim, *Doctors of Empire: Medical and Cultural Encounters between Imperial Germany and Meiji Japan* (Toronto: University of Toronto Press, 2014); J. Bowers, "The Adoption of German Medicine in Japan: The Decision and the Beginning," *Bulletin of the History of Medicine* 53:1 (1979), 57–80.

[28] For example, M. Ogata, "Ueber die Pestepidemie in Formosa," *Centralblatt für Bakteriologie und Parasitenkunde* Abt. I, 21 (1897), 769–77; Miura "Beiträge zur Pathologie der Kakke [beriberi], *Archiv für*

Medical mercenaries in the Dutch East Indies were aware of and regularly engaged with the German-speaking medical community in Japan. Their official publications do not display any overt expressions of racist hostility towards Japanese researchers. This aligns well with the observation by historians who have highlighted the exceptional character of Dutch-Japanese relations within the broader context of European-East Asian trade and diplomacy. For centuries, the Dutch were the only Europeans permitted to trade with Japan, a position that transformed Dutch into a key "contact language" in Tokugawa and Meiji Japan.[29] In the nineteenth-century Dutch East Indies, the Japanese held a rather atypical position in the hybrid, yet racially hierarchical colonial social order. Unlike the "natives" or the "foreign Orientals," they were typically classified as "civilised" by Europeans and, in 1899, were granted the legal status of "Europeans."[30] This privileged status found its parallel in scientific contexts, where European medical researchers generally regarded their Japanese counterparts as equals and, at times, formidable competitors.

While Koch's bacteriological paradigm was widely debated among medical mercenaries, references to Louis Pasteur or the Pasteurian strand of bacteriology are strikingly rare in the German and Japanese literature on epidemic diseases in the Dutch East Indies. The relationship between Louis Pasteur and Robert Koch themselves was characterised by deep personal and scientific antagonism. After their first meeting at the 1881 International Congress of Medicine in London, their scientific exchanges repeatedly resulted in accusations and disputes. At the fourth International Hygiene Congress in Geneva in 1882, a linguistic misunderstanding – Koch reportedly mistook Pasteur's reference to a "recueil Allemand" (German compendium) for "orgueil Allemand" (German pride) – accelerated tensions

pathologische Anatomie und für klinische Medicin 114 (1888), 385–94. For Japan's long tradition of lingua franca in its diplomacy and transnational encounters see R. Clements, "Brush Talk as the 'Lingua Franca' of Diplomacy in Japanese-Korean Encounters, c. 1600–1868," *The Historical Journal* 62:2 (2019), 289–309.

[29] See C. Joby, *The Dutch Language in Japan (1600–1900): A Cultural and Sociolinguistic Study of Dutch as a Contact Language in Tokugawa and Meiji Japan* (Leiden: Brill, 2020); M. Laver, *The Dutch East India Company in Early Modern Japan: Gift Giving and Diplomacy* (London: Bloomsbury, 2020).

[30] See C. Fasseur, "Cornerstone and Stumbling Block: Racial Classification and the Late Colonial State in Indonesia," in R. Cribb (ed), *The Late Colonial State in Indonesia: Political and Economic Foundations of the Netherlands Indies, 1880–1942* (Leiden: KITLV Press, 1994), 31–56; G. Ken'ichi, *Tensions of Empire: Japan and Southeast Asia in the Colonial and Postcolonial World* (Athens: Ohio University Press, 2003), 3–23. Rather ironically, the Japanese Racial Equality Proposal presented at the Treaty of Versailles in 1919 was rejected by the major Western delegations. See N. Shimazu, *Japan, Race and Equality: The Racial Equality Proposal of 1919* (London: Routledge, 1998); M. Lake and H. Reynolds, *Drawing the Global Colour Line: White Men's Countries and the International Challenge of Racial Equality* (Cambridge: Cambridge University Press, 2012), 284–309.

already fuelled by post-Franco-Prussian War animosities.[31] In 1883, both France and the German Empire dispatched rival scientific commissions to Egypt in a race to determine the aetiology of cholera.[32] The growing rivalry between Koch and Pasteur was, however, not merely nationalistic but reflected divergent approaches to epidemic disease control. Pasteur concentrated primarily on the development of measures targeting individuals, such as immunisation and vaccines, whereas Koch emphasised population-wide interventions and sanitary regulations.[33] These differences shaped colonial public health policies and influenced the scientific priorities of researchers working in colonial contexts.[34]

Austrian, Swiss, and German medical officers in the Dutch East Indies rarely engaged with Pasteur's writings on disease control. Instead, their work aligned predominantly with the Kochian paradigm of bacteriology, emphasising pathogenic microorganisms and favouring top-down sanitary interventions. The predominance of German as a shared scientific language among Japanese, German, Swiss, Austrian, and Dutch bacteriologists facilitated the circulation of Koch's ideas and contributed to the marginal reception of Pasteurian bacteriology among medical mercenaries in the Indies.

This linguistic divide becomes further visible if one considers the case of Alexandre Yersin, a French-speaking Swiss, who had trained in Lausanne, Marburg, and Paris, including in Pasteur's laboratory in 1886. Yersin became closely associated with French bacteriology and later worked as a physician in French Indochina. In 1894, he was sent to Hong Kong by the Pasteur Institute and the French government,

[31] See T. Brock, *Robert Koch: A Life in Medicine and Bacteriology* (Washington D.C.: ASM Press, 1999), 174–7.

[32] See Mann, "Kolonialismus in den Zeiten der Cholera;" Ogawa, "Uneasy Bedfellows."

[33] See Brock, *Robert Koch*, 177; A. Velmet, *Pasteur's Empire: Bacteriology and Politics in France, Its Colonies, and the World* (New York: Oxford University Press, 2020), 11–16; I. Trankell and J. Ovesen, "French Colonial Medicine in Cambodia: Reflections of Governmentality," *Anthropology & Medicine* 11:1 (2004), 91–105; P. Weindling, "Scientific Elites and Laboratory Organization in *fin de siècle* Paris and Berlin: The Pasteur Institute and Robert Koch's Institute for Infectious Diseases Compared," in A. Cunningham and P. Williams (eds), *The Laboratory Revolution in Medicine* (Cambridge: Cambridge University Press, 2002), 170–88. For Louis Pasteur and the French public hygiene movement more broadly, see B. Latour, *The Pasteurization of France* (Cambridge: Harvard University Press, 1993).

[34] For bacteriology in the French Colonial Empire see A. M. Moulin, "Tropical without the Tropics: The Turning-Point of Pastorian Medicine in North Africa," in Arnold (ed), *Warm Climates and Western Medicine*, 160–80; Velmet, *Pasteur's Empire*. For the German Colonial Empire see W. Eckart, "The Colony as Laboratory: German Sleeping Sickness Campaigns in German East Africa and in Togo, 1900–1914," *History and Philosophy of the Life Sciences* 24:19 (2002), 69–89; S. Ehlers, *Europa und die Schlafkrankheit: Koloniale Seuchenbekämpfung, europäische Identität und moderne Medizin 1890–1950* (Göttingen: Vandenhoeck & Ruprecht, 2019).

where he was credited with identifying the plague bacillus.[35] Around the same time, Austro-Hungarian and Japanese commissions travelled to Hong Kong and Bombay to investigate the aetiology of the plague, yet there was no collaboration between these individual national missions.[36] Yersin's orientation toward French scientific circles contrasted with that of his Germanophone Swiss compatriots, who were more deeply embedded in German bacteriological debates. At the same time, Japanese bacteriologists, through their close ties to German medical education, became integral participants in a Germanophone transimperial network and in the wider race for the "scientific truth" about tropical diseases, contributing to the circulation and contestation of modern medicine between Berlin, Amsterdam, Sumatra, and Tokyo.

Competing Explanations and Epistemic Insecurity

A majority of European contributors to colonial medical knowledge were affiliated with the military, which shaped both the kinds of questions they pursued and the knowledge they produced.[37] This was also true for the GTNI, where many authors served as medical officers in the KNIL. At the same time, the Dutch colonial government had a vested interest in uncovering the "truth" behind the aetiology of the diseases that devastated its army's manpower. In the late nineteenth century, beriberi and cholera received particular attention due to their high mortality among colonial soldiers in the Dutch East Indies. The medical officer Heinrich Breitenstein reported that in 1886, beriberi alone caused the deaths of 5 per cent of European and 25 per cent of Javanese and Ambonese KNIL soldiers stationed in Aceh.[38] Against this backdrop, medical officers encountered little resistance when leveraging their tropical experiences to enter the debates triggered by the late nineteenth-century "laboratory revolution."

[35] See M. Kaba, "Alexandre Yersin," *Historisches Lexikon der Schweiz (HLS)*, 04.02.2014, online, https://hls-dhs-dss.ch/de/articles/014701/2014-02-04/, [accessed: 18.02.2022]; E. T. Jennings, *Imperial Heights: Dalat and the Making and Undoing of French Indochina* (Berkeley: University of California Press, 2011). Also see A. Yersin, "La peste bubonique à Hong-Kong," *Annales de l'Institut Pasteur* 8 (1894), 662–7.

[36] See H. Flamm, "Die österreichische Pestkommission in Bombay 1897 und die letzten Pest-Todesfälle in Wien 1898," *Wiener Medizinische Wochenschrift* 168 (2018), 375–83.

[37] For the relationship between colonial militaries and the production of knowledge, see D. Peers, "Colonial Knowledge and the Military in India, 1780–1860," *The Journal of Imperial and Commonwealth History* 33:2 (2005), 157–80.

[38] See Breitenstein, "Briefe aus Indien," 904.

Many 'men on the spot' researching in colonies were rather reluctant to accept the novel bacteriological paradigm famously proposed by their European colleagues Robert Koch and Louis Pasteur. First, as has been suggested by the historian of South Asia Pratik Chakrabarti, bacteriology "directly confronted the nineteenth-century medical paradigm in India, based on anticontagionism and climatic determinism."[39] Chakrabarti's observation applies just as much to the tropical Dutch East Indies, where environmental determinism and tropes about the tropics as a "White Man's Grave" dominated medical discourse far into the early twentieth century.[40] Second, and relatedly, bacteriology was at its core a universal theory, as it proposed that bacteria could appear, be isolated and studied in laboratories all around the world. This universalist model clashed with colonial ideology and notions of tropicality, that proposed inherent differences between the "West" and the "Rest," including a dichotomous view on European versus colonised bodies, environments, morals, or diseases.[41] Third, despite the late nineteenth-century advancements in laboratory and microbiological research, the final cause for many epidemic diseases in the tropics could only be conclusively proven in the early twentieth century. Robert Koch, for example, repeatedly failed to meet one of his postulates, namely infecting animals with the cholera bacillus, which became a major point of criticism among his adversaries.[42] The thiamine vitamin, whose deficiency caused beriberi, was only isolated from rice in 1926. In the light of this lack of empirical evidence, historians have hence described the late nineteenth century as an age of "epistemic insecurity" in colonial medical discourse.[43]

The Colonial Contestation of the Bacteriological Paradigm

Medical practitioners in the colonial army were just as involved in the late nineteenth century discussions surrounding epidemic diseases as were their peers in the laboratories in Berlin and Tokyo. A disease that caused particular contestation was beriberi that presented with a wide array of symptoms, including fever, nausea,

[39] P. Chakrabarti, *Bacteriology in British India: Laboratory Medicine and the Tropics* (Suffolk: Boydell & Brewer, 2012), 23.

[40] See H. Pols, "Health and Disease in the Tropical Zone: Nineteenth-century British and Dutch Accounts of European Mortality in the Tropics," *Science, Technology and Society* 23:2 (2018), 324–39.

[41] See Velmet: *Pasteur's Empire*, 5–8. On discourses of "tropicality" see D. Arnold, *The Tropics and the Traveling Gaze: India, Landscape, and Science, 1800–1856* (Seattle: University of Washington Press, 2014); and D. Arnold "The Indian Ocean as a Disease Zone, 1500–1950," *South Asia: Journal of South Asian Studies* 14:2 (1991), 1–21.

[42] See Mann, "Kolonialismus in den Zeiten der Cholera;" Ogawa, "Uneasy Bedfellows."

[43] See van Bergen, *Uncertainty, Anxiety, Frugality*.

oedema, dizziness, mental confusion, and even paralysis of the limbs.[44] The wide range of symptoms corresponded with the broad variety of theories regarding the disease's aetiology. In 1897, Dutch medical officer Christiaan Eijkman had suggested a correlation between beriberi and the consumption of polished rice. However, the cause of beriberi – a vitamin B1 deficiency – was only conclusively established in 1912.[45] In the late nineteenth century, contagionist explanations for the disease were widely discussed among physicians, particularly in the aftermath of Robert Koch's "discovery" of the comma bacillus in 1883/84.

Theories that linked the spread of beriberi to pathogenic microorganisms received further attention in the light of the results produced by the Pekelharing-Winkler commissions. In 1886, the Dutch colonial government appointed Cornelis Pekelharing, professor of pathology in Utrecht, and his assistant Cornelis Winkler to conduct a systematic investigation into the cause of beriberi. Before departing for the Dutch East Indies, Pekelharing and Winkler were sent to Robert Koch's laboratory in Berlin to train in the latest bacteriological methods. In Berlin, they met Christiaan Eijkman, who volunteered to assist their research in the Indies. The Pekelharing-Winkler commission spent eight months in the colony, during which they reported isolating a microorganism they believed to be responsible for beriberi.[46] They were not alone in proposing a bacterial aetiology: João Batista de Lacerda, who had conducted experimental studies on beriberi at the National Museum of Natural History in Rio de Janeiro,[47] and Masanori Ogata, a member of the medical faculty at the Imperial University of Tokyo with prior training in Munich and in Berlin, also claimed to have identified a bacillus responsible for the disease. In Japanese medical discourse, contagionist theories emerged as the dominant explanation for beriberi (or *kakke*), likely because many late nineteenth-century Japanese medical researchers received training in Koch's laboratories in Berlin.[48] The swift identification of both the cause and cure of beriberi in Japan was driven by practical urgency: throughout the 1880s, allegedly epidemic diseases,

[44] On the contestation of the aetiology of beriberi see D. Arnold, "British India and the 'Beriberi Problem,'" *Medical History* 54:3 (2010), 295–314; K. Carpernter, *Beriberi, White Rice, and Vitamin B: A Disease, a Cause, and a Cure* (Berkeley: University of California Press, 2000).

[45] See "Christiaan Eijkman," in *Encyclopedia Britannica*, https://www.britannica.com/biography/Christiaan-Eijkman [accessed 14.02.2022].

[46] See A. De Knecht-van Eekelen, "Het Bacteriologisch Dogma," *Nederlands Tijdschrift voor Medische Microbiologie* 27:1 (2019), 16–19; K. Carpenter, "The Discovery of Thiamin," *Annals of Nutrition and Metabolism* 61:3 (2012), 219–23; Carpenter, *Beriberi, White Rice, and Vitamin B*, 32–5.

[47] See J. B. de Lacerda, *Etiologia e Genesis do Beriberi: Investigações Feita no Laboratorio de Physiologia Experimental do Museu Nacional* (Rio de Janeiro: Liv. Contemporânea de Faro et Lino, 1883).

[48] See A. Bay, "Beriberi, Military Medicine, and Medical Authority in Prewar Japan," *Japan Review* 20 (2008), 111–56.

particularly beriberi, precipitated several public health crises in Meiji Japan. The disease was especially prevalent among the Japanese military, elevating the search for effective treatments to a matter of national security. Western-trained Japanese bacteriologists, sceptical of "traditional" Japanese medicine, strongly advocated for public health policies grounded in laboratory-based research. However, the bacteriological paradigm remained highly contested, and "traditional" Japanese medicine continued to play an important role in the ongoing debate over beriberi.[49]

Bacteriological explanations of beriberi faced repeated criticism from medical mercenaries in the Dutch Colonial Army. Despite primarily being medical practitioners, they remained well-informed about the latest discoveries emerging from German and Japanese laboratories.[50] Among the most persistent critics of contagionist theories was the Swiss medical officer Otto Gelpke. Gelpke initially believed that beriberi was caused by the consumption of rotten fish imported from China. "For the past two months," he wrote, "I have been asking every beriberi sufferer if they ate dried fish, and in 25 cases, I have always received the answer 'yes'."[51] Based on this observation, Gelpke concluded that "[the] beri-beri disease spreads wherever [fish from China] is caught and eaten; it will appear in epidemics wherever these fish migrate."[52] Eleven years later, Gelpke was still convinced that "[o]f all the factors which come into consideration in the investigation of the hygienic defect [among beriberi patients], the most important seems to me to be nutrition."[53] He did, however, for reasons unknown to his readers, change his mind as to which food precisely had "poisoned" its beriberi-struck consumers: rice. Gelpke continued by criticising the Pekelharing-Winkler commission who had prematurely dismissed dietary explanations due to unsuccessful bacteriological examinations of rice:

> According to a report in the Batavia newspapers, 45 different varieties of rice were examined at that time [of Professor Pekelharing's investigations]. No microorganisms were found and that is enough for the bacillus fanatics to consider the rice question settled.[54]

[49] See ibid.; Carpenter, *Beriberi, White Rice, and Vitamin B*, 1–14; A. Bay, *Beriberi in Modern Japan: The Making of a National Disease* (Rochester: University of Rochester Press, 2012); Y. Sugiyama and A. Seita, "Kanehiro Takaki and the Control of Beriberi in the Japanese Navy," *Journal of the Royal Society of Medicine* 106:8 (2013), 332–4.

[50] For the late acceptance of Eijkman's dietary theory of the aetiology of beriberi see M. Somers Heidhues, "The Epidemic that wasn't: Beriberi in Bangka and the Netherlands Indies," in K. Van Dijk and J. Gelman Taylor (eds), *Cleanliness and Culture: Indonesian Histories* (Leiden: KITLV, 2011) 61–93.

[51] O. Gelpke, "Beri-Beri," *GTNI* XIX (1879), 277.

[52] Ibid., 274.

[53] O. Gelpke, "Ein Beitrag zur Bestreitung der Beriberi," *GTNI* XXX (1890), 146.

[54] Ibid., 147.

In Gelpke's eyes, bacteriologists were "fanatics" blinded by their search for pathogenic microorganisms. Gelpke's colleague, the German medical officer Friedrich Joseph Max Fiebig, was equally critical of those advocating for bacteriological explanations of beriberi. Drawing on microscopic investigations conducted by his compatriots Erwin von Baelz in Tokyo and Heinrich Botho Scheube in Kyoto, Fiebig firmly believed that beriberi should be classified as a miasmatic-contagious disease, involving both pathogenic microorganisms as well as environmental factors. He was particularly sceptical of bacteriologists' efforts to prove the contagious nature of beriberi by infecting animals with isolated beriberi bacilli. The results of the animal experiments conducted by Masanori Ogata, Pekelharing, and others were apparently not only controversial among renowned Japanese bacteriologists.[55] They were, according to Fiebig, quite simply "too good to be true." Fiebig hence accused Pekelharing et al. of manipulating their results according to the bacteriological doctrine.[56] Among Fiebig's supporters was his Austrian KNIL colleague Dr. Heinrich Breitenstein, who likewise argued that contagionists had reached hasty conclusions. As he remarked, "If, as has recently been done by some, malaria is to be counted among the contagious diseases, because all infectious diseases suddenly became contagious, then of course beriberi must also be included among the latter."[57] Breitenstein instead maintained that Fiebig's study on the miasmatic cause of beriberi held the promise of yielding more meaningful results.[58]

Another alternative to a bacteriological aetiology of beriberi was proposed by the Swiss medical officer Heinrich Erni. Following extensive examinations of his patients' faeces, Erni claimed to have discovered a hookworm responsible for all symptoms attributed to beriberi. He believed this parasite to be identical to the worm found in the intestines of labourers who had worked on the construction of the Gotthard Tunnel in Switzerland. Indeed, hookworm infection (*Ancylostoma duodenale*) had been the subject of intense public and medical debate during the 1870s in connection with the Gotthard Tunnel project. Numerous tunnel workers had succumbed to severe worm infestations, raising widespread concerns about the health and susceptibility of miners across German-speaking Europe, particularly in relation to the hygienic conditions surrounding major construction sites.[59]

By advancing his worm theory, Erni thus drew upon a well-established and widely circulated discourse concerning the health of working-class bodies in

[55] See Fiebig, "Geschichte und Kritik," 253–79.

[56] Ibid., 283–4.

[57] Breitenstein, "Briefe aus Indien," 1001.

[58] See ibid., 1063.

[59] See L. Bluma, "The Hygienic Movement and German Mining 1890–1914," *European Review of History* 20:2 (2013), 181–7.

Switzerland and Germany at the time. He further bolstered his argument by asserting that he had found the same worm in the intestines of deceased Javanese convicts whom he had dissected at the military hospital in Aceh.[60] His colleague, the Prussian physician Friedrich Wilhelm Stammeshaus, subsequently followed up on these claims by examining worms that Erni had brought to the military hospital in Panteh Perak, Aceh, in 1882. Stammeshaus also conducted dissections on his deceased Malay, Javanese, and Chinese patients, reporting that:

> These macro- and microscopic findings make it beyond doubt that the nematodes found belong to the anchylostoma duodenalia, which were discovered by Dubini in Milan in 1838, and which were later observed mainly in Egypt, further in Brazil, Cayenne and on the Comoro Islands. Recently, these parasites were found by Italian and Swiss physicians among workers in the St. Gothard [sic!] tunnel.[61]

Stammeshaus cautiously concluded that the worms might explain some of the symptoms, but further causes had to be investigated, as he had found the same worm in patients' intestines who had not suffered from beriberi.[62] In general, Erni's worm theory was – as opposed to miasmatic, dietary, or contagionist explanations – not taken seriously by most of his peers. Fiebig, for example, heavily criticised Erni by accusing him of being ignorant of the writings of his Japan-based colleagues Heinrich Botho Scheube and Erwin Baelz, who had conducted "the first scientific pathological-anatomical investigations of beriberi with modern instruments," as well as of ignoring the findings of "other coryphaei of our science" who had long refuted a parasitical aetiology.[63]

Despite the strong opposition Erni met regarding his worm theory, he would remain a persistent anti-contagionist even after his return to Europe. In 1889, he contributed to a special issue of the German journal *Hygienische Tagesfragen*, edited by the famous German localist and Koch-opponent Max von Pettenkofer and dedicated to cholera. In his article *Die Cholera in Indien*, Erni denounced bacteriological cholera theories that had been put forward by Robert Koch after the "discovery" of the comma bacillus in 1883. Essentially, he raises three arguments against Koch: First, Koch had repeatedly failed to infect animals with the bacillus he had isolated. Second, Koch had claimed "that his cholera bacillus perishes remarkably quickly

[60] See H. Erni, "Beri-Beri: Pernicieuse Anaemie und Eingeweidewürmer," *GTNI* XXII (1882), 97–116.

[61] F. W. Stammeshaus, "Over het voorkomen van Anchylostomum Duodenale (Dochmius Duodenalis) in de darmen van beri-beri en andere lijken," *GTNI* XXII (1882), 122.

[62] See ibid.

[63] M. Fiebig, "Voorloopige mededeeling omtrent de oorzoaken en het wezen der beri-beri," *GTNI* XXIV (1885), 230–1.

when it dries out." This is however "in direct contrast to the experience in the [Dutch East] Indies," where "cholera disappears precisely due to the rain and reappears in the dry season." Third, while Koch regarded cholera as a contagious disease, Erni remembers "no single instance in which a doctor or a nurse in the Dutch East Indies fell ill after their contact with the patients."[64] Erni thus concluded that:

> In general, it can be asserted that all of Koch's theories about cholera in India are in direct contradiction with reality. Instead, the Indian doctor will completely agree with Cuningham and Pettenkofer that contagiousness cannot be assumed directly from cholera patients, and that cholera is bound to localities [...].[65]

In the debate surrounding the aetiology of cholera, Erni aligned with the localist perspective proposed by Koch-opponents such as the German Max von Pettenkofer and the British James Cuningham, both of whom severely rejected a bacteriological explanation for the disease.[66] This position was by no means unique. A close examination of the publications authored by medical mercenaries in the GTNI (and beyond) reveals that many were reluctant to accept the bacteriological hypothesis put forward by their Germanophone colleagues working in laboratories in Berlin, Amsterdam, and Tokyo. It would however be wrong to regard them as scientific amateurs blinded by colonial fantasies proposing an inherent "otherness" of tropical environments and diseases and basing their adherence to anti-contagionist explanations solely on instinct and pride. These 'men on the spot' were readily supported by the Dutch Colonial Army, diligent in their research methods, and eager to uncover the "truth" about the aetiology of allegedly epidemic diseases threatening the military success in the tropics. In light of the growing competition emerging in the European and Japanese laboratories, they increasingly underlined their practical experience as a significant advantage in the transimperial race for the cause and treatment of diseases in the tropics.

The Practitioner's Privilege

Many medical mercenaries researching diseases on the spot in the tropics kept themselves informed about the latest developments in the rapidly expanding field of bacteriology. At the same time, they believed they possessed a significant advantage over their white-coated colleagues in metropolitan universities. As Leo van

[64] Erni-Greiffenberg, „Die Cholera in Indien," 65–70.

[65] Ibid., 76.

[66] On the debate between Robert Koch, James Cuningham and Max von Pettenkofer, see Mann, "Kolonialismus in Zeiten der Cholera;" Ogawa, "Uneasy Bedfellows."

Bergen has argued, "The former remained practicing 'physicians in the tropics', rather than theoretical 'tropical physicians.' Clinical observation, instead of scientific, technological debate, came first."[67] Medical mercenaries claimed that it was precisely their "practical experience" that granted them a privileged access to the true nature of diseases. In doing so, they attempted to directly capitalise on their first-hand experiences in the tropical Dutch East Indies and uphold their belonging to colonial medical masculinity, underlining the epistemic value of observations from the colonial field. By discursively constructing a (false) dichotomy between laboratory and field science in the late nineteenth century they attempted to strengthen their scientific authority as experts on tropical diseases. Other than laboratory scientists, they claimed, they stood in regular contact with patients suffering from beriberi or cholera in supposedly pathogenic environments. In arguing against Robert Koch, Heinrich Erni wrote, for example:

> If Koch, after a six-month stay in India, sees the right to give a decisive opinion on the aetiology of cholera in India, then I believe that I too, after a seven-year stay there, may take the floor on this question, in order to shed light on the accuracy or inaccuracy of Koch's doctrine on the basis of my own observations.[68]

Erni directly linked the duration of a researcher's stay in the tropics to the reliability of their scientific conclusions. On this basis, he argued that Koch, having spent too little time in India, could not have conclusively demonstrated his bacteriological cholera hypothesis. By contrast, Erni asserted his own authority by emphasising that he had lived for seven years in a tropical colony and was therefore fully qualified to speak on the matter. He even claimed that his "observations on the course of cholera in [Dutch East] India compel me to doubt even such a celebrated authority as Professor Koch," adding that such criticism was very "daring […] [i]n a time when faith in authority is as rampant as it is today."[69]

Erni, however, faced significant obstacles in challenging Robert Koch when he published his hypotheses on cholera in 1889. Following Koch's research expeditions to Alexandria and Calcutta in 1883/84 during which he gathered crucial evidence for the existence of the comma bacillus, the bacteriologist had become a celebrated figure in Germany, even attaining the status of a national hero.[70]

[67] Van Bergen, *Uncertainty, Anxiety, Frugality*, 80–1. Also see M. Worboys, "Germs, Malaria and the Invention of Mansonian Tropical Medicine: From 'Diseases in the Tropics' to 'Tropical Diseases'," in Arnold (ed), *Warm Climates and Western Medicine*, 181–207.

[68] Erni, "Die Cholera in Indien," 59.

[69] Ibid., 70.

[70] For Robert Koch's transformation into a national hero, see Brock, *Robert Koch*, 140–68 and 267–85; N. Howard-Jones, "Robert Koch and the Cholera Vibrio: A Centenary," *British Medical Journal*

The universalising claims advanced by bacteriologists that effectively detached diseases from their environmental and social context,[71] posed a serious threat to the scientific authority of medical practitioners in the tropics. These practitioners had long distinguished themselves from their metropolitan counterparts by invoking their hands-on expertise in tropical environments. In an effort to defend their status as experts on "tropical" diseases, many 'men on the spot' therefore repeatedly insisted that direct observation in tropical settings was an indispensable prerequisite for medical research. Critiquing the Dutch bacteriologist Van Ecke's animal experiments, for example, Fiebig maintained that

> he who knows how difficult it is to draw the line between physiological and abnormally strong [...] degeneration and who sees in a disease a clinical and pathological-anatomical overall picture, for him the proof that Van Ecke's animals have suffered from beri-beri is not established.[72]

The rhetorical "he" that Fiebig constructs in his argument is, of course, the medical practitioner, presumed to possess superior skill in discerning the "overall picture" compared with scientists focused on microscopic particularities. Fiebig added, with a touch of irony: "I deem myself authorized to make this judgement, although I am not a bacteriologist, but just a simple practitioner."[73]

The Swiss KNIL officer Otto Gelpke displayed a similarly defensive stance towards laboratory scientists. In 1879, he declared: "Even if a few beriberi cases are known to have occurred outside barracks and prisons, it remains undisputed that in barracks, prisons, hospitals etc. [the main] hygeinic [sic!] mistakes are made." According to Gelpke, the "solution" to the "beriberi question" is thus "a task for Indian and not European doctors."[74] As an "Indian doctor" himself, Gelpke clearly had a vested interest in asserting the privileged position of practicing physicians in the Indies. This is further evidenced in his dispute with Dr. Evart van Dieren, who had sent him his study on beriberi, *Beriberi een Rijstvergiftiging* (Beriberi, a rice poisoning) that contradicted Gelpke's "rotten-rice-theory." Gelpke's primary criticism was that van Dieren had never set foot in the Dutch East Indies and relied solely on textbook knowledge of tropical diseases. "He thinks," Gelpke remarked,

288:6414 (1984), 379–81; G. Haddad, "Medicine and the Culture of Commemoration: Representing Robert Koch's Discovery of the Tubercle Bacillus," *Osiris* 14 (1999), 118–37.

[71] See A. Velmet, "The Making of a Pastorian Empire: Tuberculosis and Bacteriological Technopolitics in French Colonialism and International Science, 1890–1940," *Journal of Global History* 14:2 (2019), 199–217.

[72] Fiebig, "Geschichte und Kritik," 287–8.

[73] Ibid., 288.

[74] Gelpke, "Ein Beitrag zur Bestreitung der Beriberi," 151–2.

"that one simply buys the grain on the market and then searches for the matching disease in an encyclopaedia at home."[75]

Erni, Gelpke, and Fiebig exemplify a broader pattern among 'men on the spot': the assertion of epistemic authority grounded in the colonial field, as opposed to laboratory science. Yet this authority was circumscribed by the racialised hierarchies of the Dutch East Indies. European-trained Javanese physicians, for example, were largely excluded from the networks of the GTNI and the bacteriological laboratories. At the same time, the professionalisation of medical science and the growing belief in the universal applicability of bacteriological paradigms further marginalised indigenous medical traditions. Javanese herbal medicine (*jamu*) and Chinese medicine were increasingly dismissed as "superstitious" and ineffective.[76] This was a marked shift from earlier decades: in 1829, the German medical officer F. A. C. Waitz published *Praktische Beobachtungen über einige javanische Arzneimittel* (Practical Observations on Some Javanese Medicines), highlighting the therapeutic properties of certain local plants. Waitz likely acquired much of his knowledge from Javanese *dukun*, traditional healers who remain influential in Indonesia today.[77] By the late nineteenth century, however, authority over the "truth" of tropical diseases and the discourse on medical modernity in Germanophone science remained largely reserved for white European men and male representatives of "modern," independent, Germanophile Meiji Japan. Only in the twentieth century did Indonesian physicians begin to advocate for equal access to education, research, and participation in the structures of medical modernity.[78]

Contingent Categories: Colonial Ideology and Bacteriological Knowledge

Although medical mercenaries in the Dutch East Indies emphasised firsthand observations and practical experience in the colonies as their primary epistemic advantage, they often resorted to established methodologies of laboratory medicine. Colonial hospitals provided access to extensive medical statistics and research infrastructure, including small laboratories and microscopes. Medical

[75] O. Gelpke, "Ueber die Aetiologie der Beri-Beri. Gelpke contra van Dieren," *GTNI* XXXVII (1898), 111.

[76] See H. Pols, "European Physicians and Botanists, Indigenous Herbal Medicine in the Dutch East Indies, and Colonial Networks of Mediation," *East Asian Science, Technology and Society* 3:2/3 (2009), 173–208.

[77] On the history of indigenous medical practitioners in the Dutch East Indies see L. Hesselink, *Healers on the Colonial Market: Native Doctors and Midwives in the Dutch East Indies* (Leiden: KITLV Press, 2011).

[78] H. Pols, *Nurturing Indonesia: Medicine and Decolonisation in the Dutch East Indies* (Cambridge: Cambridge University Press, 2018).

Figure 4: The Military Laboratory in Batavia, ca. 1900. The KNIL provided medical mercenaries with tools and infrastructures of modern medical science, such as microscopes, laboratory facilities, or dissection rooms. Leiden University Libraries Digital Collections, KITLV 29059.

mercenaries could also examine the bodies of hundreds of deceased Javanese and Chinese patients, conducting dissections with few ethical constraints regarding consent or local religious and cultural practices surrounding death and burial.[79] This stood in contrast to Europe, where autopsies, though legal, were increasingly regulated by laws such as the British Anatomy Act of 1832.[80] Meanwhile, “armchair” laboratory bacteriologists continued to rely on data from the colonial field, linking their microbiological findings to earlier notions of climatic and environmental determinism, and thereby proposing “an apparently paradoxical thesis of germs and geography.”[81] The relationship between colonial practitioners and laboratory theoreticians was therefore contingent, with medical knowledge constantly being shaped at the intersection of the colonial field and the metropolitan laboratory.

[79] For the dissection of human bodies in colonial medicine see S. Chatterjee, “Healing the Body: Colonial Medical Practice and the Corporeal Context,” *Proceedings of the Indian History Congress* 76 (2015), 546–54; H. Macdonald, “Reading the ‘Foreign Skull:’ An Episode in Nineteenth-Century Colonial Human Dissection,” *Australian Historical Studies* 36:125 (2005), 81–96.

[80] See C. T. A. Brenna, “Post-Mortem Pedagogy: A Brief History of the Practice of Anatomical Dissection,” *Rambam Maimonides Med J.* 12:1 (2021), online. DOI: 10.5041/RMMJ.10423; R. Richardson, *Death, Dissection, and the Destitute* (London: Phoenix Press, 2001).

[81] Chakrabarti, *Bacteriology in British India*, 9.

From the early nineteenth century onwards, the laboratory transformed into an important site for experimental research in Europe. Historians often present the laboratory founded by the German chemist Justus Liebig at the University of Giessen in 1825 as pivotal to the institutionalisation of laboratory science, as students from across Europe flocked to Giessen to study under Liebig's guidance. Over the course of the century, disciplines such as physics, physiology, and biology increasingly adopted the German model, incorporating isolated, experimental research into their methodological repertoire.[82] The first dedicated *medical* laboratories emerged across Europe in the 1840s and 1850s.[83]

Laboratory infrastructure in the colonies, by contrast, developed with a slight delay. Only in the 1880s, when concerns over the efficiency of the British Indian Army and the poor state of colonial healthcare were expressed by both British settlers and segments of the Indian elite, were several medical research institutions established. These included the Imperial Bacteriological Laboratory in Poona (1890), the Bacteriological Laboratory in Agra (1892), the Plague Research Laboratory in Bombay (1896), and others.[84] In the Dutch East Indies, the institutionalisation of bacteriological research began in 1888 with the founding of the *Geneeskundig Laboratorium* (Central Laboratory for Public Health Service) in Batavia (Jakarta), which was later renamed the Eijkman Institute in 1938. In 1890, the Dutch East Indies government also established the *Parc Vaccinogen Instituut Pasteur* (Pasteur Vaccination Institute) to ensure a steady production of vaccines.[85]

[82] There is an extensive body of literature on the history of the institutionalisation of the laboratory in the nineteenth century. Good overviews are Cunningham/Williams (eds), *The Laboratory Revolution in Medicine*; P. Galison and C. Jones "Factory, Laboratory, Studio: Dispersing Sites of Production," in P. Galison and E. Thompson (eds), *The Architecture of Science* (Cambridge: MIT Press, 1999), 497–540; T. Lenoir, *Instituting Science: The Cultural Production of Scientific Disciplines* (Stanford: Stanford University Press, 1997); S. Shapin and S. Schaffer, *Leviathan and the Air Pump: Hobbes, Boyle, and the Experimental Life* (Princeton: Princeton University Press, 2018).

[83] See J. Büttner, "The Origin of Clinical Laboratories," *European Journal of Clinical Chemistry and Clinical Biochemistry* 30:10 (1992), 585–93; C. Bonah, *Instruire, guérir, server: Formation, recherche et pratique médicales en France et en Allemagne pendant la deuxième moitié du XIXe siècle* (Strasbourg: Presses Universitaires de Strasbourg, 2000).

[84] See P. Chakrabarti, "Beasts of Burden: Animals and Laboratory Research in Colonial India," *History of Science* 48:1 (2010), 125–52; Chakrabarti, *Bacteriology in British India*, 25–60; S. Guha, "Nutrition, Sanitation, Hygiene, and the Likelihood of Death: The British Army in India c. 1870–1920," *Population Studies* 47:2 (1993), 395–9.

[85] See M. Akbar and T. Handayani, "Science and Technology Development in Dutch East Indies," *Indonesian Historical Studies* 5:2 (2021), 126. For laboratory biology in the Dutch colonies see R. J. Wille, *De Stationisten: Laboratoriumbiologie, Imperialisme en de Lobby voor Nationale Wetenschapspolitiek 1871–1909*, PhD thesis, Radboud Universiteit Nijmegen, Nijmegen 2015.

The military monopoly on the Dutch East Indies' health care extended to these civil research institutions. Key positions in civil medical organisations and laboratories – such as the Pasteur Institute, the *dokter djawa* school, or the medical laboratory in Jakarta – were occupied by medical officers.[86] Given the relatively late institutionalisation of laboratories in the colonies, hospitals, prisons, and military garrisons remained the primary sites for medical research for much of the nineteenth century, granting medical officers privileged access to colonial research infrastructures.

Between the Field and the Laboratory

The Swiss medical mercenary Heinrich Erni provides a striking example of how medical officers in the colonies framed military posts as ideal sites of experimental research. In his plea against Robert Koch's comma bacillus, he recalls the favourable research conditions he encountered in Aceh:

> Cholera did not progress regularly from one post to another, but skipped one here and there, only to return to it much later. This very remarkable phenomenon, which can be observed so clearly in the peculiar distribution of the Dutch military posts, which are in uninterrupted mutual communication, as if created for the experiment, must convince everyone that the disposition of the locality plays a major role in the possibility of the emergence of an epidemic [...].[87]

Erni viewed the military camps in Aceh as "laboratories," offering ideal conditions for the experimental study of disease transmission. It is likely that he strategically adopted the language of bacteriologists to lend greater scientific authority to his refutation of Koch's bacteriological hypotheses on the aetiology of cholera. However, it would be misleading to interpret his use of bacteriological language and methods solely as a discursive tactic. While posted at the hospital in Kota Radja, Erni experimented with different treatments for beriberi, keeping a detailed logbook on his patients and the medications he tested.

He documents, for example, the case of "Wongsodrono, a Javanese soldier, 31 years old, who had stayed in Atjeh for 5 years, without ever having seriously fallen ill." Wongsodrono, who suddenly developed beriberi, was successfully treated with quinine and santonin.[88] A similar case involved Djopopawiro, "a Javanese soldier, 26 years old, who had recently come to Atjeh and rapidly fell ill with beriberi,"

[86] See Hesselink, *Healers on the Colonial Market*, 270.

[87] Erni, "Die Cholera in Indien," 62.

[88] Erni, "Beri-Beri," 99.

whose symptoms also resolved following administration of quinine and santonin.[89] In addition to experimenting with treatments, Erni examined microscopically patients' faeces, in which he claimed to have found the worm allegedly responsible for beriberi.[90]

Erni was not alone in experimenting on living patients and their bodily fluids in the military hospitals. The German physician Friedrich Joseph Max Fiebig similarly investigated beriberi at the hospital in Onrust, microscopically examining the blood of dozens of Javanese and Malay patients to support his argument that the disease should be considered miasmatic-contagious.[91] Fiebig meticulously recorded the development of his patients' symptoms. For instance, "Ronosemito, forced labourer no. 3387, Javanese, 25 to 30 years old," came under his care on January 30, 1884, due to beriberi. Microscopic examination of Ronosemito's urine revealed "many very large lymphoid cells, which often contain 2–5 large, colourless, shiny micrococci; here and there micrococci clumps of 4 to 6 [pieces] swim in the fluid."[92]

As the accounts cited above indicate, experiments and microscopic investigations were conducted almost exclusively on Javanese and other "native" soldiers and coolies, rather than on European patients. This points to the inherently racialised dimension of medical research in colonial contexts, as described by a growing number of historians of colonial medicine.[93] Being stationed in the colonies, medical mercenaries had privileged access to the bodies of colonised patients and, in some cases, even to their corpses without any major ethical or legal obstacles. After the Javanese forced labourer Ronosemito died, Fiebig dissected his body. While waiting to access the corpse, he used the time for further microscopic investigations:

> Prediction of section 17 hours after death. The interval was used for the microscopic examination of the dead muscle and blood. The latter, examined 2 1/2 hours after death, shows the following: the red corpuscles have a very irregular shape; between them one sees a shiny, granular substance and numerous single and heaped micrococci."[94]

[89] Ibid., 102.

[90] See ibid., 104.

[91] See Fiebig, "Voorloopige Mededeeling," 223–43.

[92] Ibid., 224–5.

[93] For the racialised dimension of medical research and experimentation in the colonial field see Chatterjee, "Healing the Body," 549–51; L. Schiebinger, *Secret Cures of Slaves: People, Plants, and Medicine in the Eighteenth-Century Atlantic World* (Stanford: Stanford University Press, 2017), 45–64; H. Tilley, "Medicine, Empires, and Ethics in Colonial Africa," *AMA Journal of Ethics* 18:7 (2016), 743–53; D. Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: University of California Press, 1993); H. Washington, *Medical Apartheid: The Dark History of Medical Experimentation on Black Americans from Colonial Times to the Present* (New York: Anchor, 2008).

[94] Fiebig, "Voorloopige Mededeeling," 228.

Both the microscopic investigations of Ronosemito's blood and the subsequent dissection provided evidence of micrococci, which Fiebig interpreted as sufficient proof for his hypothesis regarding the miasmatic-contagionist nature of beriberi.[95] Similarly, the Swiss medical officer Otto Gelpke based his dietary theory of beriberi's aetiology on dissections he performed in Aceh in 1879, as well as on medical examinations of convicts in Batavia who would later be sent to Aceh as forced labourers.[96] "I have performed many dissections of beriberi corpses," Gelpke wrote, "and the first thing I noticed is a very developed and long-lasting rigor mortis."[97] He described, in meticulous detail, opening the chest, cutting into the heart, and examining the blood vessels, expressing the conviction that further dissections paired with microscopic investigations would yield promising insights.[98]

Heinrich Erni, Gelpke's compatriot, also closely examined the bodies of deceased patients in his search for hook worms. In 1882, he dissected four men: the aforementioned Javanese soldier Wongsodrono and three Javanese convicts. He recorded:

> The *appendix* is the most severely affected; *there is not a healthy spot left on the entire mucous membrane*, the small red ulcers are found everywhere. The upper part of the large intestine is also still affected, but the frequency of ulcers decreases considerably and increases towards the bottom. Corresponding to these damages, one finds an *intestinal worm*. In the small intestine, about 1 foot above the appendix, a small worm adheres to the mucous membrane, which moves briskly and is so firmly attached that it cannot be washed away by a stream of water; numerous punctiform sores are found around it. In the coecum there are at least 20 worms of the same kind, which are arranged in tangles like snakes.[99]

Erni claimed to have found worms in all four patients who had died from beriberi, which he interpreted as confirmation of a parasitological cause for the disease.[100] In the official publications authored by medical mercenaries, there is little evidence of official or individual resistance to being granted access to corpses for dissection. The Austrian medical officer Heinrich Breitenstein is one of the few documented cases to explicitly acknowledge potential challenges in dissecting the bodies of colonised individuals. He noted that "in the Dutch-Indian army, half of whose corps consists of Mohammedan soldiers, no dissections are to be performed on native soldiers due to religious reasons, except when their family

[95] See ibid., 226–8.
[96] See Gelpke, "Beri-Beri," 262–70.
[97] Ibid., 261.
[98] Ibid., 263–9.
[99] Erni, "Beri-Beri," 108.
[100] See ibid., 97–116.

or comrades explicitly give permission."[101] However, this claim is contradicted by the practices of Gelpke, Erni, and Fiebig, who conducted the majority of their dissections on Javanese soldiers and convicts – who were most likely of Muslim faith – without apparent restrictions. Nevertheless, after the death of one of his Christian Ambonese patients, Breitenstein recounted having to request permission from the family before performing the dissection:

> After the death of this patient, I sent for his wife and told her that I personally did not believe that her husband had died of poisoning, but that I could only state the true cause of death if I could at least open the abdominal cavity and in this way examine the abdominal contents. She immediately asked me to do so, and the autopsy confirmed the diagnosis in vivo: cancer […].[102]

As noted, Breitenstein appears to have been an exception in mentioning the need to obtain permission for the dissection of a "native" patient. It is entirely plausible that the Dutch colonial government rarely, if ever, monitored whether such permission was obtained – particularly in the case of soldiers originating from islands other than those on which they were stationed, such as Javanese soldiers in Sumatra, whose families were distant and effectively excluded from the process. Indentured and convict labourers were equally vulnerable, as their work often required migration to distant regions or islands, leaving them physically and socially removed from family or community oversight and thus particularly exposed to medical experimentation. Medical mercenaries capitalised on the vulnerability of many of their colonised patients, gaining direct access both to bodies for dissection and experimentation and to the research infrastructure of military hospitals. This access allowed them to pursue their investigations into the aetiology of diseases such as beriberi, drawing on empirical evidence collected through the established laboratory methods of their time, including microscopic examination, dissection, and controlled medical experimentation.

Bacteriology, Colonial Ideology, and Race

Just as medical practitioners in the colonial field conducted experimental, laboratory investigations, late nineteenth-century metropolitan "armchair" scientists were not confined to their laboratories. As historian Christoph Gradman has emphasised, travelling was an integral component of "applied sciences" such as

[101] H. Breitenstein, *21 Jahre in Indien: Aus dem Tagebuch eines Militärarztes, Dritter Theil: Sumatra* (Leipzig: Th. Grieben's Verlag, 1902), 97–8.

[102] Ibid.

hygiene or bacteriology. And yet, the history of the "laboratory revolution" has often been misrepresented as a history of "revolution in the laboratory." The fact that Robert Koch himself travelled to Egypt (1883) and Calcutta (1884) to isolate the bacterium responsible for cholera underscores the critical role of overseas journeys in the early development of bacteriology.[103]

Methodologically, early bacteriology was considerably messier than retrospective narratives of the discipline often suggest. This includes the postulates attributed to Robert Koch, which were intended to prove the bacterial aetiology of a disease: (1) the identification of bacteria in infected patients, (2) the isolation and cultivation of these bacteria, and (3) the successful infection of healthy hosts with the isolated bacteria. Recent scholarship has highlighted the historicity of Koch's postulates, emphasising how they were repeatedly challenged, transformed, and adapted over time.[104] For instance, after repeated failures to infect animals with isolated bacteria in Berlin laboratories, Koch travelled to German East Africa and Togo between 1906 and 1913, where he conducted high-risk experiments on African patients, effectively turning colonised bodies into objects of study and the colonies themselves into field laboratories.[105]

At the same time, historians have noted a convergence of the "germ theory of disease" and the "gene theory of disease" following the rediscovery of Mendel's laws of heredity at the turn of the twentieth century.[106] Within the context of the emerging racial hygiene movements in Germany and Britain, infectious diseases came to be understood not only as medical phenomena but also as social and racial concerns, linked to the movement and composition of human "races." As medical researchers increasingly medicalised racial heredity, the concept of "immunity"

[103] See C. Gradmann, "Das reisende Labor: Robert Koch erforscht die Cholera 1883/84," *Medizinhistorisches Journal* 38:1 (2003), 35–56. For international cholera research in Egypt also see S. A. Boyle, "Cholera, Colonialism, and Pilgrimage: Exploring Global/Local Exchange in the Central Egyptian Delta, 1848–1907," *Journal of World History* 26:3 (2015), 581–604; V. Huber, "Pandemics and the Politics of Difference: Rewriting the History of Internationalism through Nineteenth-Century Cholera," *Journal of Global History* 15:3 (2020), 394–407; C. Rose, "Trial by Virus: Colonial Medicine and the 1883 Cholera in Egypt," *Journal of Colonialism and Colonial History* 24:1 (2023), online, DOI: doi:10.1353/cch.2023.0005. For British India see D. Arnold, "Cholera and Colonialism in British India," *Past & Present* 113 (1986), 118–51; S. Watts, "From Rapid Change to Stasis: Official Responses to Cholera in British-Ruled India and Egypt," *Journal of World History* 12:2 (2001), 321–74.

[104] See C. Gradmann, "Alles eine Frage der Methode: Zur Historizität der Kochschen Postulate 1840–2000," *Medizinhistorisches Journal* 43:2 (2008), 121–48; Ogawa, "Uneasy Bedfellows."

[105] See Eckart, "The Colony as Laboratory."

[106] See A. Teicher, "Medical Bacteriology and Medical Genetics, 1880–1940: A Call for Synthesis," *Medical History* 64:3 (2020), 325–54; M. Worboys, "From Heredity to Infection: Tuberculosis, 1870–1890," in J. P. Gaudillière and I. Löwy (eds), *Heredity and Infection: The History of Disease Transmission* (London: Routledge, 2003), 81–100.

was invoked to theorise differences in susceptibility to infectious diseases among distinct human populations.[107]

In the aftermath of the European "Scramble for Africa," a pressing concern was whether the "white race" could permanently settle in tropical colonies.[108] Addressing this issue, on February 14, 1908, Robert Koch presented a lecture to the German Reich Health Council (*Reichsgesundheitsrat*) on the question: "To what extent is the white race capable of permanently colonizing tropical regions and reproducing there, without harming its own nature and health?"[109] Drawing on his observations from the Transvaal, Koch argued that "European settlers have been residing for a long time without compromising their [racial] peculiarity and health; they have not lost their ability to reproduce, nor have they formed a mixed race over time." He attributed the possibility of healthy white settlement in the tropics to environmental factors such as the elevated highlands, which offered fewer mosquitoes, better hygienic conditions, and a temperate climate. Koch concluded that:

> So far there is nothing to prevent the white race from existing and reproducing permanently on the high plateau of Africa at altitudes of 3000-4000 feet (1000 m and above) without impairing its character and health. This judgement applies primarily to German East Africa and should only include South West Africa in so far as its climatic conditions correspond to those of Transvaal.[110]

By emphasising the "healthy" climates of the African highlands for the white race, Koch effectively merged the bacteriological paradigm with climatic determinism and the racial hygiene ideology characteristic of colonial medicine. Moreover, in his lecture before the German Reich Health Council, Koch explicitly aligned his research with German colonial ambitions by assessing the feasibility of permanent white settlement in German colonial territories.

A decade earlier, the German physician and former medical mercenary in Dutch service Karl Däubler argued along similar lines. Däubler had joined the KNIL in 1878 to serve in Aceh, completing the full five years of contractually

[107] S. Besser, *Pathographie der Tropen: Literatur, Medizin und Kolonialismus um 1900* (Würzburg: Königshausen & Neumann, 2013), 189–205.

[108] See A. Bashford, "Is White Australia possible? Colonialism and Tropical Medicine," *Ethnic and Racial Studies* 23:2 (2000), 248–71; Downs, *Maladies of Empire*, 122–136; M. Espinosa, "The Question of Racial Immunity to Yellow Fever in History and Historiography," *Social Science History* 38:3/4 (2014), 437–53; M. Bauche, "Race, Class or Culture? The Construction of the European in Colonial Malaria Control," *Comparativ* 25/6 (2015), 116–36; Anderson, *Colonial Pathologies*, 207–26.

[109] R. Koch, "Ansiedlungsfähigkeit der weissen Rasse in den Tropen," in *Gesammelte Werke Robert Kochs* 2 (Robert Koch Institut, 1908), 959.

[110] Ibid., 961.

mandated service.[111] In 1895, he published a handbook with the title *Grundzüge der Tropenhygiene* (Fundamentals of Tropical Hygiene), distributed by the Berlin-based publishing house Otto Enslin. The work appears to have been well received, as indicated by the release of a second edition in 1900. In the preface, Däubler identifies his intended audience as "the prospective colonial physician […] who shall not enter into a realm of work that essentially differs from previous [Western] ones."[112]

On the one hand, the findings described in the handbook draw on his own laboratory research, likely conducted at the medical faculty of the Ludwig Maximilian University in Munich. Däubler explicitly acknowledges the generous support he received from Munich-based laboratory researchers, including Professor Dr. von Voit, Professor Dr. Kupfer, and Dr. Cremer. On the other hand, he integrates his experiences as a practitioner in the Dutch East Indies, thanking his former KNIL colleagues for "providing him with material for his research" after completing his service.[113]

The first half of the book is dedicated to tropical hygiene, offering practical guidance on climate, humidity, drinking water, and appropriate clothing for the tropics. The second, more theoretical part addresses so-called tropical pathology, opening with general reflections on diseases in tropical regions. Comparing pathogenic particularities between Europe and the tropics, Däubler observes:

> A disease [in the tropics] often differs from its counterpart in Europe by its higher or lower malignity for different races as well as by differences in its progression. Thus, we observe in the tropics that typhus abdominalis, introduced from Europe, shows a different distribution than in Europe, where it is ubiquitous. In the tropics, it sticks to places where Europeans live. Natives are rarely affected and survive the disease more easily.[114]

Although Däubler identified as a bacteriologist and parasitologist, his comparison of tropical and temperate zones maintains the importance of locality in the spread of contagious diseases. He further posits hereditary differences in disease susceptibility between "races," a racialised framework that becomes particularly evident in his discussion of immunity. While "native children develop a certain immunity against malaria in their early youth," Europeans born in the tropics, he notes, remain highly susceptible to the disease.[115] Däubler elaborates on racial differences

[111] See Nationaal Archief Den Haag (NL-HaNA), Inventaris van het Archief van het Ministerie van Koloniën, Stamboeken en Pensioenregisters van Militairen KNIL in Oost- en West-Indië, 1815–1949 (1954), nummer toegang 2.10.50, inv. nr. 11, folio 2786.

[112] K. Däubler, *Grundzüge der Tropenhygiene* (Berlin: Verlag von Otto Enslin, 1900), preface (n.p).

[113] Ibid.

[114] Ibid., 129.

[115] Ibid., 130.

(*Rassenunterschiede*) between "white" and "coloured" populations, claiming, for instance, that "the size of the red blood cells is not the same in n*[116] and whites."[117] Regarding beriberi, he observes that "coloured people [*Farbige*] incline more [to contract it] than white people. In the [Dutch East] Indies, beriberi was considered a native disease until the early 1870s. Even though Europeans started to contract it in Atjeh in 1883, the ratio between [infected] coloured and white people remained very unequal."[118] With little nuance, Däubler subsumes the indigenous populations of tropical regions globally under the category of "coloured peoples," contrasting their supposed racial susceptibility with that of Europeans. He concludes:

> It is therefore hygiene which, in relation to the conditions outlined here, must demand the scientific proof of the pathology of the lower races and their relationship to that of the whites. This is still a vast field of research that has barely been worked on, the knowledge of which seems however absolutely necessary for any serious colonization.[119]

Däubler's insistence on the urgency of the scientific investigation of racial pathology implicitly highlights the political stakes of racial hygiene: if the German Empire intended to colonise Africa and establish permanent white settlements, it needed, according to physicians like Däubler, to account for racial differences in hereditary immunity to tropical diseases. At the same time, *Grundzüge der Tropenhygiene* illustrates, on a microhistorical level, how knowledge acquired by medical mercenaries in Dutch service during the 1870s was later mobilised for German colonial ambitions in Africa after 1884/85, and how this knowledge was adapted and transformed around the turn of the twentieth century under the influence of the racial hygiene movement.

Europe in the Tropics – the Tropics in Europe

Environmental determinism in colonial medicine did not only shape perceptions of colonised and Europeans bodies and their "fitness" for survival in the tropics. The notion that diseases were tied to environmental conditions also influenced how European physicians viewed the pathogenicity (or lack thereof) of Europe itself.

[116] To avoid unnecessarily reproducing racist terminology, the word n*, used as a derogatory term targeting Black people in historical source material, is not spelled out. This practice is described, for example, in P. Purtschert, *Kolonialität und Geschlecht im 20. Jahrhundert: Eine Geschichte der weissen Schweiz* (Bielefeld: Transcript 2019), 79.

[117] Däubler, *Grundzüge der Tropenhygiene*, 131.

[118] Ibid., 132.

[119] Ibid.

Experiences in the colonial field often shaped and shifted how medical mercenaries perceived the climate and health conditions of their home countries.

Seeking to capitalise on the presumed differences between the tropical climates of the colonies and the temperate zones of Europe, the Swiss physician Heinrich Erni and the Austrian physician Heinrich Breitenstein established *Kurpraxen* (curative medical or spa clinics[120]) in their respective homelands after completing service with the KNIL. They specifically advertised their services to patients convalescing from tropical diseases in Europe.

Their practice reflected a broader trend in European colonial health care, which advocated relocating patients recovering from illnesses such as cholera or tuberculosis to cooler climates. To this end, the British, French, and Dutch colonial governments established so-called "hill stations" in the highlands of their tropical colonies in Asia, Africa, and the Caribbean, where the temperatures tended to be more moderate. The mountainous landscapes and European-style architecture of these stations further evoked a sense of familiarity, offering a welcome contrast to the tropical lowlands and the "foreign" cultures perceived as starkly other.[121] When residence at a hill station proved insufficient to restore European patients' health, they were often sent back to Europe for full recovery.

In the fall of 1897, after falling ill in the Dutch East Indies, Heinrich Breitenstein sought curative treatments in Karlsbad, a spa town in what is now the Czech

[120] In historiography, the German term 'Kur' with its strict medical connotation is commonly translated as the English term 'spa'. See, for example, D. C. Large, *The Grand Spas of Central Europe: A History of Intrigue, Politics, Art, and Healing* (Lanham: Rowman & Littlefield, 2015).

[121] See N. Bhattacharya, *Contagion and Enclaves*: *Tropical Medicine in Colonial India* (Liverpool: Liverpool University Press, 2012), 18–52; L. Veracini, "The Imagined Geographies of Settler Colonialism," in T. Banivanua-Mar and P. Edmonds (eds), *Making Settler Colonial Space: Perspectives on Race, Place and Identity* (London: Palgrave Macmillan, 2010), 179–97; J. T. Kenny, "Climate, Race, and Imperial Authority: The Symbolic Landscape of the British Hill Station in India," *Annals of the Association of American Geographers* 85:4 (1995), 694–714; N. Bhattacharya, "Imperial Sanctuaries: The Hill Stations of Colonial South Asia," in H. Fischer-Tiné and M. Framke (eds), *Routledge Handbook of the History of Colonialism in South Asia* (London: Routledge, 2021), 319–30; E. Jennings, "Hill Stations, Spas, Clubs, Safaris and Colonial Life," in R. Aldrich and K. McKenzie (eds), *The Routledge History of Western Empires* (London: Routledge, 2013), 346–61; C. Lowrie, "Chinese Elites, Hill Stations and Contested Racial Discrimination in Interwar Colonial Malaya and the Philippines," *Journal of Historical Geography* 79 (2023), 52–64; D. Pomfret, "'Beyond Risk of Contagion:' Childhood, Hill Stations, and the Planning of British and French Colonial Cities," in R. Peckham and D. Pomfret (eds), *Imperial Contagions: Medicine, Hygiene, and Cultures of Planning in Asia* (Hong Kong: Hong Kong University Press, 2013), 81–104; R. Reed, "The Colonial Genesis of Hill Stations: The Genting Exception," *Geographical Review* 69:4 (1979), 463–8; C. Coleborne and A. McCarthy, "Health and Place in Historical Perspective: Medicine, Ethnicity, and Colonial Identities," in *Health and History* 14:1 (2012), 1–11; D. Arnold, "Race, Place, and Bodily Difference in Early Nineteenth-Century India," *Historical Research* 77:196 (2004), 254–73; D. Kennedy, *The Magic Mountains: Hill Stations and the British Raj* (Berkeley: University of California Press, 1996).

Republic, then part of the Habsburg Empire. Renowned since the early nineteenth century as a destination for health-seekers from across Europe, Karlsbad offered relief from a range of ailments.[122] Breitenstein reported having "found so much relief for his stomach ailments" that he became convinced of the town's therapeutic potential. He was so persuaded by the healing properties of the hot springs that he requested an honourable discharge from the KNIL in order to settle permanently in Karlsbad.[123]

In 1898, Breitenstein opened his own *Kurpraxis* (spa clinic), which he advertised in Dutch and Dutch East Indies newspapers, repeatedly emphasising his previous service as a first-class medical officer in the KNIL.[124] In 1904, he published an extensive article in the *Sumatra Post*, praising Karlsbad as an ideal location for Europeans recovering from tropical diseases. "Hundreds and hundreds of sick civil servants, officers and private citizens go on leave to Europe every year," he wrote, "because despite the excellent medical treatment [in the Indies], they cannot recover in the tropical climate […]. And they long with 'Sehnsucht' [yearning] for the moment when they enter European soil and expect to be relieved of their suffering immediately."[125]

Breitenstein acknowledged, however, that recovery in Europe was not always straightforward. "Disappointments often occur," he admitted. Yet he remained optimistic: "Most of them often need months to regain their full health and recover new strength for the future, although they can overcome these ailments much faster and more pleasantly in the world-famous Karlsbad spa." He then described in meticulous detail the environmental qualities of Karlsbad, particularly its mineral waters, which could be consumed or used in baths and "have been the subject of chemical research by professionals," forming "the main basis for assessing the success of Karlsbad water and its influence on healthy and sick people." According to Breitenstein, these water-based treatments had proven highly effective: "Over the

[122] See Large, *The Grand Spas of Central Europe*; U. Lotz-Heumann, *The German Spa in the Long Eighteenth Century: A Cultural History* (New York: Routledge, 2022); K. Wood, *Health and Hazard: Spa Culture and the Social History of Medicine in the Nineteenth Century* (Cambridge: Cambridge Scholars Publishing, 2012); I. Bradley, *Health, Hedonism and Hypochondria: The Hidden History of Spas* (London: I. B. Tauris & Company, 2021); J. Steward, "Moral Economies and Commercial Imperatives: Food, Diets and Spas in Central Europe: 1800–1914," *Journal of Tourism History* 4:2 (2012), 181–203.

[123] See "Een oude kennis," *De Locomotief*, 11 May 1898.

[124] See, for example, advertisements in *Het Vaderland*, 25 April 1898; *Soerabaiasch-Handelsblad*, 18. May 1898; *De Locomotief*, 4 June 1898; *Soerabaiasch-Handelsblad*, 18 May 1898; *Dagblad van Zuid-Holland en 's-Gravenhage*, 9 June 1898.

[125] H. Breitenstein, "Een en ander uit Karlsbad," *De Sumatra Post*, 26 January 1904. For the history of discourses surrounding the healing properties of (drinking) water in Europe, see K. Fuchs, *Baden und Trinken in den Bergen: Heilquellen in Graubünden 16. bis 19. Jahrhundert* (Baden: Hier und Jetzt, 2019).

last ten years, the number of spa guests has increased by an average of 2,000 annually, which proves that Karlsbad is a serious spa and that its reputation is based on the healing power of its springs and other therapeutical aids." He concluded with confidence that patients from the Indies seeking recovery from tropical diseases would likewise experience rapid improvements if treated with the healing waters of Karlsbad.[126]

Roughly a decade before Heinrich Breitenstein, the Swiss physician Heinrich Erni had realised a very similar business venture. In 1889, shortly after completing his service in the KNIL, Erni opened a medical clinic in the internationally renowned Swiss spa and tourist destination of Gersau. As with Breitenstein's later decision to settle in Karlsbad, Erni's turn to curative practice in the Swiss "hinterlands" was profoundly shaped by his experiences in tropical Sumatra.

In 1899, he published an article in the *Archiv für Schiffs- und Tropen-Hygiene* discussing the Dutch East Indies' health care system, which he argued should serve as a model for other European nations entering the colonial race. "The murderous tropical climate with its diseases [...]," he writes, "rests like a nightmare on countries in the tropics and is the greatest enemy of the white population." Yet despite the devastating effect of the tropical environment on European bodies, Erni observes that "some nations have flourishing colonies in the hot zone, such as the British in India and the Dutch in the Malay Archipelago."[127]

His praise focused in particular on what he called the Dutch system of "evacuation", or the large-scale relocation of ill or recovering Europeans to more salubrious climates:

> The most beautiful and most effective institution is the evacuation of the sick, which is applied on a grand scale with a success that exceeds even the wildest hopes [...]. Malaria patients are primarily cured and saved by this [institution], and also beri-beri patients, liver patients, etc. are evacuated to the mountains, to the sea, to Europe at the expense of the state. The reason for evacuation is the difference in the climatological conditions of the individual regions of the [Dutch East] Indies, especially the difference between the high altitude and the coastal climate.[128]

To Erni, the Dutch evacuation regime constituted a "best practice" in colonial health care: Europeans debilitated by tropical diseases could recover fully only when removed to cooler, higher, or more familiar environments, whether hill stations

[126] H. Breitenstein, "Een en ander uit Karlsbad," *De Sumatra Post*, 26 January 1904.

[127] H. Erni, "Die Krankenfürsorge in Niederländisch-Indien," *Archiv für Schiffs- und Tropen-Hygiene* 3 (1899), 141.

[128] Ibid., 150.

in the tropics or Europe itself. "If we look at Europe," he added pointedly, "we do not see a single state who does the same for its ill [...]. Why, for example, should lung patients stay in the city hospitals until they die, while the healing mountain air is so close? [...] The Indian evacuation has been giving the definite answer for many years."[129]

Two years earlier, in 1897, Erni had already articulated these views at the Twelfth Medical Congress in Moscow, where an entire panel was devoted to the "climatic treatment of the tuberculous" in Europe. The session brought together leading German and Russian specialists and revealed deep disagreement between advocates of Koch's tuberculin and proponents of the *Höhenkur* ("altitude cure"), among whom Erni was a vocal figure. By the late nineteenth century, altitude therapy – treating tuberculosis and other respiratory diseases in high-altitude sanatoriums – had become an established practice in European medicine. Erni, a staunch anti-contagionist, insisted that the altitude cure was superior to tuberculin.[130]

Following the Moscow congress, he published a study on the treatment of pulmonary tuberculosis in which he defended his position by drawing on "observations from the colonies for lung patients on the Rigi." Mount Rigi, in the Canton of Schwyz, had long served as a destination for convalescents, and Erni claimed it was a "suitable place for the observation of sick patients, many of whom go up or are sent up there in large numbers every year."[131] The healing effects he believed to have observed in the Swiss mountains stood in stark contrast to the pathogenicity he associated with the tropics, yet, in his view, they closely resembled conditions in the highlands of Sumatra. Patients recovering in the mountain air, he argued, showed a "fresh vigorous appearance," with notable "improvements of the lungs," and "contrasted favourably with the pale figures from the south, who were sensitive to every draught of air and only dared to go outdoors wrapped up thickly."[132] Mountain sanatoriums, he concluded, represented "the future," asserting that "open-air cures are now the word of the day." Thanks to "the establishment of sanatoriums [...]," he added, "Switzerland is on the right track."[133]

[129] Ibid., 165.

[130] See H. Erni, *Die Behandlung der Lungenschwindsucht: Beobachtungen aus den Kolonien für Lungenkranke am Rigi* (Gersau: Gebrüder Müller, 1898), 3. For the history of the sanatorium in Europe see P. Warren, "The Evolution of the Sanatorium: The First Half-Century, 1854–1904," *Canadian Bulletin of Medical History* 23:2 (2006), 457–76; For Switzerland, see T. Gull, *Herwigs in Arosa: Die Erfindung eines Kurorts* (Zürich: Hier und Jetzt, 2022); C. Schürer, *Der Traum von Heilung: Eine Geschichte der Höhenkur zur Behandlung von Lungentuberkulose* (Baden: Hier und Jetzt, 2017).

[131] Erni, *Die Behandlung der Lungenschwindsucht*, 107.

[132] Ibid., 108.

[133] Ibid., 8.

Erni himself had become part of that "right track" almost immediately after returning from the Dutch East Indies in 1886, when he established his clinic in Gersau, a small town at the foot of Mount Rigi. In 1889, he advertised his clinic in the *Bataviaasch Nieuwsblad*, the largest daily newspaper in the Dutch East Indies, referring to its privileged location in the vicinity of Lake Lucerne. The advertisement highlights that the local environment in Gersau was perfectly suited for "patients from the tropics," with first- and second-class hotels as well as private apartments being available for prospective patients.[134] Long before Erni's arrival, Gersau had achieved fame as a tourist and spa destination, attracting guests from across Europe, including the Netherlands.[135]

In 1891, the town hosted two particularly notable visitors: Queen Wilhelmina of the Netherlands and her mother, then serving as regent. Although their stay was initially kept secret, news of the royal visit soon spread, generating extensive coverage in the Dutch and Dutch East Indies press. "Gersau!" exclaimed the *Java-Bode*: "Just a few weeks ago, most people did not even know the town's name." The queen's visit changed that dramatically, the newspaper continued, calling attention to the "special features" of the "location" – its climate, surroundings, and history."[136]

Sensing opportunity, Gersau's tourism sector swiftly began courting visitors from the Netherlands. The Gersau Spa Association (*Kurverein Gersau*) launched an advertising campaign in Dutch newspapers, proclaiming: "Switzerland is expensive? No!!!" and promoting the town as a destination "where holidays are still really holidays."[137] The locally run Hotel Müller also advertised frequently in the Dutch press.[138] The campaign appears to have succeeded: according to Erni, guests from the Netherlands, alongside Germans and French, made up the largest share of non-Swiss spa patients in the Gersau "lung colonies." It is highly likely that some of them had previously resided in the Dutch East Indies and sought out Gersau to recover from tuberculosis contracted in the colony.[139] For Erni, the decision to settle in the Canton of Schwyz after his KNIL service seems to have been equally advantageous.

[134] "Dr. Erni, Kurarts," *Bataviaasch Nieuwsblad*, 16 February 1889.

[135] See L. Tissot, "Tourismus," *Historisches Lexikon der Schweiz (HLS)*, 08.03.2022, online, https://hls-dhs-dss.ch/de/articles/014070/2022-03-08/ [accessed: 12.06.2023]; S. Barton, *Healthy Living in the Alps: The Origins of Winter Tourism in Switzerland, 1860–1914* (Manchester: Manchester University Press, 2014).

[136] "Gersau," *Java-Bode*, 30 May 1891.

[137] Kurverein Gersau, "Zwitserland," *De Telegraaf*, 25 April 1881.

[138] See, for example, "Hôtel en Pension Müller," *Haagsche Courant*, 25 February 1899. For the history of the hotel Müller and its significance in establishing tourism in Gersau see E. Horat, "Müller, Josef," *Historisches Lexikon der Schweiz (HLS)*, 19.11.2009, online https://hls-dhs-dss.ch/de/articles/030433/2009-11-19/ [accessed: 12.06.2023].

[139] See Erni, *Die Behandlung der Lungenschwindsucht*, 108.

The Zurich-born physician remained a practicing doctor in Gersau for most of his life, embedding his colonial experience within a thriving European spa economy.[140]

Conclusion

In 1890, after nearly three years of unsuccessful attempts to isolate the bacterium presumed to cause beriberi in the Dutch East Indies, Christiaan Eijkman made an observation that would earn him a Nobel Prize in Medicine in 1929: all of his experimental chickens, including those intentionally shielded from the pathogen he believed responsible, developed symptoms of beriberi. Their condition improved only when their diet was changed from polished to unpolished rice. From this, Eijkman hypothesised that beriberi did not stem from a microbial agent, as widely assumed, but from the absence of a vital nutrient removed during the polishing process. Initially dismissed, even mocked, this hypothesis would later form the foundation for the discovery of vitamins, deficiencies of which were ultimately shown to cause beriberi.[141]

This often-told story on the discovery of vitamins, framed as a singular moment of scientific serendipity, obscures a far more intricate and contested history of bacteriological research. Eijkman was neither the first nor the only medical practitioner to advance a dietary explanation for beriberi, and the "coincidental" circumstances surrounding his discovery were not exceptional. Throughout the late nineteenth century, both bacteriologists and colonial physicians pursued aetiological theories through a combination of systematic laboratory experimentation and contingent, sometimes accidental, observations made in the colonial field.

A central aim of this chapter has been to situate these debates and the multiplicity of actors involved within their colonial context. By introducing *Germanophoneness* as an analytical framework, it has highlighted the inherently transimperial character of medical knowledge production in the age of empire. In the late nineteenth century, a dispersed community of German-speaking physicians competed to establish the "scientific truth" about diseases in the tropics, linking researchers in Berlin, Amsterdam, Sumatra, and Tokyo through a shared lingua franca and a shared publication culture. The *Geneeskundig Tijdschrift voor Nederlandsch-Indië* (GTNI) emerged as a crucial node in these networks, providing a forum through which medical mercenaries circulated their findings from the Dutch East Indies to a broader Germanophone scientific community.

[140] See "Dr. med. Heinrich Erni," *Neue Zürcher Zeitung*, 11 February 1942.

[141] See Carpenter, "The Discovery of Thiamin;" K. Pietrzak, "Christiaan Eijkman (1856–1930)," in *Journal of Neurology* 266:11 (2019), 2893–5.

The chapter also underscored the pivotal role of practitioners in the colonial field in shaping late nineteenth-century debates on bacteriology, as well as the centrality of colonial armies as sites of medical knowledge production. Seeking explanations for the diseases that devastated their troops, the Dutch Colonial Army afforded its medical officers opportunities to conduct research during off-duty hours that enabled medical mercenaries to enter contemporary debates surrounding emerging subdisciplines such as bacteriology and tropical medicine. Their efforts must be understood not merely as scientific interventions but also as performances of medical masculinity: by emphasising bodily endurance, experiential knowledge, and intimate proximity to disease, medical officers claimed an epistemic authority they framed as superior to that of "armchair" laboratory scientists in metropolitan Europe. Additionally, their assertion of authority entailed the systematic exclusion of those whom colonial hierarchies rendered illegible as scientific actors – women as well as Javanese, Batak, Acehnese, and Chinese medical experts, many of whom possessed deep expertise in both local and European therapeutic traditions. Only in the twentieth century would such exclusions provoke organised resistance and broader claims to equal access to the promises of "modernity" in the Dutch East Indies.

The chapter has further argued that the relationship between bacteriological universalism, environmental determinism, and colonial ideology was contingent and mutually constitutive. Although colonial physicians framed their field experience as their greatest advantage over metropolitan researchers, they, too, employed the methods of laboratory research: meticulous clinical documentation, microscopic investigations, controlled experiments, and the dissection of colonised bodies. Conversely, bacteriologists left the laboratory to conduct field research in colonial settings. Despite its universalist rhetoric, bacteriology remained entangled with colonial ideologies: race functioned as a crucial marker of difference, underpinning concepts such as "racial immunity" and subfields including racial pathology and racial hygiene.

Germanophone medical officers' interventions in bacteriological discourse provide a lens onto the transimperial circulation of medical knowledge between the Dutch East Indies, German-speaking Europe, and the German Empire. The German KNIL veteran Karl Däubler, for instance, explicitly positioned his colonial experience in the Dutch East Indies as a resource for German imperial ambitions in Africa in his *Grundzüge der Tropenhygiene* (1895). Notions of the tropics as inherently pathogenic likewise shaped how medical mercenaries perceived and represented the environments of their home countries. After their KNIL service, Heinrich Breitenstein and Heinrich Erni marketed spa clinics in Karlsbad and Gersau as restorative counterpoints to the "unhealthy" conditions of the tropics, thereby reinforcing a dichotomy between a supposedly "civilised" European climate and a "hostile" tropical one. In doing so, they not only participated in the

circulation of medical knowledge across imperial boundaries but also contributed to the broader narrative of environmental determinism that informed European medical and cultural discourses at the fin de siècle. The history of early bacteriology, when viewed through the lens of Germanophone medical mercenaries in the Dutch East Indies, thus emerges not as a triumphant march toward universal scientific truth but as a field marked by competing paradigms, contested authorities, and the deep entanglements of "modern" microbiological sciences with empire.

CHAPTER 4

From "Koelie Medicine" via Plantation Hygiene to International Public Health: German and Swiss Physicians on Sumatra's Plantation Belt

Abstract

This chapter examines German and Swiss physicians employed in private plantation laboratories and hospitals in northeastern Sumatra, highlighting their central role in institutionalising plantation hygiene, a medical subdiscipline designed to curb diseases among indentured labourers. It interrogates claims that plantation hygiene was a philanthropic endeavour, foregrounding the economic motives behind improving "coolie" health. It shows how plantation hygiene functioned as a set of racialised biopolitical interventions that shaped workers' daily lives and restricted their mobility and bodily autonomy. The chapter finally traces how knowledge produced on Sumatran plantations circulated globally, informing medical discourse in the German Empire and later United Nations health commissions.

Keywords: Sumatra; Plantations; Colonial hygiene; Public health; Indentured labour

> In earlier years, the high-altitude estates were considered to be climatically unhealthy, and this was used as an excuse for the large losses due to disease and death. Today, the difference in mortality is reduced to a small percentage: The climate remained the same […] but the pathogens have been driven back everywhere.[1]

In 1909, the German physician W. A. P. Schüffner and his Dutch colleague W. A. Kuenen looked back at ten years of public health and hygiene policies that successfully improved the health conditions among indentured labourers employed with the Senembah Company (*Senembah Maatschappij*), one of the largest tobacco conglomerates on Sumatra's plantation belt. At that time, Schüffner had been working as the Company's chief physician for twelve years. He was one – albeit the historiographically most reappraised – among several German and Swiss

[1] W. A. P Schüffner and W. A. Kuenen, "Die gesundheitlichen Verhältnisse des Arbeiterstandes der Senembah-Gesellschaft auf Sumatra während der Jahre 1897 bis 1907," *Zeitschrift für Hygiene* 64 (1909), 178.

physicians employed by European plantation companies to secure the health of disease-inflected Javanese and Chinese "coolies" in northeastern Sumatra from the 1870s onwards. Kuenen joined Schüffner as an assistant in 1902 and was appointed director of the Pathological Laboratory in Medan, established in 1906 by the Senembah Company and the neighbouring Deli Company (*Deli Maatschappij*). The laboratory's main aim was to study diseases prevalent among the Chinese and Javanese "coolies" on the European plantations as well as to formulate concrete policy recommendations to decrease the mortality rates among indentured labourers.[2] These public health recommendations specifically targeted individual diseases and parasites that were particularly prevalent on the Sumatra plantations – such as malaria, cholera, hookworms, and beriberi – constituting a form of vertical public health intervention that focused on disease-specific control rather than broader structural determinants of health. According to the statement quoted above, it was this laboratory-based production of scientific knowledge – and the public health measures derived from it – that, in the eyes of contemporary plantation physicians such as Schüffner and Kuenen, accounted for the marked improvements in the supposedly "unhealthy" conditions on the tropical plantations.

The establishment of scientifically informed health policies on Sumatra's plantation belt coincided with broader transformations in the transimperial market for medical expertise, as outlined in chapter 1. At the turn of the twentieth century, the Dutch Colonial Army – formerly the largest employer of foreign physicians in the Dutch East Indies – largely halted its recruitment of non-Dutch Europeans. Meanwhile, by the late nineteenth century, the wide spread of disease among indentured labourers on European plantations in Sumatra had sparked intense controversy in both Europe and the Dutch East Indies. Apart from being regarded as a threat to the productivity and profitability of the plantation economy, the high mortality rates on the plantations fuelled criticism from liberal European observers, who condemned the harsh and brutal working conditions endured by Javanese and Chinese "coolies." In response to both public outrage and financial concerns, European plantation conglomerates and mining companies in the Dutch East Indies established a privatised hospital system for their indentured workforce. Like the Dutch Colonial Army, they primarily recruited the hospitals' chief physicians in

[2] See B. Agustono, J. Nasution, and K. M. Affandi, "Pathology Laboratory: An Institution of Tropical Disease in Medan, East Sumatra, 1906–1942," *Cogent Arts & Humanities* 8:1 (2021), online, DOI: https://doi.org/10.1080/23311983.2021.1905261; C. W. Janssen, *Senembah Maatschapij, 1889–1914* (Amsterdam: Roeloefzen-Hübern en Van Santen, 1914), 43–4. For the high death rates on Sumatra's plantations see M. van Klaveren, "Death among Coolies: Mortality of Chinese and Javanese Labourers on Sumatra in the Early Years of Recruitment, 1882–1909," *Itinerario* 21:1 (1997), 111–24; J. Breman, *Koelies, planters en koloniale politiek: Het arbeidsregime op de grootlandbouwondernemingen aan Sumatra's oostkust in het begin van de twintigste eeuw* (Leiden: KITLV Uitgeverij, 1987).

the Netherlands and the German-speaking parts of Europe. From the perspective of non-Dutch physicians, the privatised "coolie" hospitals created new employment opportunities in the Dutch East Indies. German-speaking physicians, such as the aforementioned W. A. P. Schüffner, earned an excellent reputation among the plantation companies due to their significant contributions to "plantation hygiene," a medical subdiscipline aimed at curbing the spread of disease among plantation workers.

Earlier historical research has largely presented the history of public health policies on Sumatra's plantation belt as an unambiguous success story.[3] In doing so, scholars have often echoed narratives produced by the plantation companies themselves, which presented the establishment of private hospitals and laboratories as a philanthropic project that primarily intended to improve the overall health conditions of indentured labourers.[4] It is true that these privatised medical facilities partly compensated for gaps in civil healthcare caused by the Dutch colonial military's monopoly on European medicine: while the annual mortality rate among Javanese and Chinese workers on the Senembah plantations averaged 31.8 per thousand between 1905 and 1907, the corresponding rate in Batavia reached 51.6 per thousand.[5]As late as 1940, the 238 still-operating company hospitals offered three times the patient capacity of all colonial government civil hospitals combined.[6]

In recent years, however, historians have started to critically investigate the institutionalisation of workers' hygiene in the Dutch East Indies by interpreting it as an early manifestation of economically driven "corporate social responsibility" or by exploring how physicians' "political views" influenced policies aimed at increasing indentured labourers' health and productivity.[7] Building on these critical perspectives, the present chapter contributes to a growing body of research that reassesses the alleged philanthropic nature of early twentieth-century colonial

[3] See, for example, G. T. Haneveld, "From Slave Hospital to Reliable Health Care: Medical Work on the Plantations of Sumatra's East Coast," in G. M. van Heteren, A. De Knecht-Van Eekelen, and M. J. D. Pulissen (eds), *Dutch Medicine in the Malay Archipelago 1816–1942* (Amsterdam: Rodopi, 1989), 73–86.

[4] See, for example, the 'hagiographies' published by the Senembah Company and the Deli planter's association: Janssen, *Senembah Maatschappij*; P. W. Modderman, *Gedenkboek uitgegeven ter Gelegenheid van het Vijftig Jarig Bestaan van de Deli Planters Vereeniging* (G. Kolff & Co. Weltevreden, 1929).

[5] Schüffner/Kuenen, "Die gesundheitlichen Verhältnisse," 185–6.

[6] See F. Ochsendorf, "Colonial Corporate Social Responsibility: Company Healthcare in Java, East Sumatra and Belitung, 1910–1940," *Lembaran Sejarah* 14:1 (2018) 84.

[7] See Ochsendorf, "Colonial Corporate Social Responsibility;" G. Jaelani, "Preserving the Resources: Plantations and Mines Workers' Hygiene," *Archipel: Études interdisciplinaires sur le Monde Insulindien* 104 (2023), 33–56; H. Pols, "Quarantine in the Dutch East Indies," in A. Bashford (ed), *Quarantine: Local and Global Histories* (London: Palgrave Macmillan, 2016), 85–102.

public health.[8] While much of the existing scholarship focuses on state-led healthcare initiatives, this study widens the historiographical lens by turning to privatised, company-driven public health, and, in doing so, highlights the economic rationales that underpinned the institutionalisation of civil medicine in the colonies.[9]

A second gap in the existing scholarship concerns the temporal and analytical boundaries within which plantation medicine in Sumatra has typically been examined. Historians have largely concentrated on the centralisation of Sumatra's plantation hospital system, the establishment of the laboratory in Medan, and the scientific "breakthroughs" associated with these institutions following the arrival of W. A. P. Schüffner in 1897. This focus has tended to marginalise the broader historical developments that both preceded and followed the "official" institutionalisation of plantation hygiene in the early 1900s. Such a temporal narrowing is characteristic of wider historiographies of colonial public health and tropical medicine – including, for example, Warwick Anderson's seminal work on public health in the American Philippines – which often privilege the early twentieth century, largely disregarding longer trajectories and transformations emerging in nineteenth-century colonial medical discourse.[10] Addressing this lacuna, this chapter seeks to reconstruct the wider continuities linking nineteenth-century colonial medicine with early twentieth-century public health initiatives, as well as with the subsequent rise of the global health movement. A further gap becomes apparent

[8] See, for example, A. Velmet, *Pasteur's Empire: Bacteriology and Politics in France, its Colonies, and the World* (New York: Oxford University Press, 2020); A. Bashford, *Imperial Hygiene: A Critical History of Colonialism, Nationalism, and Public Health* (Basingstoke: Palgrave Macmillan, 2004); W. Anderson, *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines* (Durham: Duke University Press, 2008); K. Pelis, "'Prophet for Profit in French North Africa: Charles Nicolle and the Pasteur Institute of Tunis, 1903–1936," *Bulletin of the History of Medicine* 71 (1997), 583–622; P. Lorcin, "Imperialism, Colonial Identity, and Race in Algeria, 1830–1870: The Role of the French Medical Corps," *Isis* 90:4 (1999), 653–79; L. Monnais-Rousselot, *Médecine et colonisation: L'aventure Indochinoise, 1860–1939* (Paris: Editions CNRS, 1999); A. M. Moulin, "The Pasteur Institutes between the Two World Wars: The Transformation of the International Sanitary Order," in P. Weindling (ed), *International Health Organisations and Movements, 1918–1939* (New York: Cambridge University Press, 1995), 244–65; K. Brig, "Stabilising Lymph: British East and Central Africa, 'Tropical' Climates, and the Search for Effective Smallpox Vaccine Lymph, 1890s–1903," *The Journal of Imperial and Commonwealth History* 50:5 (2022), 890–914; H. L. Clark, "Of Jinn Theories and Germ Theories: Translating Microbes, Bacteriological Medicine, and Islamic Law in Algeria," *Osiris* 36 (2021), 54–85; L. Manderson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870–1940* (Cambridge: Cambridge University Press, 1996).

[9] For the economic imperatives shaping colonial public health policies in British India see N. Bhattacharya, *Contagion and Enclaves: Tropical Medicine in Colonial India* (Liverpool: Liverpool University Press, 2012); S. Serahwat, *Colonial Medical Care in North India: Gender, State, and Society, c. 1830–1920* (Oxford: Oxford University Press, 2013).

[10] See Anderson, *Colonial Pathologies.*

when considering the transnational composition of Sumatra's planter society: although recent studies have illuminated the crucial role of German and Swiss planters on Sumatra's plantation belt, no study has so far examined the significant presence of physicians from the German Empire and Switzerland in Sumatra's health care regimes. In response, this chapter explores how Germanophone physicians participated in the transimperial production and circulation of public health policies from the late nineteenth to the twentieth century.

The first section situates the institutionalisation of plantation hygiene within a transimperial framework by reconstructing the emergence of a German and Swiss diaspora in Sumatra, comprising planters and plantation owners, who facilitated the recruitment of physicians from Germanophone Europe. It further demonstrates how these recruitment networks persisted before, during, and after the high tide of the German Colonial Empire, underscoring their durability beyond formal imperial structures.[11] Section two examines how hygiene policies formulated by plantation physicians in Sumatra reshaped European imaginations of Chinese and Javanese indentured labourers' bodies, particularly regarding their alleged (racial) predisposition to disease.[12] It also shows how these theoretical constructions of "coolie" bodies translated into practical hygiene policies through the establishment of villages modelled after military barracks, which were designed to transform "coolies" from disease-carriers into "modern," hygienic subjects. At the same time, it points to the significant role of local medical expertise and acts of resistance in the implementation of plantation hygiene.

Understanding "public health and colonial medicine as a multicentered process,"[13] the final section examines the transimperial circulation and long-term implications of plantation medicine from Sumatra. It argues that the medical subdiscipline of plantation hygiene, developed on Sumatra's plantation estates,

[11] For the temporal extension of German colonialism, see S. Conrad, *Globalisation and the Nation in Imperial Germany* (Cambridge: Cambridge University Press, 2010); B. Naranch, and G. Eley (eds), *German Colonialism in a Global Age* (Durham: Duke University Press, 2014); M. von Brescius and C. Dejung, "The Plantation Gaze: Imperial Careering and Agronomic Knowledge between Europe and the Tropics," *Comparativ* 31:5/6 (2022), 572–90; U. Kirchberger, "German Scientists in the Indian Forest Service: A German Contribution to the Raj?," *The Journal of Imperial and Commonwealth History* 29:2 (2001), 1–26; U. Kirchberger, "Between Transimperial Networking and National Antagonism: German Scientists in the British Empire during the Long Nineteenth Century," in A. Goss (ed), *The Routledge Handbook of Science and Empire* (London: Routledge, 2021), 138–47.

[12] For the remaking of Tamil bodies on plantations in British Malaya, see R. Baxstrom, "Governmentality, Bio-Power, and the Emergence of the Malayan-Tamil Subject on the Plantations of Colonial Malaya," *Crossroads: An Interdisciplinary Journal of Southeast Asian Studies* 14:2 (2000), 49–78.

[13] R. Peckham and D. M. Pomfret, "Introduction: Medicine, Hygiene, and the Re-ordering of Empire," in idem (eds), *Imperial Contagions: Medicine, Hygiene, and Cultures of Planning in Asia* (Hong Kong: Hong Kong University Press, 2013), 7.

later proved useful for German imperial efforts, particularly in the German South Pacific, where tobacco companies hired veterans from Sumatra's plantation belt to benefit from with their long-standing expertise in the economic exploitation of tropical environments and populations. At the same time, German-speaking plantation physicians regularly published their findings in authoritative German medical journals such as the *Archiv für Schiffs- und Tropenhygiene*, thereby disseminating knowledge produced in Sumatra's laboratories to a wider Germanophone readership.

Many Swiss and German plantation physicians transformed the symbolic capital acquired through their activities in Sumatra's plantation hospitals into career opportunities in Europe. After having returned to Europe, some secured prestigious professorships in tropical medicine at institutions in Switzerland, Germany, and the Netherlands. Within the framework of these appointments, they joined international congresses and supranational research commissions dedicated to "improving" the health of populations inhabiting the tropical world.

German-speaking Physicians on Sumatra's Plantation Belt

Since the publication of Ann Laura Stoler's influential study *Capitalism and Confrontation in Sumatra's Plantation Belt, 1870–1979*, the colonial plantation complex of northeastern Sumatra has occupied a prominent place in historiography.[14] Scholars have emphasised the violence, hardships, and slave-like working conditions experienced by the indentured labourers employed on the European plantations,[15] while others have pointed to the long-term effects of environmental, demographic, and socio-economic transformations produced by large-scale land clearance and labour migration in the nineteenth and twentieth centuries.[16] More

[14] To date, Stoler's work provides the most extensive English-language overview of the colonial plantation economy on Sumatra and its aftermath. See A. L. Stoler, *Capitalism and Confrontation in Sumatra's Plantation Belt, 1870–1979* (New Haven: Yale University Press, 1985).

[15] See Breman, *Koelies, planters en koloniale politiek*, 217–62; J. Stenberg and B. Minasny, "Coolie Legend on the Deli Plantation: Tale, Text, and Temple of the Five Ancestors," *Bijdragen tot de Taal-, Land- en Volkenkunde* 178:2/3 (2022), 159–91; B. Agustono, "Violence on North Sumatra's Plantations," in F. Colombijn and T. Lindblad (eds), *Roots of Violence in Indonesia: Contemporary Violence in Historical Perspective* (Leiden: KITLV Press, 2002), 133–41; V. Houben, "Homes and Colonial Violence in the Dutch East Indies: The Coolie Pondok," J. Williams and F. Hentschke (eds), *To Be at Home: House, Work, and Self in the Modern World* (Oldenbourg: De Gruyter, 2018), 120–4; R. Darini, and D. A. Anggraeni, "The Life of Deli Tobacco Plantation's Workers in East Sumatera, 1880–1930," *Indonesian Historical Studies* 5:1 (2021), 30–44.

[16] See S. De Groot Heupner, "Labour Exploitation, Systematic Oppression and Violence in Palm Oil Plantations in North Sumatra, Indonesia," *People: International Journal of Social Sciences* 2:1

recently, historians have approached the history of the Sumatra plantations and their enduring legacies from a transnational perspective.[17] The historian Andreas Zangger, for instance, has highlighted the substantial presence of Swiss and German planters who migrated to Sumatra from the 1870s onwards to partake in the lucrative tobacco trade.[18]

For much of the nineteenth century, the plantation economy in the Dutch East Indies was shaped by the so-called *cultuurstelsel* (cultivation system), a state monopoly on agricultural production that mandated the cultivation of export-oriented cash crops and forced farmers to surrender a part of their harvest to the colonial government. The system resulted in severe poverty and famine among the colonised population, sparking mounting criticism from the emerging liberal political movement in the Netherlands. Among its most influential critics was Douwes Dekker, who, in 1856, published the novel Max Havelaar under the pseudonym Multatuli that fiercely denounced the oppression and exploitation inherent in Dutch colonial rule.[19] The cultivation system was ultimately abolished in 1870. In the same year, the colonial government introduced the *agrarische wet* (agrarian law), which opened the door for foreign investors to obtain long-term land leases from

(2016), 477–94; T. Murray Li, "After the Land Grab: Infrastructural Violence and the 'Mafia System' in Indonesia's Oil Palm Plantation Zones," *Geoforum Online* (2017), DOI: http://dx.doi.org/10.1016/j.geoforum.2017.10.012; M. Ford, "Violent Industrial Protest in Indonesia: Cultural Phenomenon or Legacy of an Authoritarian Past?," in G. Gall (ed), *New Forms and Expressions of Conflict at Work* (London: Palgrave Macmillan, 2013), 171–90; T. Murray Li, "The Price of Un/Freedom: Indonesia's Colonial and Contemporary Plantation Labor Regimes," *Comparative Studies in Society and History* 59:2 (2017), 245–76.

[17] See, for example, von Brescius/Dejung, "The Plantation Gaze;" M. Minarchek, "Plantations, Peddlers, and Nature Protection: The Transnational Origins of Indonesia's Orangutan Crisis, 1910–1930," *TRaNS: Trans-Regional and -National Studies of Southeast Asia,* 6:1 (2018), 101–29; Stoler, *Capitalism and Confrontation*, 17–22; M. Toivanen, "A Nordic Colonial Career Across Borders: Hjalmar Björling in the Dutch East Indies and China," *The Journal of Imperial and Commonwealth History* 51:2 (2023), 421–41.

[18] See A. Zangger, *Koloniale Schweiz: Ein Stück Globalgeschichte zwischen Europa und Südostasien (1860–1930)* (Bielefeld: Transcript, 2014).

[19] For the anti-colonial dimension of Max Havelaar and agricultural reforms in the Dutch East Indies, see D. Zook, "Searching for *Max Havelaar*: Multatuli, Colonial History, and the Confusion of Empire," *Modern Language Notes* 121:5 (2006), 1169–89; R. Salverda, "The Case of the Missing Empire, or the Continuing Relevance of Multatuli's Novel *Max Havelaar* (1860)," *European Review* 13:1 (2005), 127–38. For the cultivation system and its abolishment more broadly, see C. Fasseur, "Purse or Principle: Dutch Colonial Policy in the 1860s and the Decline of the Cultivation System," *Modern Asian Studies* 25:1 (1991), 33–52; U. Bosma, "Het cultuurstelsel en zijn buitenlandse ondernemers. Java tussen oud en nieuw kolonialisme," *TSEG – The Low Countries Journal of Social and Economic History* 2:2 (2005), 3–28; C. Fasseur, *The Politics of Colonial Exploitation: Java, the Dutch, and the Cultivation System* (Ithaca: Cornell University Press, 1994); F. Gouda, *Dutch Culture Overseas: Colonial Practice in the Netherlands Indies 1900–1942* (Singapore: Equinox Publishing, 1995), 47–8; U. Bosma, *The Sugar Plantation in India and Indonesia: Industrial Production, 1770–2010* (New York: Cambridge University Press, 2013), 88–104.

local authorities and ended the regime of forced cultivation of export-oriented cash crops. At this point, European agricultural production was mainly concentrated on the island of Java.[20]

In 1862, Sultan Mahmud Al Rasyid Perkasa Alam Shah of Deli, Sumatra, signed a treaty that permitted European planters to lease land in the areas under his reign. The first three land concessions were granted in 1865 to the Dutchman Jacob Nienhuys, the German B. von Mach, and the Swiss Albert Breker. In 1869, Nienhuys established the limited liability company *Deli Maatschappij* (Deli Company), which soon became a catalyst for further European investments, especially amid rising tobacco prices in the late nineteenth century. In 1871, the Dutch J. T. Cremer was appointed chief administrator of the Deli Company. He arranged financing for companies and individuals eager to participate in the nascent plantation economy of northeastern Sumatra. As a result, the number of plantation companies expanded rapidly, and in 1879, individual planters consolidated their interests by forming the Deli Planters' Association. In the years that followed – and in the near absence of formal colonial government structures on Sumatra – the Association strategically invested in the development of local infrastructure.[21]

Meanwhile, planters and merchants from across Europe and the Americas continued to flock to Sumatra to participate in the burgeoning plantation industry. Many German and Swiss planters began their careers with the Deli Company before acquiring leases and establishing their own plantation enterprises.[22] According to the historian Andreas Zangger, by 1884 Germans (16 per cent) constituted the second-largest group of Europeans on Sumatra's east coast after the Dutch (58.5 per cent), followed by the British (13 per cent), the Swiss (5.9 per cent), and the French (1.8 per cent).[23] In 1889, the Deli Company purchased several neighbouring plantations, many of which were Swiss or German owned, and united them under the newly founded conglomerate *Senembah Maatschappij* (Senembah Company).

Despite the gradual transfer of many estates to Dutch ownership and the concurrent consolidation of the German Empire's overseas colonies after 1884, German and Swiss nationals continued to maintain a prominent presence on Sumatra. Company records indicate that, by 1914, the Senembah Company employed twenty-one Germans, three Swiss, one Austrian, and one Danish citizen, compared with thirty-eight Dutch employees.[24] Even as late as 1930, Germans (7 per cent) and

[20] See Bosma, *The Sugar Plantation in India and Indonesia*, 27, 117, 130.

[21] See Stoler, *Capitalism and Confrontation*, 16–17; Breman, *Koelies, Planters en Koloniale Politiek*, 46–53; Pols, "Quarantine in the Dutch East Indies," 94–5.

[22] See Zangger, *Koloniale Schweiz*, 169–82.

[23] See ibid., 195.

[24] Janssen, *Senembah Maatschappij*, 38.

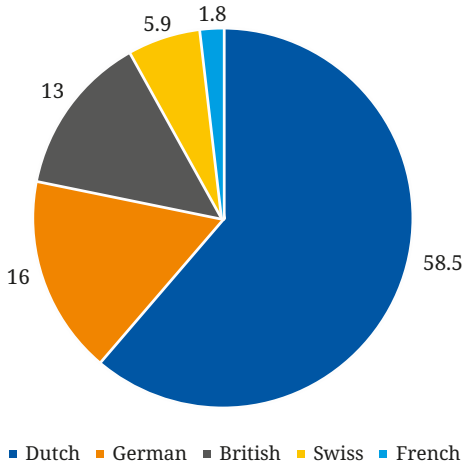

Figure 5: Europeans on Sumatra's East Coast (percentage according to nationality). Data based on Zangger, Koloniale Schweiz, 195.

Swiss (2.4 per cent) still represented a significant portion of the European planter community.[25]

The prominent role of planters from Germanophone Europe did not escape contemporary Dutch observers. Justifying the high proportion of Germans and Swiss in Sumatra, Christian Wilhelm Janssen, the founder of the Senembah Company, explained:

> The increased demands for controlling [the plantations] that were related to the increase of coolies and the intensification of labour, as well as the need to be aware at all times of the amount of expenditure on the various subjects, made it necessary to send out many new young people [to Sumatra] and to choose them from among the physically and mentally well-developed people, who brought sound family traditions [to Sumatra] and could be considered good representatives of the European element towards the Easterners.[26]

According to Janssen, the task of recruiting European personnel for Sumatra was far from straightforward. "Naturally," the Senembah Company initially sought to employ "suitable Dutchmen" since, at the time of its founding, "the personnel consisted mainly of Germans and Swiss." Yet, he notes, "it turned out that the most suitable elements here [in the Netherlands] did not opt for a career in Deli […]." Consequently, the company continued to approve applications "that reached us

[25] See Zangger, *Koloniale Schweiz*, 195.

[26] Janssen, *Senembah Maatschappij*, 36.

from Germany […].” The Senembah Company’s confidence in hiring Germans was reinforced by its prior experience taking over the formerly German- and Swiss-owned plantation company Näher & Grob, whose Dutch and German personnel “got along very well and complemented each other.” Janssen adds that, although German by nationality, these employees “made every effort to learn Dutch, while at the same time remaining good members of their ‘Deutscher Verein’ [German association].”[27]

In other words. the European planters in Sumatra appear to have exhibited a form of imperial cosmopolitanism that coexisted with, rather than diminished, their respective national identities. While maintaining ties to their Swiss or German heritage, planters successfully integrated into Dutch colonial society.[28] Beyond their ability to assimilate well, the Senembah Company emphasised that the Germans in Sumatra were “young people from good families, who had studied on large estates there [in Germany] and had received good theoretical agricultural education.”[29] The emphasis on German planters’ excellent “theoretical” training underscores the reputation of the German educational system, which made German experts especially desirable for foreign imperial services.[30]

Through such portrayals, European plantation companies presented the German-speaking planter diaspora as a civilising force driving the development and agricultural exploitation of Sumatra’s plantation belt. Yet this narrative also served to obscure the increasingly vocal criticisms in Europe regarding the harsh treatment of indentured labourers on these estates toward the end of the nineteenth century.

The Coolie Ordinance: The Early Days of Plantation Health Care

Agricultural knowledge was not the only form of expertise that European plantation conglomerates valued in their German and Swiss employees. Reflecting on the achievements of the German-Swiss tobacco company Näher & Grob, the Senembah Company highlighted that, in addition to employing “people who were well educated in the field of agriculture,” the firm had “managed to attract eminent physicians for their venture,” including the German Dr. Bernhard Hagen and Dr.

[27] Ibid., 36–8.

[28] For the role of national associations among diasporic European communities in the colonies, see Zangger, *Koloniale Schweiz*, 415–32.

[29] Janssen, *Senembah Maatschappij*, 38.

[30] See Kirchberger, “German Scientists in the Indian Forest Service;” B. Schär, “From Batticaloa via Basel to Berlin: Transimperial Science in Ceylon and Beyond around 1900,” *The Journal of Imperial and Commonwealth History* 48:2 (2019), 230–62; von Brescius/Dejung, “The Plantation Gaze;” Kirchberger, “Between Transimperial Networking and National Antagonism.”

Paster, "who belonged to the best physicians in Deli."[31] In general, the high presence of German and Swiss individuals within Sumatra's plantation owner and planter society was reflected in the medical staff of the plantation hospitals, whose chief physicians were recruited through interpersonal and academic networks across German-speaking Europe.[32]

The recruitment of European physicians must be understood against the backdrop of the so-called *Koelie Ordonnantie* (Coolie Ordinance), a set of laws introduced by the Dutch colonial government in 1880 that regulated the contractual relationship between European plantation companies and their indentured workforce. Other than on Java, where plantation workers were recruited among the local populations, the indigenous Batak and Malay communities of Sumatra largely refused to work on European plantation estates. European planters therefore "imported" their workforce among the (often impoverished) populations in China and central Java.[33] The recruitment of workers operated through a transimperial system of "coolie brokerage," a network of specialised agencies that provided plantations across the globe with indentured labourers from China, South, and Southeast Asia.[34]

From the perspective of the European planters, the Coolie Ordinance safeguarded the considerable investment involved in transporting labourers from neighbouring islands or mainland China. Through the introduction of the *poenale sanctie* (penal sanction), the ordinance allowed plantation owners to criminally prosecute and punish indentured workers who attempted to leave their three-year

[31] Janssen, *Senembah Maatschappij*, 7.

[32] For details on the recruitment process, see chapter 1.

[33] See Stoler, *Capitalism and Confrontation*, 25–9; Breman, *Koelies, Planters en Koloniale Politiek*, 76–91; T. Termorshuizen, "Indentured Labour in the Dutch Colonial Empire, 1800–1940," in G. Oostindie (ed), *Dutch Colonialism, Migration and Cultural Heritage* (Leiden: Brill, 2009), 261–314; Murray Li, "The Price of Un/Freedom;" G. Benton, *Chinese Indentured Labour in the Dutch East Indies, 1880–1942: Tin, Tobacco, Timber, and the Penal Sanction* (Cham: Springer, 2022).

[34] See M. Ginés-Blasi, "Exploiting Chinese Labour Emigration in Treaty Ports: The Role of Spanish Consulates in the 'Coolie Trade'," *International Review of Social History* 66:1 (2021), 1–24; A. J. Meagher, *The Coolie Trade: The Traffic in Chinese Labourers to Latin America 1847–1874* (Bloomington: Xlibris Corporation, 2008); M. Ginés-Blasi, "The 'Coolie Trade' via Southeast Asia: Exporting Chinese Indentured Labourers to Cuba through the Spanish Philippines," in K. Ekama, L. Hellman, and M. van Rossmu (eds), *Slavery and Bondage in Asia, 1550–1850: Towards a Global History of Coerced Labour* (Berlin: De Gruyter, 2022), 97–118; M. Jung, "Outlawing 'Coolies:' Race, Nation, and Empire in the Age of Emancipation," *American Quarterly* 57:3 (2005), 677–701; J. Sharma, "'Lazy' Natives, Coolie Labour, and the Assam Tea Industry," *Modern Asian Studies*, 43:6 (2008), 1287–324; M. Ginés-Blasi, "A Philippine 'Coolie Trade:' Trade and Exploitation of Chinese Labour in Spanish Colonial Philippines, 1850–98," *Journal of Southeast Asian Studies* 51:3 (2020), 457–83; R.P. Behal, "Coolie Drivers Or Benevolent Paternalists? British Tea Planters in Assam and the Indenture Labour System," *Modern Asian Studies* 44:1 (2010), 29–51; A. Datta, *Fleeting Agencies: A Social History of Indian Coolie Women in British Malaya* (Cambridge: Cambridge University Press, 2021).

contracts prematurely. In return, European companies were legally obligated to provide board and lodging, as well as rudimentary healthcare, for their workforce.[35]

While the Coolie Ordinance did guarantee a measure of workers' rights, the implementation of healthcare provisions was driven more by practical necessity than by philanthropic concern. As several scholars have noted, Javanese and Chinese indentured labourers on Sumatra were subjected to arbitrary, everyday violence that shocked even contemporary European observers. In addition, the harsh conditions on the plantations, the tropical climate, and the cramped living arrangements accelerated the spread of epidemic diseases that often resulted in death.[36]

In an effort to improve the overall health of indentured labourers – and in compliance with the legal requirements of the Coolie Ordinance – European plantation companies established small, decentralised hospitals on their estates during the 1870s and 1880s. Each estate hospital was typically headed by a Malay or Chinese medical expert and visited by a European physician on a bi-weekly basis.[37] One of the first European physicians recruited to Sumatra's emerging plantation healthcare system was the German Dr. Bernhard Hagen, who was employed in 1879 by the German-Swiss company Näher & Grob as a chief physician for the hospital in Tandjong Morawa. As I have argued elsewhere in more detail, Hagen displayed little interest in his role as a plantation physician, instead using his posting in Sumatra and his access to colonised patients to pursue a career in physical anthropology (or race science).[38] Nevertheless, his private papers and early publications offer a glimpse in the poorly documented early years of plantation hygiene on Sumatra's plantation belt.

Hagen meticulously recorded statistics on the "coolie" patients admitted to and treated at the plantation hospital,[39] and he compiled annual reports detailing the prevalence and nature of diseases as well as the number of hospital admissions in Tandjong Morawa. His records reveal both the deplorable state of the estates' medical infrastructure as well as the alarming frequency of injuries inflicted on indentured labourers by the European planters and Chinese supervisors. Between

[35] See Stoler, *Capitalism and Confrontation*, 28; Breman, *Koelies, Planters en Koloniale Politiek*, 284–307; Pols, "Quarantine in the Dutch East Indies," 95; Haneveld, "From Slave Hospital to Reliable Health Care," in G. M. van Heteren, et al., Dutch Medicine in the Malay Archipelago 1816–1942 (Amsterdam: Rodopi, 1989), 75.

[36] See Jaelani, "Preserving the Resources," 42; Breman, *Koelies, Planters en Koloniale Politiek,* 217–62; Stenberg/Minasny, "Coolie Legend on the Deli Plantation;" Agustono, "Violence on North Sumatra's Plantations;" Darini/Anggraeni, "The Life of Deli Tobacco Plantation's Workers."

[37] See Haneveld, "From Slave Hospital to Reliable Health Care," 75–6.

[38] See M. Ligtenberg, "Contagious Connections: Medicine, Race, and Commerce between Sumatra, New Guinea, and Frankfurt, 1879–1904," *Comparativ* 31:5/6 (2021), 555–71.

[39] See, for example, B. Hagen, "Staat darie Orang Tjina jang Maninggal Doenja Kampoeng Laboean Deli di dalam Boelan Mei 1887," in Institut für Stadtgeschichte Frankfurt am Main (ISG), Nachlass Bernhard Hagen, S1–175, 245.

September 1879 and December 1880, for instance, Hagen treated a total of 255 patients, nearly 10 per cent of whom were admitted for wounds and injuries. These figures do not include patients who were treated or died on site, nor those who sought care through Javanese or Chinese healing practices. Hagen also carefully documented the widespread prevalence of diseases such as dysentery, malaria, and syphilis, which caused the greatest number of fatalities.[40] Echoing a pragmatic, economic rationale, he noted: "It was a true calamity, and the planters suffered great [financial] damage due to the people's inability to work," a statement that illustrates the liberal economic spirit guiding late nineteenth-century European exploitation of labour and resources in Sumatra.[41]

In 1889, the German Hermann Näher and the Swiss Karl Fürchtegott Grob sold their Sumatra estates to the Dutch Senembah Company. Around the same time, Hagen ended his employment at the hospital in Tandjong Morawa and returned to Europe to recover from repeated bouts of dysentery and malaria.[42] With the acquisition of these plantation estates, the Senembah Company also inherited the existing medical infrastructure, including the "central hospital at Tandjong Morawa as well as auxiliary hospitals at Soengei Bahasa, Patoembah, Goenoenoeng Rinteh […], and Boentoe Batoembar."[43]

Following Hagen's departure, a "competent German doctor" named Dr. Hauser was appointed as his successor; unfortunately, he appears to have left no further trace in the archives. Despite Dr. Hauser's "competence," the overall health situation on the plantations showed little improvement. In 1890, the Senembah Company reported "great losses that were attributed to the poor quality of the new 'coolies' who had come over from China" as well as the spread of beriberi that had become "epidemic." Additional challenges included "prolonged heat," "excessive rains," cholera and dysentery, which "claimed many, many victims." Dr. Hauser was eventually succeeded by the Dutch physicians Dr. Löbell and Dr. Voorthuis who, despite enjoying the Senembah Company's "full confidence," were unable to significantly improve the general health conditions on the estates.[44]

[40] B. Hagen, "Erster Jahresbericht des Krankenhauses Tandjong-Morawa, 1879/80," in ISG, S1–175, 257.

[41] B. Hagen, "Vortrag über seine Tätigkeit als Arzt auf Sumatra," unknown location, 1901, in ISG, S1–175, 272.

[42] See Ligtenberg, "Contagious Connections," 561.

[43] Janssen, *Senembah Maatschappij*, 42–3.

[44] Ibid.

German-speaking Physicians and the Scientification of "Coolie" Healthcare

Bernhard Hagen and Dr. Hauser were among the first in a long line of German and Swiss physicians employed by European plantation companies in Deli from the late nineteenth century into the 1920s. By the turn of the twentieth century, mounting reports of widespread violence and deteriorating health conditions prompted European observers to increasingly condemn the poor working conditions on the Deli plantations. In response to this criticism – and to mitigate further financial losses caused by disease outbreaks – the Senembah Company adopted a more systematic approach to improving the health and hygiene on its plantations that targeted the treatment and prevention of specific diseases prevalent on its estates.[45]

The development of plantation hygiene on Sumatra stood within the broader context of the so-called "ethical policy," a Dutch variant of the French *mission civilisatrice* or the British "civilising mission," which became the official policy of the Dutch colonial government in 1901.[46] A central aim of the "ethical policy" was the expansion of civil healthcare for the indigenous population. However, its implementation primarily targeted urban centres and the island of Java, leaving the so-called "outer islands," including Sumatra, largely dependent on private initiatives for the delivery of public health services, particularly those aimed at indigenous populations and indentured labourers.[47]

[45] See Jaelani, "Preserving the Resources," 41–2; Ochsendorf, "Colonial Corporate Social Responsibility," 84.

[46] For the Dutch 'ethical policy,' see Gouda, *Dutch Culture Overseas*, 23–8; S. Protschky (ed), *Photography, Modernity and the Governed in Late-colonial Indonesia* (Amsterdam: Amsterdam University Press, 2015); A. Vickers, *A History of Modern Indonesia* (Cambridge: Cambridge University Press, 2005), 17–18, 23; J. Coté, "Colonising Central Sulawesi: The 'Ethical Policy' and Imperialist Expansion 1890–1910," *Itinerario*, 20:3 (1996), 87–107; A. Goss, "Decent Colonialism? Pure Science and Colonial Ideology in the Netherlands East Indies, 1910–1929," *Journal of Southeast Asian Studies* 40:1 (2009), 187–214; S. Moon, *Technology and Ethical Idealism: A History of Development in the Netherlands East Indies* (Leiden: CNWS Publications, 2007); E. Locher-Scholten, *Ethiek in fragmenten: Vijf studies over koloniaal denken en doen van Nederlanders in de Indonesische Archipel, 1877–1942* (Utrecht: Hes Publishers, 1981). There is an extensive body of literature on the British and French civilising missions. Good overviews are C. A. Watt and M. Mann (eds), *Civilizing Missions in Colonial and Postcolonial South Asia: From Improvement to Development* (London: Anthem Press, 2011); H. Fischer-Tiné and M. Mann (eds), *Colonialism as Civilizing Mission: Cultural Ideology in British India* (London: Anthem Press, 2004); D. Costantini, *Mission civilisatrice: Le rôle de l'histoire coloniale dans la construction de l'identité politique Française* (Paris: La Découverte, 2008). For the role of medicine in the 'civilising mission,' see P. Chakrabarti, *Medicine and Empire 1600–1960* (Basingstoke: Palgrave Macmillan, 2014), 164–81; M. Lyons, *The Colonial Disease: A Social History of Sleeping Sickness in Northern Zaire, 1900–1940* (Cambridge: Cambridge University Press, 2002).

[47] See Ochsendorf, "Colonial Corporate Social Responsibility," 84.

The involvement of private companies in improving worker health and hygiene was not unique to the Dutch East Indies. Across Western states and empires, enterprises increasingly implemented health policies to improve the productivity of their workforce. Katharyn Oberdeck, for example, has studied the case of the Kohler Company, a plumbing-ware enterprise promoting American standards of living among immigrant workers in the industrial village of Kohler, Wisconsin.[48] Similarly, Michitake Aso's seminal study on malaria in colonial and postcolonial Vietnam shows how researchers from the Pasteur Institute collaborated with the Michelin rubber company to reduce mortality on newly established plantations in southern Vietnam.[49]

The Senembah Company entrusted the task of improving workers' health on its plantation estates to the German physician Wilhelm August Paul Schüffner. Born in Prussia in 1867, Schüffner studied medicine in Würzburg and Leipzig before "preparing himself through a five-year clinical assistantship, including the study of [laboratory] bacteriology, for the arduous task that called him to the Senembah tobacco plantations on Sumatra's east coast in 1895."[50] Existing historiography typically presents his arrival in 1897 as a pivotal moment in the modernisation of sanitary and health practices on the Deli plantations.

One of Schüffner's most notable achievements was the centralisation of the plantation hospital system. Before his arrival, small hospitals were scattered across the Senembah Company's estates, forcing European physicians to travel long distances to attend to patients – a system Schüffner deemed inefficient. In response, the company opened a central hospital in Tandjong Morawa, setting a precedent that other European plantation companies on Sumatra's plantation belt would soon follow. In the subsequent years, the Holland America Plantation Company and the Deli Company followed Schüffner's model and established their own centralised health care systems. The Deli Company hired Schüffner's compatriot, the German physician Georg Maurer, to develop its central plantation hospital.

[48] See K. Oberdeck, "Of Tubs and Toil: Kohler Workers in an Empire of Hygiene, 1920–2000," *International Review of Social History* 55:3 (2010), 447–83.

[49] See P. Le Roux, *Alexandre Yersin, un Passe-Muraille (1863–1943): Vainqueur de la peste et de la diphtérie, explorateur des hauts plateaux d'Indochine. Suivi du récit d'exploration 'Sept mois chez les Moïs, par Alexandre Yersin'* (Paris: Connaissances et Savoirs, 2007); M. Aso, "Patriotic Hygiene: Tracing New Places of Knowledge Production about Malaria in Vietnam, 1919–75," *Journal of Southeast Asian Studies* 44:3 (2013), 423–43. Also see Nandini Bhattacharya's work on entrepreneurial incentives for malaria research on north Bengali tea plantations: N. Bhattacharya, "The Logic of Location: Malaria Research in Colonial India, Darjeeling and Duars, 1900–30," *Medical History* 55:2 (2011), 183–202; Bhattacharya, *Contagion and Enclaves*, 99–118.

[50] "Prof. Dr. Schüffner," *Deli Courant*, 13 January 1934.

Figure 6: A “coolie” hospital on the Tandjong Morawa plantation estate, 1903.
Leiden University Libraries Digital Collections, KITLV 12592.

Under Maurer’s initiative, in 1906, the Deli Company, the Senembah Company, and the Medan Tobacco Company joined forces to establish the Pathological Laboratory in Medan. The laboratory provided infrastructure for experimental research on diseases prevalent among indentured labourers, such as malaria or dysentery, produced vaccines, and offered facilities for visiting researchers from across Europe. In addition, most company hospitals were equipped with small laboratories, reinforcing a scientific approach improving the health of indentured labourers.[51] The healthcare initiatives recommended by Schüffner and Maurer were widely celebrated: between 1897 and 1907, mortality rates among workers employed by the Senembah Company reportedly fell from 60 per cent to 9.5 per cent per annum.[52]

Meanwhile, the steady expansion of Sumatra’s plantation economy created an enormous demand for European physicians to safeguard the survival and health of the indentured workforce. By 1903, 146 companies employed a total of 91,928 indentured labourers.[53] The historians Budi Agustono, Junaidi and Kiki Maulana Affandi

[51] See Modderman, *Gedenkboek*, 213; Janssen, *Senembah Maatschappij*, 43–4; Haneveld, “From Slave Hospital to Reliable Health Care,” 79–82; Jaelani, “Preserving the Resources,” 46–7; Agustono/Junaidi/Affandi, “Pathology Laboratory;” Pols, “Quarantine in the Dutch East Indies,” 97–100; Ochsendorf, “Colonial Corporate Social Responsibility,” 88–9.

[52] See Pols, “Quarantine in the Dutch East Indies,” 96.

[53] Numbers based on Breman, *Koelies Planters en Koloniale Politiek*, 258.

have identified a total of twenty-two hospitals and twenty-three physicians serving European plantation conglomerates in 1910, excluding medical assistants, nurses, and visiting researchers. By 1930, these numbers rose to forty-seven hospitals and fifty-three physicians.[54]

To meet their growing demand for medical personnel, plantation companies continued to recruit physicians from the Netherlands and German-speaking Europe to occupy leading roles in their healthcare and research facilities. In the years following Schüffner's arrival, numerous German and Swiss physicians were hired across Sumatra's hospitals and laboratories.[55] Although their exact number is difficult to determine due to the loss of many estate and company archives – and because many lower-ranking or lesser-known plantation physicians left little archival trace – available evidence points to the crucial role that German and Swiss physicians played in sustaining Sumatra's plantation healthcare regime.

Among them was Gustav Baermann, a German doctor from Breslau, who served as chief physician of the Serdang Doktor Fonds (SDF) in the 1910s and 1920s. The SDF was a consortium of around twenty plantation estates that employed approximately 9,000 indentured labourers and 100 European staff.[56] Its hospital comprised ten pavilions, each accommodating forty-two patients, along with a separate operating theatre and a well-equipped laboratory for blood and urine tests as well as for animal experiments.[57] Another notable figure was the Swiss physician Dr. Henggeler, who completed his practical medical exam in Batavia in 1896 before taking up a post at the plantation hospital in Tebing Tinggi, Deli, where he worked for just over six years before returning to Switzerland.[58] Around the same time, the German physician Dr. H. Dürk was commissioned by the Deli Company to study diseases prevalent on its estates, apparently due to his extensive laboratory expertise.[59]

In 1920, Kurt Surbek, a physician from Basel, sought employment with Batang Saponggol, a Swiss-managed, British-owned plantation estate. Accompanied by his wife Gret, he spent a total of twenty-five years in the Dutch East Indies, first on

[54] See Agustono/Junaidi/Affandi, "Pathology Laboratory," 5. Their figures are based on W. Kouwenaar, "De Gezondheidszorg ter Oostkust van Sumatra 1911–1935," *Geneeskundig Tijdschrift voor Nederlandsch-Indië (GTNI) Festbundel* (1936), 287.

[55] For the recruitment process, see chapter 1.

[56] See G. Baermann, "Die Assanierung der javanischen und chinesischen Arbeiterbestände," *Beiheft zum Archiv für Schiffs- und Tropenhygiene* 16:5 (1912), 509.

[57] See ibid., 514–15.

[58] See "Telegrammen aan De Locomotief," *De Locomotief*, 27 November 1896; "Dr. Oskar Henggeler," *De Sumatra Post*, 28 December 1903.

[59] See Ochsendorf, "Colonial Corporate Social Responsibility," 90.

Sumatra and later on Java, where the couple ran a sanatorium.[60] Lüneburg-born Henry Heinemann earned his medical degree in Munich in 1908 and, after working as a physician in British Ceylon, was hired as chief physician for the central hospital in Tandjong Morawa in 1923, succeeding W. A. P. Schüffner, who had been appointed to a professorship at the University of Amsterdam.[61]

Although employed by different plantation companies, Swiss and German plantation physicians often collaborated in the Pathological Laboratory in Medan or co-authored research publications presenting their latest findings on the sanitation of plantations and workers' dwellings. Many physicians were also active members of Sumatra's *Deutscher Verein* (German Association).[62] In 1908, for example, Dr. Georg Maurer was named honorary member of the Association.[63] Following his death in 1927, a contemporary observer noted that, "apart from the staff of the Deli Maatschappij," several "representatives of the Deutsche Verein" attended Maurer's funeral. The eulogy was delivered by Mr. Hopman on behalf of the German Association, who "honoured the deceased as a human and a German."[64] In the late 1920s, Gustav Baermann assumed the presidency of the Association, organising various meet-ups and events for Germans residing in Sumatra.[65] Through their affiliation with the German Association, physicians became closely integrated into the German-speaking planters diaspora that had emerged on Sumatra's plantation belt in the late nineteenth century, strengthening both their professional networks and social ties within the colonial settler community.

Race, Medicine, and the Commodification of "Coolie" Labour and Bodies

In plantation hospitals and laboratories, physicians developed scientifically grounded recommendations aimed at curbing the spread of diseases most common among indentured labourers in Sumatra. Their recommendations directly shaped

[60] The story of the Surbeks is recounted in the published memoirs of Gret Surbek. See G. Surbek, *"Im Herzen waren wir Indonesier:" Eine Bernerin in den Kolonien Sumatra und Java, 1920–1945*," (Zürich: Limmat Verlag, 2007).

[61] See "Dr. H. Heinemann Gehuldigd," *De Indische Courant*, 16 June 1937; C. Bühringer, "Während des Krieges in Ceylon," *Süddeutsche Monatshefte* 13 (1916), 44–5.

[62] According to the historian Andreas Zangger, such national associations in Southeast Asia acted as support networks for their members and served to maintain (cultural) ties with the homeland. They would organise common activities for their members and give them a platform to speak their mother tongue. See Zangger, *Koloniale Schweiz*, 417.

[63] See "Deutscher Verein," *De Sumatra Post*, 17 February 1908.

[64] "Begrafenis Georg Maurer," *De Sumatra Post*, 27 May 1927.

[65] See "Der Deutsche Verein," *De Sumatra Post*, 16 October 1929; "Dr. Gustav Baermann," *Deli Courant*, 29 January 1932.

European plantation companies' policies on recruitment, working conditions, hygiene infrastructure, and the housing of the "coolies" they employed.[66] However, as the historian Warwick Anderson reminds us in his study on public health in the colonial Philippines, imperial hygiene always entailed "a flexible, and sometimes unstable, framework for constituting racial capacities and colonial bodies. Indeed, racialised agency was constructed […] more through the projects of hygiene and bodily reform than any other means […]."[67] Similarly, the hygiene policies established by plantation physicians in Sumatra were neither completely detached from racial ideology, nor were they primarily motivated by philanthropy. Rather, the medicalisation of indentured labour reinforced racialised perceptions of "coolie" bodies and their supposed predisposition for work in tropical environments. As the historian Hans Pols has argued, "Deli medicine was medicine within a carceral society, forcibly applied in the interests of maintaining labour productivity and reducing the high expenses associated with labour recruitment and loss of manpower because of disease."[68] To sustain high productivity on the plantations, physicians experimented with the living conditions of indentured labourers, effectively transforming "coolie" housing into a laboratory where novel hygiene policies could be developed and refined.

The migration of "coolie" labour transformed the previously only sparsely populated east coast of Sumatra into one of the most ethnically diverse regions in the Dutch East Indies. Plantation physicians were often quick to notice what they presumed to be "racial differences" between their patients. In the late 1870s and 1880s, Dr. Bernhard Hagen meticulously documented the age, gender, and, importantly, race of the Chinese and Javanese workers under his care.[69] Based on these records, he concluded that susceptibility to certain diseases was inherently linked to racial predispositions. For instance, Hagen classified beriberi as an infectious disease and argued that it affected certain races more than others: "The Chinese and Javanese are the most likely to contract it," he wrote, "after them the immigrated Malays, at the most seldom the Indians (Tamils) and Europeans." According to him, only the "native Delimalay" appeared entirely immune.[70]

[66] See Jaelani, "Preserving the Resources," 40.

[67] Anderson, *Colonial Pathologies*, 2.

[68] Pols, "Quarantine in the Dutch East Indies," 100.

[69] See Hagen, "Staat darie Orang Tjina."

[70] See B. Hagen, *Unter den Papua's: Land & Leute, Thiere & Pflanzen in Deutsch-Neu-Guinea* (Wiesbaden: Kreidel, 1899), 46–7. For the relation between race and medicine more broadly see M. Harrison, "'The Tender Frame of Man:' Disease, Climate, and Racial Difference in India and the West Indies, 1760–1860," *Bulletin of the History of Medicine* 70:1 (1996), 68–93; S. Seth, *Difference and Disease: Medicine, Race, and the Eighteenth-Century British Empire* (Cambridge: Cambridge University Press, 2018).

Convinced of these supposed racial differences, Hagen maintained that physicians working in the tropics "must quite necessarily and as a matter of course study the ethnographic peculiarities of [their] patients."[71] He further argued that recognising the "ethnographic particularities" of different "coolie races" allowed plantation managers to assign tasks according to perceived racial traits. For example, he claimed that "only the born gardener, the Chinese" truly understood how to "properly handle the fine, expensive tobacco leaves," whereas "native" Malays and Javanese were better suited for construction work – an occupation he deemed entirely unsuited to the Chinese. "This is how one thing depends on the other," Hagen concluded, "and you have to pay careful attention if you want to work economically and with good results."

Hagen also assessed the overall health performance of the different ethnic groups: "Of all the foreign peoples, the Javanese and Malays have performed best in terms of health. […] The Chinese, as far as they were healthy, sturdy, and habituated to working in the fields, also held up well." Nevertheless, he advised planters to ensure that even workers recruited from these supposedly "sturdy races" were not of "inferior quality," warning that the harsh plantation conditions operated according to the rules of "natural selection" and the "survival of the fittest."[72] By presenting health and physical endurance as inherent racial traits, he contributed to the naturalisation of indentured labour exploitation through statistical inquiry, medical research, and "ethnographic" observation.[73]

As discussed in the previous chapter, the rise of laboratory bacteriology and parasitology did not liberate the medical sciences from ideological biases; rather, the emerging medical subdisciplines around 1900 often reinforced racialised perceptions of the human body under the guise of scientific universalism and objectivity. This is equally true for the laboratory investigations conducted by plantation physicians in Sumatra. In their report on health conditions at the Senembah Company's plantations, Schüffner and Kuenen argued that a carefully managed racial division of labour was not only economically beneficial but also essential for maintaining the health of indentured labourers.

"The Javanese", they wrote, "works on the fields, does the canal and drainage work, builds the roads and constructs the necessary barns and other buildings." According to Schüffner and Kuenen, the supposed "uniformity" of these tasks benefitted the overall health of workers as they ensured that "the people are not

[71] Hagen, "Vortrag über seine Tätigkeit als Arzt auf Sumatra."

[72] Hagen, *Unter den Papua's*, 37–8.

[73] Also see A. Kaur, "Indian Labour, Labour Standards, and Workers' Health in Burma and Malaya, 1900–1940," *Modern Asian Studies* 40:2 (2006), 460–74; S. S. Amrith, "Indians Overseas? Governing Tamil Migration to Malaya 1870–1941," *Past & Present* 208:1 (2010), 242–4.

easily overworked, a danger which in any case less affects the Javanese with his more phlegmatic temperament."[74] Another perceived health-related advantage of employing Javanese workers was that they came "to a country that is not essentially different from [their] homeland, whereas the Chinese must first acclimatize, i.e. according to our modern understanding, he must first come to terms with the diseases and pathogens that prevail here."[75] They further contended that disease-inflected mortality was significantly lower among the Javanese "race," reinforcing the notion that racialised traits could be linked to both labour capacity and vulnerability to disease.[76]

Schüffner and Kuenen further reinforced racialised assumptions about indentured labourers by asserting that "the addiction to wealth is particularly strong among the Chinese." According to them, this alleged racial trait meant that "the Chinese showed little consideration for his health" and, in some instances, "literally works himself to death." In contrast, they characterised the Javanese as inherently lazy, arguing that "he lets even considerable extra earnings slide if their acquisition disturbs his leisurely outlook on life."[77] By portraying Chinese coolies as "greedy" and "hungry for money," while depicting the Javanese as "idle" and "content," Schüffner and Kuenen perpetuated racial stereotypes deeply embedded in colonial discourse around 1900.[78]

On Sumatra's plantation belt, these stereotypes had direct implications for health-related policies. Acting on the "scientific" expertise of physicians such as Kuenen and Schüffner, European plantation companies sought to "protect" Chinese labourers from their alleged racial predisposition to overwork by imposing strict regulations on their working hours and employment conditions. For instance, at the start of their employment, Chinese labourers were typically hired on a daily basis. Only after demonstrating their ability to endure the harsh plantation conditions for a year were they, like the Javanese, offered multi-year contracts.[79]

[74] Schüffner/Kuenen, "Die gesundheitlichen Verhältnisse," 171–2.

[75] Ibid., 188.

[76] Ibid., 187.

[77] Ibid., 188.

[78] For European perceptions of Chinese indentured labourers see Benton, *Chinese Indentured Labour in the Dutch East Indies*. For Javanese labourers' alleged 'laziness', see R. Hoefte, "Cleansing the World of the Germ of Laziness: Hygiene, Sanitation, and the Javanese Population in Suriname," *História, Ciências, Saúde-Manguinhos* 21:4 (2014), 1437–55. For racial stereotypes in the Dutch East Indies more broadly, see B. Luttikhuis, "Beyond Race: Constructions of 'Europeanness' in Late-Colonial Legal Practice in the Dutch East Indies," *European Review of History* 20:4 (2013), 539–58. For the transimperial dimension of racialised labour recruitment, see U. Lindner, "Indentured Labour in Sub-Saharan Africa (1870–1918): Circulation of Concepts between Imperial Powers," in S. Damir-Geilsdorf et al. (eds), *Bonded Labour: Global and Comparative Perspectives (18th–21st Century)* (Bielefeld: Transcript, 2016), 59–82.

[79] See Schüffner/Kuenen, "Die gesundheitlichen Verhältnisse," 202.

The immigration of indentured labourers to Sumatra, combined with intensified interventions into the tropical environment driven by the industrial cultivation of tobacco and rubber, contributed to the accelerated spread of epidemic diseases such as malaria.[80] At the same time, the "bacteriological revolution" and the "discovery" of invisible disease agents heightened anxieties surrounding the global movement of people. Racialised bodies, in particular, were increasingly perceived as potential carriers of pathogenic microorganisms, whose mobility required strict surveillance.[81] In the eyes of plantation physicians, ensuring that only the "healthiest" and "sturdiest" among the Javanese and Chinese "races" were allowed to immigrate to Sumatra's east coast became a top priority.[82]

Schüffner and Kuenen describe the extensive medical screening process "coolies" underwent even before their departure to Sumatra: "Both [the Chinese and Javanese] races undergo medical examinations at their home port, whereby the weak and sick should be eliminated."[83] In 1899, the Deli Planters Association established a quarantine station on an island five hours off the coast of Belawan, where newly recruited workers were held prior to beginning work on the European plantations.[84] However, Kuenen and Schüffner noted that rigorous selection could not always be guaranteed during periods of labour shortages.[85] Gustav Baermann similarly observed that "when the demand for workers is not too high, a careful

[80] In a similar vein, the historians have linked the spread of malaria in British India to colonial infrastructure projects and related state interventions into the natural environment. See S. Watts, "British Development Policies and Malaria in India 1897–c. 1929," *Past and Present* 165 (1999), 141–81. See also D. Gilmartin, *Blood and Water: The Indus River Basin in Modern History* (Oakland: University of California Press, 2015).

[81] See, for example, A. Bashford (ed), *Medicine at the Border: Disease, Globalization and Security, 1850 to the Present* (Basingstoke: Palgrave Macmillan, 2014); R. D. Roy, *Malarial Subjects: Empire, Medicine and Nonhumans in British India, 1820–1909* (Cambridge: Cambridge University Press, 2017), 134; F. Dube, "Public Health at the Zimbabwean Border: Medicalizing Migrants and Contesting Colonial Institutions, 1890–1960," *Histoire Sociale/Social History* 52:105 (2019), 93–108; N. Molina, "Borders, Laborers, and Racialized Medicalization: Mexican Immigration and US Public Health Practices in the 20th Century," *American Journal for Public Health* 101:6 (2011), 1024–31; G. Korman, "When Heredity Met the Bacterium: Quarantines in New York and Danzig, 1898–1921," *Leo Baeck Yearbook* 46 (2001), 243–76; A. Birn, "Six Seconds per Eyelid: The Medical Inspection of Immigrants at Ellis Island, 1892–1914," *Dynamis* 17 (1997), 281–316.

[82] In the testimonies of Gustav Barmann, for example, Javanese and Chinese immigrants are described as "carriers," explicitly linking their migration to the spread of diseases. See G. Baermann, "Serdang Doktor Fonds: Hospitaal Petoemboekan en Serbadjadi Oostkust van Sumatra: Rapport VIII–XII 1914–1918," in Leiden University Library, Colonial Sources (KIT) Royal Tropical Institute, G 05–11/12, 18.

[83] Schüffner/Kuenen, "Die gesundheitlichen Verhältnisse,"181.

[84] See Pols, "Quarantine in the Dutch East Indies," 92.

[85] See Schüffner/Kuenen, "Die gesundheitlichen Verhältnisse," 183.

Figure 7: Plantation physician Gutav Baermann (back) inspects a newly arrived "coolie" at the Petoemboekan plantation hospital, 1920s. ETH University Archive, Image Archive, Collection Albert Frey-Wyssling, Dia_249–458.

selection is made by the physician in the recruitment offices on Java and inferior material is put aside. Under these circumstances, the physical and health-related quality of the newly recruited workers is excellent."[86]

Upon arriving at the plantations, Chinese and Javanese were required – as stipulated by the Coolie Ordinance – to undergo regular health examinations at the central hospitals. As part of these routine check-ups, Baermann provided the management of the Serdang Doktor Fonds with reports on the "average quality" of their workers.[87] He also regularly analysed their blood to identify "inferior" [sic!] individuals, who were subjected to more frequent medical inspections.[88] "Unfit workers, and especially germ carriers," he noted, were eventually "sent back home at the company's expense after being treated unsuccessfully" and "are no longer allowed to enter the enterprises."[89] In cases of bacterial infection, a worker's stool was examined three times at intervals of six to ten days, and the individual was

[86] Baermann, "Die Assanierung der javanischen und chinesischen Arbeiterbestände," 8.

[87] Ibid., 9.

[88] Ibid., 12.

[89] Ibid., 9.

"not discharged from the hospital before they are free from germs." Those whose bodies did not become completely germ-free were forced to return to Java.[90]

Overall, the racial division of labour on the Deli plantations, together with the strict surveillance mechanisms governing "coolie" migration, was celebrated as a major achievement at the time. Schüffner and Kuenen, for instance, compared the mortality rates of Javanese soldiers in the KNIL with those of Javanese plantation workers employed by the Senembah Company. They argued that the centralisation of Deli's hospital system between 1904 and 1907 had such a profound impact on the well-being of indentured labourers that their overall health supposedly surpassed that of KNIL soldiers, despite the latter having access to government-funded military hospitals.[91] They even claimed that mortality rates on the Senembah estates were comparable to those in Switzerland and markedly lower than in neighbouring Singapore or Malacca.[92]

Similarly, Gustav Baermann hailed the dramatic reduction in mortality rates at the SDF as a great "success," attributing these improvements directly to the "general control of our coolies which went hand in hand with the stricter hospital quarantine of all newly arriving coolies."[93] Such declarations of triumph, however, conceal the coercive and racialised logic underpinning public health interventions in Sumatra. The celebrated decline in mortality came at a significant cost. It not only reinforced colonial assumptions about the supposed "racial particularities" of Javanese and Chinese bodies but also intensified anxieties surrounding the global migration of racialised individuals, particularly their imagined role as vectors of disease. These concerns, framed as medical necessities, justified increasingly stringent restrictions on the mobility of indentured labourers and curtailed their bodily autonomy.

Model Villages and the Making of the 'Modern' Worker

The medical surveillance of indentured labourers did not end with their (healthy) arrival on the European plantations. Instead, European physicians' conviction that Javanese and Chinese workers lacked even the most basic understanding of modern hygiene justified ongoing biopolitical intervention into their everyday lives. As historian Warwick Anderson argues, Western observers depicted Southeast Asians as "infantile, immature subjects, unready yet for self-government of body or polity." Nevertheless, the presumed divide between "modern Europeans" and "infantile natives" was not imagined as entirely immutable. Many Europeans believed that

[90] Baermann, "Serdang Doktor Fonds," 115.

[91] See Schüffner/Kuenen, "Die gesundheitlichen Verhältnisse," 189–90.

[92] See ibid., 185–6.

[93] See Baermann, "Serdang Doktor Fonds," 5.

colonised individuals "might eventually be trained to behave hygienically […] and therefore embark on the career of the probationary citizen-subject, on becoming modern."[94]

European plantation physicians on Sumatra regarded their patients as subjects who required active guidance in adopting a "modern" and "hygienic" lifestyle. Central to their recommendations was the deliberate construction of built environments designed not merely to protect health but to discipline behaviour. As historians Robert Peckham and David Pomfret have noted, "new, laboratory-based understandings of infection […] provided often contradictory rationales for the recreation of colonial space."[95] In the early twentieth century, medical considerations played an increasingly central role in the planning of public spaces and private living environments.[96] On Sumatra's plantation belt, such spatial hygiene interventions were directed above all at the housing conditions of indentured labourers. While framed as efforts to curb the spread of disease, enhance workers' well-being, and secure labour productivity, the reorganisation of "coolie" housing also functioned as a tool of colonial control, reinforcing European authority over every aspect of workers' daily lives.

The housing regime devised on the advice of plantation physicians drew heavily on the layout and logic of military barracks. The military nature of indentured labourers' living environment is echoed in an article published in the *Deli Courant* in 1934, which describes the European health policies established on Sumatra as "piracy hygiene," a "semi-military system," in which "immigrants enjoyed the same freedom and were subject to the same discipline as soldiers in barracks and sailors in ships."[97] Such comparisons reveal the profoundly paternalistic assumptions underlying public health on Sumatra, echoing European physicians' attitudes toward lower-class soldiers who – much like plantation labourers – were viewed as requiring constant supervision and regulation owing to their alleged inability to live in a healthy, temperate, and rational manner (see chapter 2).

Schüffner and Kuenen speak of a "duty" on the part of plantation companies to mitigate the "health disadvantage that arises from barracking," a condition they believed resulted directly from removing labourers "out of their natural context." The practice of housing indentured labourers in cramped barracks posed a concern

[94] Anderson, *Colonial Pathologies*, 3.

[95] Peckham/Pomfret, "Introduction: Medicine, Hygiene, and the Re-ordering of Empire," 1.

[96] See Peckham/Pomfret (eds), *Imperial Contagions*; R. Peckham, "Hygienic Nature: Afforestation and the Greening of Colonial Hong Kong," *Modern Asian Studies* 49:4 (2015), 1177–209; P. Curtin, "Medical Knowledge and Urban Planning in Tropical Africa," *American Historical Review* 90:3 (1985), 594–613; G. A. Bremner (ed), *Architecture and Urbanism in the British Empire* (Oxford: Oxford University Press, 2016); A. Njoh, *Urban Planning and Public Health in Africa: Historical, Theoretical and Practical Dimensions of a Continent's Water and Sanitation Problematic* (Farnham: Ashgate 2012).

[97] "Prof. Dr. Baermann," *De Deli Courant*, 13 January 1934.

for plantation physicians, as they believed that the "damage resulting from the non-observance [of hygienic living conditions] accumulates with the mass of residents."[98] Their response was to articulate a comprehensive set of rules aimed at improving the health and hygiene conditions in the barracks. At the core of their recommendations was the emphasis on designing housing that was "airy, bright, and dry." Proper ventilation was considered essential for eliminating "damaging odours" and ensuring a healthier living environment. Incorporating ample natural light was believed to prevent bacterial growth, as bacteria were thought to thrive in dark spaces. Lastly, maintaining a dry atmosphere was deemed critical, as excessive humidity was seen as a key factor in fostering microbial proliferation.[99]

Another crucial aspect of "coolie hygiene" was ensuring that workers had access to sterilised water. To maintain water purity, Schüffner and Kuenen advised the Senembah Company to construct securely enclosed well shafts and to conduct regular bacteriological examinations of the well water. "Taken as a whole," they remarked, "the construction of wells is an art which stands on a high level of perfection in Europe, and which can be transferred to Sumatra with only insignificant changes." Invoking a civilisational hierarchy, they declared that it was time "to leave the ground of the primitive even in the case of well installations and to begin to make European demands."[100]

The health policies advocated by Schueffner and Kuenen were readily embraced by the Senembah Company. By 1898 – barely a year after Schüffner's arrival in Sumatra – the first reconstructions of the company's workers' dwellings had already been completed and, as the physicians later noted, "where new buildings were necessary our recommendations were generally followed." Convinced that improvements in workers' health validated their approach, Schüffner and Kuenen saw "no need" for further revisions to their housing guidelines by 1909. Yet this confidence in the infrastructure contrasted sharply with their distrust of the labourers themselves. "The best dwellings are useless," they insisted, "if they are treated in an incomprehensible way. The worker does not understand the least of the intention behind the many windows […]. The houses must therefore be constantly inspected, and it is one of the duties of the masters to ensure that the windows are used properly."[101]

Such remarks reveal the racialised assumptions underpinning their hygienic vision. Schüffner and Kuenen firmly believed that the Malay, Javanese, and Chinese "races" were inherently unhygienic and incapable of internalising European sanitary

[98] Kuenen/Schüffner, "Die gesundheitlichen Verhältnisse," 232.

[99] See ibid., 225.

[100] See ibid., 217–8.

[101] Ibid., 237.

Figure 8: "Coolie" dwellings on the Senembah estates in Deli, 1903. Leiden University Libraries Digital Collections, KITLV 12589.

practices without coercion. Their commentary on waste disposal is especially telling. They describe a supposed "native" reluctance to dispose of excrement hygienically and argued that, until workers recognised the dangers of "unknowingly spreading a hazardous toxin near their homes," any reform efforts would remain "fragmented and incomplete." Convinced that change would not occur organically, they urged the Senembah Company to "educate the people, with a particular focus on the Javanese community, as they bear significant responsibility for the future." To avert the "greatest of damage" in the meantime, they advocated for the implementation of "more stringent" measures, specifically emphasising the need of close "surveillance" and "punishment" in case workers failed to adhere to their hygiene recommendations.[102]

Much as in military camps, prostitution was common around the workers' barracks and constituted yet another focal point of medical anxiety for plantation physicians. Gustav Baermann attributed the prevalence of venereal disease – above all syphilis – to the behaviour of workers' wives, whom he claimed were "handed to another man by their husband for money." Accepting the persistence of local "sexual conditions" as a given, Baermann mobilised the spread of prostitution and syphilis as further justification for the "strict control and surveillance" of "coolies," positioning the regulation of their bodies as an indispensable measure for containing disease.[103]

[102] Ibid., 238.

[103] Baermann, "Die Assanierung der javanischen und chinesischen Arbeiterbestände," 20–3.

Figure 9: Hookworm Education Centre at Petoemboekan Hospital. Using images and mock-ups of workers' dwellings, plantation physicians in Sumatra sought to educate indentured labourers on adopting a "modern" and "hygienic" lifestyle. ETH University Archive, Image Archive, Collection Albert Frey-Wyssling, Dia_249–435.

Like Schüffner and Kuenen, Baermann regularly submitted medical reports to the Serdang Doktor Fonds, outlining designs for "hygienic" workers' housing that promised to enhance the overall health conditions to secure a stable and productive workforce. Baermann was convinced that the rigorous implementation of his recommendations would lead to an increase of "high-quality workers" ("beste arbeiders") while decreasing the number of "mediocre" ("middelmatig") and "severely infected" ("zwaar geinfecteerden") labourers.[104]

In 1927, Baermann presented the results of his efforts at the First Hygiene Exhibition of the Dutch East Indies in Bandung. There, he resorted to a didactic narrative centred on a fictional Javanese woman named Soeriop to illustrate the perils of everyday life under unsanitary conditions. After finishing her day's work on the plantation, Soeriop washes her clothes in a water barrel, while "she stands on the wet ground with bare feet, not yet knowing that underneath her lie the larvae of hookworms, penetrating through her bare feet and entering through the bloodstream and lungs to the intestines where they can gradually induce the most severe symptoms of the hookworm disease." "Fortunately," Baermann explains, "she has found herself in a company where medical advice and careful supervision are highly valued, ensuring conditions in which the hookworm disease cannot

[104] Baermann, "Serdang Doktor Fonds," 64–5.

affect her, implemented through regular worm cures, through the improvement of her accommodation, through cement screeding of floors, rooms, khaki limah [hallways], and kitchens, and the construction of high-quality latrines."[105]

Baermann also detailed the manifold advantages linked to hygienic housing and disease prevention measures on the estates belonging to the Serdang Doktor Fonds, including a significant decrease in mortality rates, increased work motivation and productivity, an overall enhancement in workers' "happiness" and "joy of life," and, most notably, substantial financial savings. "Through prophylaxis and hygiene," Baermann declared, "from 1906–1925, a total of 900,000 gulden was saved by reducing mortality rates alone. If we add the reduction of sick leaves [...] and a decrease in hospitalizations, the amount saved can be multiplied by three."[106]

Given the profit-oriented logic of plantation enterprises on Sumatra's east coast, such figures undoubtedly served as compelling evidence for continued investments in privatised public health initiatives – especially in the absence of government-funded, civil health care institutions on the "outer islands."[107] At the same time, these figures may explain the favourable reception of Germanophone physicians in the historical accounts authored by the Dutch plantation companies.

Between Resistance and Collaboration

Chinese, Malay, and Javanese workers on European plantations did not just passively accept the restrictive and profoundly paternalistic housing, healthcare, and surveillance regime imposed by European physicians. Rather, there is ample evidence that physicians repeatedly encountered resistance and were compelled to adapt their plans to local customs, communal norms, and competing medical preferences.

Bernhard Hagen, for instance, expressed deep frustration over the extent to which his "coolie" patients refused to be treated at the European plantation hospital in Tandjong Morawa. These tensions escalated during a beriberi "epidemic" in 1881/82, which claimed the lives of over 200 Chinese indentured labourers. Hagen remembered how a group of Chinese workers, outraged by the high death toll, was at the verge of a riot, blaming Hagen personally for the spread of beriberi and demanding the establishment of a Chinese-managed hospital. At the same time,

[105] G. Baermann and E. Smits, *Eerste Hygienische Tentoonstelling in Nederlandsch Indië te Bandoeng, 25 Kuni-10 Juli 1927: Catalogus der Inzending van het Hospitaal Petoemboekan Sumatra's Oostkust (Het Serdang Doctor Fonds)* (Medan: Varekamp & Co, 1927), 4–5.

[106] Ibid., 9.

[107] For health care costs on the European plantations on Sumatra, also see Agustono/Junaidi/Affandi, "Pathology Laboratory," 5.

Malay workers reportedly refused to share hospital rooms with Chinese patients on religious grounds and instead preferred to recover at home using indigenous medical therapies. Confronted with mounting pressure and the limits of his authority, Hagen had little choice but to concede to his patients' demands, ultimately arranging for the establishment of a separate Chinese hospital run by Chinese staff.[108]

More than two decades later, Schüffner and Kuenen similarly noted that both Chinese and Javanese workers insisted on being housed in separate barracks, apparently due to a combination of religious considerations, cultural differences, and distinct expectations regarding domestic space. In response, they developed housing arrangements that accommodated the distinct preferences of indentured labourers from different ethnic backgrounds. Chinese workers, most of whom remained celibate during their contracts, were housed in "small houses, designed for about 10 to 15 people each, with three housing units invariably grouped together alongside an elegant little residence designated for the Chinese overseer."[109] Javanese workers, by contrast – "particularly the older ones," who "had families" – were housed in larger buildings consisting of several spacious rooms. Each room was divided into two compartments, which could either accommodate a single family or be shared by two unmarried men. Schüffner and Kuenen advised the Senembah company to "increase the size of the kitchens to allow the wives to comfortably tend to their children, or to provide an optional hall that can serve as a playground etc."[110]

The deep mistrust indentured labourers harboured toward European medical practitioners is further reflected in *Doekoen*,[111] a novel by the Dutch writer and journalist Madelon Székely-Lulofs, who lived in Deli, Sumatra, during the 1920s. Known for her critical depictions of plantation life and the exploitation of workers in the Dutch East Indies, Székely-Lulofs first published *Doekoen* as a serialised story in *Margriet* magazine in 1952/53; it appeared as a novel only in 2001.[112]

The story centres on the friendship between Marian Mathijssen, the wife of a Dutch rubber plantation assistant, and Tasminah, a Javanese woman married to the Javanese plantation overseer Djaja. Marian becomes pregnant shortly after arriving in Sumatra, whereas Tasminah struggles with infertility. Encouraged by Marian, Tasminah seeks treatment from Dr. Langhuis, the chief physician at the

[108] See Hagen, "Erster Jahresbericht des Krankenhauses Tandjong-Morawa;" Hagen, *Unter den Papua's*, 17, 50.

[109] Kuenen/Schüffner, "Die gesundheitlichen Verhältnisse," 233.

[110] Ibid., 235–6.

[111] I have identified this source through its mention in L. Hesselink, *Healers on the Colonial Market: Native Doctors and Midwives in the Dutch East Indies* (Leiden: KITLV Press, 2011), 275.

[112] See J. Moerman-Schravesande, "De Deliromans van Madelon Székely-Lulofs: Een vergelijking," *Indische Letteren* 17 (2002), 98–110.

company's Kwala Boeroeng hospital, whom Dolf, Marian's husband, describes as a "real pioneer," and "[w]hat they call a coolie doctor, but in the good sense of the word."[113] Tasminah eventually conceives, but Dr. Langhuis orders her to avoid contact with people in her kampong, which he regards as riddled with infectious disease. Tasminah defies the doctor's instructions and hosts a traditional Muslim celebration in the kampong to celebrate the sixtieth day of her child's birth. When the infant falls ill and dies soon thereafter, the village "medicine woman" – the *doekoen* – accuses Dr. Langhuis of having violated God's will by meddling with Tasminah's destiny. Tasminah and Djaja share this belief and vehemently refuse the doctor's request to dissect their deceased child, declaring that "Her child will no longer be touched by the hands of any disbeliever […]."[114] Dr. Langhuis consequently loses the trust of the "coolies" in the kampong.

Although the novel invites readers to sympathise with Marian's attempts to understand Tasminah's worldview, its depiction of Javanese characters remains shaped by familiar colonial stereotypes: they appear as deeply superstitious and blindly obedient to the *doekoen*. Nevertheless, *Doekoen* simultaneously highlights the arrogance and cultural insensitivity of plantation physicians, who often dismissed indigenous medical practices and local belief systems outright. Their refusal to engage with the social and spiritual frameworks that shaped workers' understanding of illness fuelled resentment among indentured labourers which, as historical sources suggest, could at times escalate into overt resistance and even riots.

At the same time, European plantation physicians depended heavily on the expertise and labour of European-trained Javanese and Chinese doctors and medical assistance. To maintain the health of 9,000 indentured labourers at the Serdang Doktor Fonds, Gustav Baermann, for instance, hired four European assistants alongside "25 native, mainly Javanese employees" who carried out much of the day-to-day diagnostic and nursing work.[115]

In addition, local communities were deeply involved in experimental research and public health initiatives. The Dutch parasitologist Nicolaas Hendrik Swellengrebel remembers how, during W. A. P. Schüffner's 1916/17 malaria-control campaign, "Battak schoolboys" were enlisted for the "difficult task" of identifying and capturing Anopheles mosquitos, the primary vectors of malaria. Swellengrebel also speaks highly of Schüffner's "native assistants," known as "Menteri malaria," noting that they "never made mistakes in anything, except in dissections, which were quite new to them at that time." In addition, the "village chiefs of certain selected villages" were reportedly required to catch mosquitos on Schüffner's behalf and

[113] M. H. Székely-Lulofs, *Doekoen* (Leiden: KITLV Press, 2001), 100.

[114] Ibid., 230

[115] Baermann, "Die Assanierung der javanischen und chinesischen Arbeiterbestände," 515.

deliver them to the malaria laboratory. This practice was later declared illegal by the colonial government, as it was considered "tantamount to enforced labour."[116]

According to a report by Schüffner and Kuenen, the Medan central laboratory employed numerous Javanese and Chinese physicians and assistants. A Javanese physician named Mubal, for instance, performed blood and stool examinations, while the Chinese laboratory assistant Lim Fung Siong prepared tissue samples for microscopic analysis and maintained the X-ray apparatus. Another unnamed Chinese employee oversaw the entire operating theatre. Acknowledging their contributions, Schüffner and Kuenen conceded that "We have had much less difficulty with the recruitment of these people than with the actual nursing staff."[117]

The employment of Javanese and Chinese medical staff in Deli's plantation hospitals and laboratories must be understood against the backdrop of broader transformations in colonial medical training for indigenous physicians. Facing a chronic shortage of European-trained medical personnel, the Dutch colonial government established the *Dokter Djawa School* in 1851, a two-year training programme for Javanese men in basic clinical practice. Despite their European education, however, its graduates initially suffered from a low reputation. European physicians tended to dismiss them as inadequately trained, while the Javanese aristocracy regarded the position as socially inferior due to the graduates' modest salary, subordinate status, and restricted scope of practice.[118] Even after a "radical modification" of the programme in 1875, most notably by replacing Malay with Dutch as the language of instruction, *Dokter Djawa* continued to be viewed as clearly inferior to their European colleagues.[119]

This perception gradually began to shift towards the end of the nineteenth century. In 1888, Christiaan Eijkman became director of the school and introduced laboratory-based instruction along with expanded surgical training. His successor, Hermanus Frederik Roll, extended the training programme to six years, which significantly improved the graduates' professional standing. In 1902, the *Dokter Djawa* School was replaced by the School for the Training of Native Doctors (STOVIA), and its alumni were no longer referred to as *Dokter Djawa*, but as *Inlandsch Arts* (native physician). From 1913 onwards, STOVIA admitted students from all ethnic backgrounds. The curriculum was gradually expanded, and its curriculum continued to grow in scope and sophistication. By the 1920s, indigenous physicians were

[116] N. H. Swellengrebel, "How the Malaria Service in Indonesia came into Being, 1898–1948," *Journal of Hygiene* 48:2 (1950), 152–3.

[117] Schüffner/Kuenen, "Die gesundheitlichen Verhältnisse," 214.

[118] See H. Pols, *Nurturing Indonesia: Medicine and Decolonisation in the Dutch East Indies* (Cambridge: Cambridge University Press, 2018), 47–8.

[119] Hesselink, *Healers on the Colonial Market*, 162.

represented at medical institutions throughout the Dutch East Indies, including the Deli plantation hospitals and laboratories, where they formed an increasingly indispensable component of the colonial medical workforce.[120]

For many STOVIA graduates, the Medan Pathological Laboratory served as an important steppingstone to advance their professional and social standing. Although they had received extensive medical training, indigenous physicians continued to earn lower salaries and occupy subordinate positions relative to their European counterparts. Many therefore sought additional academic training in Europe to obtain doctoral degrees and achieve professional parity with European physicians.[121] The Deli laboratories, equipped with state-of-the-art facilities and firmly grounded in European research traditions, provided these physicians with the technical preparation and laboratory experience necessary to pursue advanced study abroad.

Moreover, several European physicians who had previously worked for Deli plantation hospitals would assume professorships at European universities. Their academic networks connected medical practitioners from the Dutch East Indies with academic institutions in Europe. A striking example of how these connections could further an individual career is the Minangkabau physician Achmad Mochtar. After graduating from STOVIA in 1916,[122] Mochtar worked as a government physician in Padang, Sumatra. In 1919, he was posted to Siboga, where he most likely met W. A. P. Schüffner.[123] When Schüffner was appointed professor of tropical medicine at the University of Amsterdam in 1923, he acted as Mochtar's mentor, who was pursuing a doctoral degree on a fellowship in the Netherlands. At this point, Schüffner had already supervised the thesis of the STOVIA-trained physician Raden Soesilo.[124] Mochtar completed his doctorate in 1927 with a thesis on leptospirosis and published several papers on tropical diseases based on research in the Dutch East Indies, some of which he co-authored with Schüffner in German.[125] In 1937, he joined the Eijkman Institute in Batavia and was later appointed its director

[120] See Pols, *Nurturing Indonesia*, 49–50; Hesselink, *Healers on the Colonial Market*, 166–7.

[121] See H. Pols, "The Expansion of Medical Education in the Dutch East Indies and the Formation of the Indonesian Medical Profession," *Medical History* 68:2 (2024), 177.

[122] See "Uitslag eerste gedeelte Indische Artsexamen," *Het Nieuws van den Dag voor Nederlandsch-Indie*, 19 January 1916.

[123] See "Mutaties," *De Sumatra Post*, 14 June 1919.

[124] See L. Hesselink, "Indigenous Authors," in L. van Bergen, L. Hesselink, and J. P. Verhave (eds), *The Medical Journal of the Dutch East Indies: A Platform for Medical Research* (Jakarta: AIPI, 2017), 132.

[125] See, for example, W. A. P. Schüffner and A. Mochtar, "Gelbfieber und Weilsche Krankheit," *Archiv für Schiffs- und Tropenhygiene* 31 (1927), 49–165; W. Schüffner, A. Mochtar, and S. Proehoeman, "Weitere Beiträge zur Aetiologie des Gelbfiebers und der Bedeutung der Leptospira icteroides Noguchi," *Abhandlungen aus dem Gebiete der Auslandkunde Hamb. Universität, Medizin*, 26:2 (1927), 500–06.

during the Japanese occupation.[126] What could have been a distinguished career ended tragically in 1945 when Mochtar was beheaded by the Japanese Army, falsely accused of "poisoning" indentured labourers with experimental vaccines.[127]

As historian Hans Pols has pointed out, European-trained physicians such as Mochtar "came to occupy an ambiguous and at times paradoxical social position between the colonisers and the colonized."[128] On the one hand, they grew increasingly frustrated with their subordinate professional status compared to European physicians, which motivated their strong involvement in the Indonesian nationalist movement.[129] On the other hand, their participation in colonial medical institutions and their alignment with Western therapeutic traditions could provoke resentment within local communities. This tension is vividly reflected in the aforementioned novel *Doekoen*, where Moeswawi, the Javanese assistant to the plantation physician Dr. Langhuis, is labelled a "traitor" by Djaja and Tasminah for his role in imposing Western medicine on Tasminah's body.[130] The conflict between Moeswawi and the "coolie" society underscores the internal stratification of Deli's plantation society, where a transnational community of European planters and physicians collaborated with Javanese and Chinese medical staff to enforce a rigid health and immigration regime over the disenfranchised indentured workforce. Yet despite the stark asymmetries in power and status, both indentured labourers and indigenous physicians played formative roles in shaping plantation hygiene in colonial Sumatra – the former through moments of collaboration with European plantation physicians, and the latter through acts of resistance against them.

From Transimperial Medicine to International Public Health

> The result of the [past] 10 years has been the sanitation of a tropical country. Here [in Sumatra], a problem has been successfully solved, that still poses a great challenge to other tropical countries, and both practical as well as theoretical tropical medicine have been involved in its solution.[131]

The "sanitation" (*Assanierung*) of Sumatra's plantation belt was hailed by contemporaries far beyond the Netherlands and its colonies as a remarkable achievement.

[126] See Pols, *Nurturing Indonesia*, 165f.

[127] See ibid., 180.

[128] Pols, "The Expansion of Medical Education in the Dutch East Indies," 163.

[129] See Pols, *Nurturing Indonesia*.

[130] See Székely-Lulofs, *Doekoen*, 230.

[131] Schüffner/Kuenen, "Die gesundheitlichen Verhältnisse," 168.

As the quote above suggests, many observers believed that the medical knowledge produced in the hospitals and laboratories of Sumatra's plantation belt could potentially be transferred to other tropical colonies.[132] Historians have since shown that, in the early twentieth century, tropical medicine progressively evolved into a transimperial field that connected experts from various national backgrounds through professional networks, specialised journals and international congresses.[133] Within this expanding epistemic community, scientific "discoveries" made by Germanophone plantation physicians in northeastern Sumatra entered debates within the German Colonial Empire, informed teaching at European universities, and ultimately fed into the early League of Nations' global health commissions.

German-speaking physicians employed by plantation companies in Sumatra actively discussed and disseminated their latest findings through a range of specialised medical journals, thereby positioning themselves within the rapidly expanding field of tropical medicine. Their contributions covered a broad spectrum of topics, ranging from new hypotheses on the causes of tropical diseases to practical guidelines for disease prevention and hygienic conduct in the tropics.[134] On the one hand, many contributed to Dutch colonial medical journals such as the

[132] For the European construction of 'the tropics' as a homogenous environmental and cultural space, see, for D. Arnold, "The Place of 'the Tropics' in Western Medical Ideas Since 1750," *Tropical Medicine & International Health* 2 (2007), 303–13; D. Arnold, *The Tropics and the Traveling Gaze: India, Landscape, and Science, 1800–1856* (Seattle: University of Washington Press, 2014); D. Arnold (ed), *Warm Climates and Western Medicine: The Emergence of Tropical Medicine, 1500–1900* (Amsterdam: Rodopi, 1996).

[133] See D. Neill, "Science and Civilizing Mission: Germans and the Transnational Community of Tropical Medicine," in Naranch/Eley (eds), *German Colonialism in a Global Age*, 74–92; D. Neill, *Networks in Tropical Medicine: Internationalism, Colonialism, and the Rise of a Medical Specialty, 1890–1930* (Stanford: Stanford University Press, 2012); H. Power, *Tropical Medicine in the Twentieth Century: A History of the Liverpool School of Tropical Medicine 1898–1990* (New York: Routledge, 2011); I. Amaral, "The Emergence of Tropical Medicine in Portugal: The School of Tropical Medicine and the Colonial Hospital of Lisbon (1902–1935)," *Dynamis* 28 (2008), 301–28; M. Cueto, "Tropical Medicine and Bacteriology in Boston and Peru: Studies of Carrión's Disease in the Early Twentieth Century," *Medical History* 40:3 (1996), 344–64.

[134] See, for example, H. Heinemann, "Tuberkulose-Beobachtungen an javanischen Kontraktarbeitern," *GTNI* 56 (1914), 206–34; H. Heinemann, *Practische Wenken Voor Moeders* (Medan: Köhler & Co., 1928); H. Heinemann, "Het Hygiënisch Werk der Senembah-Maatschappij Gedurende de Laatste Jaren," *GTNI* 75 (1935), 524–33; G. Baermann and O. Eckersdorff (eds), *Atlas tropischer Darmkrankheiten* (Leipzig: Johann Ambrosius Barth, 1913); G. Baermann, "Die kurzfristigen Spirochätenfieber," *Handbuch der pathogenen Mikroorganismen* 7:1 (1930), 661–90; G. Baermann, "Die Ankylostomiasis der Tropen und Subtropen," *Handbuch der pathogenen Mikroorganismen* 6:2 (1929), 949–94; O. Henggeler, *Geschichtliches über die Pest* (Zürich: Amberger, 1907); O. Henggeler, "Über einige Tropenkrankheiten der Haut: I. Framboesia Tropicalis," *Monatshefte für Praktische Dermatologie* 40 (1904), 235–77; O. Henggeler, "Über einige Tropenkrankheiten der Haut: II. Tinea Imbricata," *Monatshefte für Praktische Dermatologie* 43 (1906), 325–41.

GTNI, which, as discussed in chapter 3, accepted submissions in both Dutch and German, thus lowering the linguistic barrier for German-speaking practitioners and facilitating their integration into the colonial medical community. On the other hand, plantation physicians leveraged their insights from the tropical laboratories to publish in international journals with a readership well beyond the Dutch sphere of influence. Their findings attracted considerable interest within the German Empire, which, having established its colonial territories in East and Southwest Africa and the Pacific at the turn of the twentieth century, was eager to acquire medical knowledge applicable to its own tropical colonies.

In 1912, for example, Gustav Baermann, published a detailed account on the sanitary measures implemented on the Serdang Doktor Fond's plantation estates in the *Archiv für Schiffs- und Tropenhygiene*, widely regarded as the foremost German journal for the latest developments in colonial bacteriology and tropical medicine.[135] German interest for medical knowledge produced in tropical Sumatra is further illustrated by W. A. P. Schüffner's publication list. Over the course of his career as a tropical physician, spanning from 1898/99 to his retirement in 1937, he authored a total of 120 scientific articles, books, and papers. Of these, 68 (56.7 per cent) were published in Dutch journals, while 42 (35 per cent) appeared in German publications, most prominently in the *Archiv für Schiffs- und Tropenhygiene* (12 publications) and *the Zentralblatt für Bakteriologie, Parasitenkunde und Infektionskrankheiten* (10 publications).[136] Through this body of work, Schüffner provided German-speaking medical researchers and colonial practitioners with empirical insights and practical guidance deemed essential for the administration and medical management of German tropical colonies.[137]

[135] See Baermann, "Die Assanierung der javanischen und chinesischen Arbeiterbestände."

[136] See the bibliography in W. A. Kuenen, "Prof. Dr. W. A. P. Schüffner," *Nederlandsch Tijdschrift voor Geneeskunde* III:28 (1937), 3282–95. Only sporadically did Schüffner publish outside Germany and the Netherlands, for example in the *Transactions of the Royal Society of Tropical Medicine*, the *American Journal of Tropical Medicine*, or the *Philippine Journal of Science*. The most extensive collection of Schüffner's publications is held in: Nationaal Archief Den Haag (NL-HaNA), Koninklijk Instituut voor de Tropen (KIT), nummer toegang 2.20.69, inv. nr. 7002, blok I 134.

[137] For the role of medicine in German colonial efforts, see Neill, "Science and Civilizing Mission;" S. Besser, *Pathographie der Tropen: Literatur, Medizin und Kolonialismus um 1900* (Würzberg: Königshausen & Neumann, 2013); S. Ehlers, *Europa und die Schlafkrankheit: Koloniale Seuchenbekämpfung, europäische Identitäten und moderne Medizin 1890–1950* (Göttingen: Vandehoeck & Ruprecht, 2019); D. Walther, *Sex and Control: Venereal Disease, Colonial Physicians, and Indigenous Agency in German Colonialism, 1884–1914* (New York: Berghahn, 2015); W. Eckart, "The Colony as Laboratory: German Sleeping Sickness Campaigns in German East Africa and in Togo, 1900–1914," *History and Philosophy of the Life Sciences* 24:1 (2002), 69–89; W. Eckart: *Medizin und Kolonialimperialismus: Deutschland 1884–1945* (Paderborn: Schöningh, 1997).

In at least one instance, the knowledge produced by German-speaking physicians on the Deli plantations was directly transferred to the German Colonial Empire. In 1892, shortly after leaving his position at the plantation hospital in Tandjong Morawa, Bernhard Hagen signed a contract with the German *Kolonialgesellschaft* Astrolabe Company to serve as a plantation physician on the northeast coast of New Guinea. Prior to 1899, when the German Empire formally assumed direct power over its colonies, the region was largely administered by private investors, with the Astrolabe Company – founded in 1891 – emerging as one of the key plantation ventures alongside the New Guinea Company.[138] These companies sought to transform the island's northeastern coast into a profitable centre for tobacco cultivation and export. Hagen's extensive experience on the Deli tobacco plantations made him a particularly valuable asset for these imperial newcomers. Moreover, the Astrolabe Company's chief administrator Curt von Hagen was himself a former Deli planter, and, according to Bernhard Hagen, "eager to transform the Compagnie's tobacco plantations according to the Deli pattern."[139]

In their efforts to transform their Pacific colonies into profitable enterprises, the Germans in New Guinea adopted labour recruitment patterns previously established by plantation companies in Dutch-ruled Sumatra. Like Sumatra, New Guinea was relatively sparsely populated, prompting German administrators to "import" Javanese and Chinese indentured labourers through broker networks in Batavia and Singapore.[140] Physicians such as Bernhard Hagen also considered New Guinea to be similar to Sumatra in terms of climate and diseases.[141] As historian Margit Davies has noted, the widespread prevalence of diseases on New Guinea was a constant cause of concern for German colonists. High mortality rates among both Europeans and the local population earned the island the notorious label of *Fieberkolonie* (fever colony), threatening the economic success of the newly established plantations.[142]

[138] See H. Hiery, "Die deutsche Verwaltung Neuguineas 1884–1914," in idem (ed), *Die Deutsche Südsee, 1884–1914: Ein Handbuch* (Paderborn: F. Schöningh, 2001), 277–311.

[139] Hagen, *Unter den Papua's*, 11.

[140] See H. W. van den Doel, "Nachbarn an der Peripherie: Die Beziehungen zwischen Niederländisch-Ostindien und den deutschen Südseekolonien," in Hiery (ed), *Die Deutsche Südsee*, 777–83.

[141] See Hagen, *Unter den Papua's*, 19–26; M. Davies, *Public Health and Colonialism: The Case of German New Guinea 1884–1914* (Wiesbaden: Harrassowitz, 2002), 35–6.

[142] See M. Davies, "Das Gesundheitswesen im Kaiser-Wilhelmsland und im Bismarckarchipel," in Hiery, (ed), *Die Deutsche Südsee*, 419. Also see W. Eckart, "Medicine and German Colonial Expansion in the Pacific: The Caroline, Mariana, and Marshall Islands," in R. MacLeod and M. Lewis (eds), *Disease, Medicine and Empire: Perspectives on Western Medicine and the Experience of European Expansion* (London: Routledge, 1988), 80–102.

Drawing on his experiences in Sumatra, Hagen advised the German company to replicate the racialised division of labour he had observed on the Deli plantations, which he claimed had effectively maintained workers' health. He further advocated for the "importation" of indentured labourers, arguing that the indigenous Melanesians were particularly vulnerable to the island's natural threats and "ravaged by influenza and dysentery." In doing so, Hagen applied the hypothesis he had developed at the Tandjong Morawa hospital linking race, health, and labour productivity to the Astrolabe Company's tobacco estates in New Guinea. Hagen emphasised that "the doctor in the colonies [should] be given […] a deciding voice in *all* sanitary measures," noting that his recommendations on "coolie" recruitment and hygiene were "always met with the most willing acceptance on the part of the [Astrolabe Company's] directors in Berlin."[143] The long-term impact of his advice remains unclear, as Hagen returned to Germany and settled in Frankfurt am Main after just a year and a half in New Guinea. Nevertheless, in 1899 he published *Unter den Papua's* (Among the Papuans), a handbook offering practical guidance to prospective planters and merchants eager to capitalise on the lucrative trading opportunities in New Guinea.[144]

German interest in Sumatra's plantation physicians persisted even after the *Reich* lost its colonial possessions following the First World War. In 1921, for example, Gustav Baermann, while still being employed with the central hospital Petoemboekan, collaborated with the German pharmaceutical company Bayer.[145] During a visit to Europe, Baermann had been approached by the company, which sought to test the effectiveness of the medication Bayer 205 against surra, an animal disease transmitted by flies. As Bayer explained, "there was however no opportunity for this [experiment] in Europe," leading to Baermann being tasked with conducting medicinal trials in Sumatra. His German nationality seemed to have played a crucial role in why he was chosen by Bayer to conduct the experiments. According to a report in the *Sumatra Bode*, Baermann was "the only one in India to whom it [the medication] had been supplied and would continue to be supplied, and he was not allowed to hand it over under any circumstances, as Germany had no patent rights and if a national of another power found out about the secret of the drug, it would be a great shame for Bayer."[146] Baermann successfully completed

[143] Hagen, *Unter den Papua's*, 36–8. Emphasis by the author.

[144] See Ligtenberg, "Contagious Connections," 566–7.

[145] For the colonial history of (commercial) pharmaceuticals, see L. Monnais, *The Colonial Life of Pharmaceuticals: Medicines and Modernity in Vietnam* (Cambridge: Cambridge University Press, 2019); N. Bhattacharya, *Disparate Remedies: Making Medicines in Modern India* (Montreal: McGill-Queen's University Press, 2023).

[146] "Een en ander over de Proeven van Dr. Baermann met 'Bayer 205'," *Sumatra-Bode*, 22 December 1921. Also see "Bayer 205," *De Sumatra Post*, 29 November 1921.

the experiments and published his findings on the treatment of surra with Bayer 205 in the *Archiv für Schiffs- und Tropenhygiene*.[147]

Transimperial Careering and the Colonial Antecedents of International Public Health

After returning to Europe from German New Guinea in 1895, Bernhard Hagen permanently abandoned the medical profession. As I have discussed elsewhere in more detail, he utilised the symbolic capital acquired through his extensive stay in "the tropics," as well as the data he collected on the different "human races" in Sumatra and New Guinea, to enter the emerging field of physical anthropology (or race science), eventually founding the *Völkerkundemuseum* (Museum of Anthropology) in Frankfurt in 1904.[148]

For most German and Swiss plantation physicians, however, the engagement with tropical medicine did not end with their departure from the Dutch East Indies. Instead, their firsthand experiences with tropical hygiene often paved the way for (academic) careers in Europe.[149] From 1932 onwards, Gustav Baermann, for example, served as a lecturer (*Privatdozent*) for tropical medicine and hygiene at the University of Munich.[150] Similarly, the Swiss physician Oskar Henggeler, formerly employed at the plantation hospital Tebing Tinggi, became appointed chief physician at the private hospital Theodosianum in Zurich in 1905, where he specialised in internal and tropical medicine.[151] Henggeler also became a member of the Geographic-Ethnographic Society Zurich (*Geographisch-Ethnographische Gesellschaft Zürich*), where he delivered public lectures on tropical diseases.[152]

[147] G. Baermann, "Die Behandlung der Surra mit 'Bayer 205'," *Beihefte zum Archiv für Schiffs- und Tropenhygiene* 16 (1922), 73. Bayer 205 would later be renamed Germanin and received notoriety during the Second World War as an instrument of Nazi propaganda. See W. Eckart, "Germanin – Fiktion und Wirklichkeit in einem nationalsozialistischen Propagandafilm," in W. Eckart and U. Benzenhoefer (eds), *Medizin im Spielfilm des Nationalsozialismus* (Tecklenburg: Burgverlag, 1990), 69–83; E. A. Jacobi, "Das Schlafkrankheitsmedikament Germanin als Propagandainstrument: Rezeption in Literatur und Film zur Zeit des Nationalsozialismus," *Würzburger medizinhistorische Mitteilungen* 29 (2010), 43–72.

[148] See Ligtenberg, "Contagious Connections," 567–70.

[149] For the career opportunities opened by moving between and across empires, see the contributions in D. Lambert, and A. Lester (eds), *Colonial Lives Across the British Empire: Imperial Careering in the Long Nineteenth Century* (Cambridge: Cambridge University Press, 2006) and C. L. Blaser, M. Ligtenberg, and J. Selander, "Transimperial Histories of Knowledge: Exchange and Collaboration from the Margins of Imperial Europe," special issue in *Comparativ* 31:5/6 (2021).

[150] See "Privat-Dozent te München," *De Sumatra Post*, 20 January 1932.

[151] See "Dr. Oskar Henggeler," *De Sumatra Post*, 28 December 1903; "Henggeler, Oskar," *Adressbuch der Stadt Zürich* 53 (1928), 325.

[152] See "Jahresbericht pro 1907/1908," *Jahresberichte der Geographisch-Ethnographischen Gesellschaft in Zürich* 8 (1908), 5.

Henggeler maintained his loyalty to the colonial plantation regime in Sumatra even after returning to Europe. In 1904, the Swiss daily *Zuger Volksblatt* reported on an international socialist congress held in Amsterdam, where participants openly condemned the exploitative working conditions on Sumatra's plantation belt. Their critique was largely based on the pamphlet *De Millioenen uit Deli*, published by the Dutch lawyer Johan van den Brand. Van den Brand's manifesto, which garnered international attention and severely damaged the reputation of Sumatra planters, specifically targeted the slave-like conditions imposed by the penal sanction, that greatly restricted the freedom of movement of indentured labourers.[153] In response, Henggeler published a rebuttal in the *Zuger Volksblatt*, asserting that "If the author of the article had been more critical, he would have known that van den Brand's words have been refuted in the past two years." He adds that "objectively judging, insightful individuals and people knowing the true conditions [in Deli] do no longer take van den Brand seriously," and urged the newspaper to retract the article "in order to preserve the honour of the medical community of Deli, to which I have belonged for 8 years."[154]

In general, plantation physicians remained largely uncritical of the exploitative working conditions on Sumatra's plantation belt even after returning to Europe. This was not because the conditions were exemplary: as van den Brand's pamphlet demonstrates, many contemporaries denounced the harsh labour practices and ongoing violence on the estates, even after the introduction of the Coolie Ordinance. One possible explanation for the physicians' silence is their financial entanglement with the companies they served. According to a 1945 statement of Schüffner's assets, he had invested 93,141 guilders with the Senembah Company,[155] and received an additional 12,000 guilders in pension from the company – roughly equivalent to 86,000 euros today.[156]

Schüffner's lasting ties to the Netherlands were reflected not only in financial terms but also in his later career. After concluding his service with the Senembah company, he continued his academic career in the Netherlands. In 1923, the board of the *Koloniaal Instituut* (Colonial Institute) appointed him professor of tropical

[153] For van den Brand's pamphlet and its reception see Breman, *Koelies, Planters en Koloniale Politiek*, 263–73; Stenberg/Minasny, "Coolie Legend on the Deli Plantation," 165–6.; J. Breman, "Colonialism and Its Racial Imprint," *Sojourn: Journal of Social Issues in Southeast Asia* 35:3 (2020), 463–92.

[154] "Warom gezwegen?," *De Sumatra Post*, 7 October 1904.

[155] See P. C. Meyners Accountant en Belastingsconsulent, "Staat van Vermogen per 1 September 1945 van Professor Dr. W. A. P. Schüffnert te Hiversum," in Nationaal Archief Den Haag (NL-HaNA), 2.09.16.01, Nederlandse Beheersinstituut (NBI): Beheersdossiers, inv. nr. 5572.

[156] See Letter from A. Icke to the Director of the Nederlands Beheersinstituut in Den Haag,6 June 1946, in NL-HaNA 2.09.16.01, inv. Nr. 5572.

medicine at the University of Amsterdam, where he succeeded the Dutch professor Johannes Jacobus van Loghem. At the time, the Institute was directed by its co-founder Christian Wilhelm Janssen, the founder of the Senembah Company, who had originally hired Schüffner for service in Sumatra. The Institute financed Schüffner's laboratory and salary in Amsterdam, encouraging him to continue his research on tropical diseases in the Netherlands.[157]

Through this professorship, Schüffner became embedded in a transnational network of microbiologists and tropical physicians who worked at the intersection of laboratory research and public health. Throughout his academic career in Europe, Schüffner actively participated in major international conferences and initiatives on tropical medicine and infectious diseases, including the First International Congress on Malaria in Rome (1925), the International Congress on Tropical Medicine and Hygiene in Cairo (1928), the Second International Congress on Malaria in Algiers (1930), and the First International Congress of Microbiology in Paris (1930).[158] Even after retiring in 1937, he remained engaged in the field, co-organising the Third International Congress of Tropical Medicine and Malaria in Amsterdam, an event coordinated by the League of Nations.[159]

At this point, Schüffner was already a known figure in the League of Nations' section for health and social questions. In 1925, he had joined a League of Nations research group investigating the effectiveness of quinine in the global containment of malaria.[160] Three years later, in 1928, he was appointed a corresponding member for the Netherlands on the League of Nations Malaria Commission in British India.[161] Schüffner was not the only Deli veteran to participate in international health initiatives and congresses. At the 1930 International Malaria Congress in Algiers, he was joined by Nicolaas Swellengrebel and Willem Walch, both of whom had previously worked as plantation physicians in Sumatra. Walch later represented the Dutch East Indies at the Far Eastern Association of Tropical Medicine Congress in China

[157] See Pols, "Quarantine in the Dutch East Indies," 96–100.

[158] See Kuenen, "W. A. P. Schüffner," 329–30.

[159] See "Third International Congress of Tropical Medicine and Malaria (Amsterdam)," in United Nations (UN) Library & Archives Geneva, League of Nations Secretariat, R6012/8A/29065/298. For the historical significance of international hygiene conferences organised by the League of Nations, see S. Amrith and P. Clavin, "Feeding the World: Connecting Europe and Asia, 1930–1945," *Past and Present* 218 [issue supplement 8] (2013), 29–50; S. Litsios, "Revisiting Bandoeng," *Social Medicine* 8:3 (2014), 113–28; T. M. Brown and E. Fee, "The Bandoeng Conference of 1937: A Milestone in Health and Development," *American Journal of Public Health* 98:1 (2008), 42–3.

[160] See "Enquiry on Quinine – Collaboration with Professor Schüffner," in UN Library & Archives Geneva, League of Nations Secretariat, R936/12B/37434/35993.

[161] See correspondences in: "Malaria Committee – Services of, and various correspondence with Professor Schüffner (corresponding member for the Netherlands)," in UN Library & Archives Geneva, League of Nations Secretariat, R5953/8C/4561/1411.

(1933),[162] following the path of W. A. Kuenen, who had attended the Association's 1913 Congress in Saigon.[163] Similarly, Deli physicians E. P. Snijders and W. Kouwenaar participated in the Eighth Congress of the Far Eastern Association for Tropical Medicine Bangkok (1930), where they presented research on typhoid fever based on investigations conducted at the Pathological Laboratory in Medan.[164]

The international networks of former plantation physicians demonstrate how medical knowledge produced on Sumatra's estates circulated well beyond the Netherlands and the Dutch East Indies. Through participation in global congresses, contributions to League of Nations commissions, and publications in European and international journals, Deli physicians transferred their experience with tropical diseases and plantation hygiene into the emerging field of international health. The laboratories and hospitals of the Deli plantations thus served not only as sites of biopolitical interventions into the everyday lives of indenture workers but also as nodes in transimperial networks of scientific exchange in the emerging global health movement.[165]

Conclusion

Despite a transimperial career trajectory that carried him from the Senembah Company hospital on Sumatra through a professorship in tropical medicine in Amsterdam to League of Nations health commissions, W. A. P. Schüffner remained a German citizen throughout his life, continuing to correspond and publish in German even while employed in Dutch institutions. After the Second World War, his enduring ties to Germany drew the attention of Dutch authorities engaged in post-war denazification, prompting inquiries into his political loyalties. Former Dutch

[162] See "Wijlen Prof. Dr. E. W. Walch," *Het Nieuws van den Dag voor Nederlandsch-Indië*, 22. December 1934.

[163] See Agustono/Junaidi/Affanci, "Pathology Laboratory," 10.

[164] See ibid., 11.

[165] For the colonial antecedents of Global Health also see J. L. Pearson, *The Colonial Politics of Global Health: France and the United States in Postwar Africa* (Cambridge: Harvard University Press, 2018); E. Richardson, *Epidemic Illusions: On the Coloniality of Global Public Health* (Cambridge: The MIT Press, 2020); J. Wells, "Imperial Medicine in a Changing World: The Fourth International Congresses on Tropical Medicine and Malaria, 1948," *Health History* 18:1 (2016), 67–88; M. Hussain et al., "Colonization and Decolonization of Global Health: Which Way Forward?," *Global Health Action* 16:1 (2023), online, DOI: 10.1080/16549716.2023.2186575; A. E. Birn, Y. Pillay, and T. H. Holtz, "The Historical Origins of Modern International (and Global) Health," in idem (eds), *Textbook of Global Health* (New York: Oxford University Press, 2017), 1–42; J. Bump, and I. Aniebo, "Colonialism, Malaria, and the Decolonization of Global Health," *PLOS Glob Public Health* 2:9 (2022), online, DOI: https://doi.org/10.1371/journal.pgph.0000936.

colleagues from the Senembah plantations vouched for his service in Sumatra and at the University of Amsterdam and his general commitment to the Netherlands,[166] yet, as Nicolaas Swellengrebel put it, the "war and post-war conditions ended his career." In his 1950 obituary, Swellengrebel offered the poignant assessment that "Schüffner was born a German, and he died a German. True to the 'Fatherland' to the last, he was painfully aware of the crimes it was guilty of, and he admitted them in that phrase of proud resignation with which he used to counter his critics, 'right or wrong, my country.'"[167]

What this post-WWII nationalism obscures is the dense web of transimperial entanglements that characterised both Schüffner's trajectory and the broader world of plantation medicine in the late nineteenth and early twentieth centuries: Schüffner was one among many German and Swiss plantation owners, planters, and physicians who settled in Sumatra following the Dutch East Indies' market liberalisation in the 1870s and the introduction of the 1880 Coolie Ordinance. In Sumatra, plantation physicians formed part of a diasporic community that established its own "German Clubs" and maintained its linguistic and cultural ties to German-speaking Europe, all while integrating into Dutch colonial society. Their mobility, networks, and institutional affiliations are characteristic of the transimperial cosmopolitanism emerging from a globalising plantation economy around 1900.

German and Swiss physicians were at the forefront of establishing a hospital-cum-laboratory system on Sumatra's plantation belt and the institutionalisation of the medical subdiscipline of plantation hygiene that effectively reduced mortality among Javanese, Chinese, and other "coolie" workers. These public health initiatives were, however, driven less by humanitarian concern and philanthropy than by an explicit economic rationale: vertical disease control reduced costs and ensured labour efficiency without significantly expanding labour rights. Plantation physicians meticulously calculated the financial benefits of plantation hygiene to justify investments in medical infrastructure. Schüffner himself was even financially invested in the companies that employed him. More broadly, plantation hygiene on Sumatra highlights the significant but often overlooked role of privatised, corporate actors in shaping colonial public health.

At the same time, the history of plantation medicine in Sumatra reveals previously unknown continuities between late nineteenth-century colonial medicine and twentieth-century public health. Early plantation physicians such as Bernhard Hagen derived racialised interpretations of "coolie" bodies from the clinical and statistical data produced in plantation hospitals, linking disease susceptibility and

[166] See documents held in NL-HaNA 2.09.16.01, inv. nr. 5572.

[167] N. H. Swellengrebel, "Wilhelm August Paul Schüffner," *The Journal of Parasitology* 36:4 (1950), 394.

labour productivity to racial predispositions. These racial classifications directly informed recruitment patterns and the division of labour on the plantations. In the twentieth century, racialised notions of "coolie" bodies translated into intrusive public health interventions into the everyday lives of workers. Indentured labourers were increasingly subjected to immigration restrictions, quarantine practices, compulsory health screenings, and the construction of model villages aimed at disciplining the supposedly "unhygienic" habits of "childlike" Javanese and Chinese workers.

The plantation barrack system integrated earlier practices from nineteenth-century colonial military barracks. It combined paternalistic claims of "protection" with mechanisms of coercion and punishment. Plantation barracks were designed not only to monitor health-related behaviour but also to regulate workers' movements, supervise their daily routines, and enforce compliance. Violence and coercion were integral to the plantation hygiene system, which cast hygienic discipline as both a civilising mission and a means of maintaining control over a workforce deemed inherently "unhealthy."

The hygiene measures developed in Deli extended far beyond Sumatra. Medical knowledge produced in the laboratories and hospitals on Sumatra circulated through German-language medical journals and, in some cases – such as Bernhard Hagen's – through the direct recruitment of Deli physicians for plantations in the German Empire's Pacific colonies. After the First World War, former Deli physicians from both German and Dutch backgrounds represented the Netherlands in international health congresses and League of Nations initiatives, contributing to global conversations on tropical disease.

At the same time, the chapter has also highlighted the limits of biopolitical power and medical authority exercised by plantation physicians. Indentured labourers frequently resisted the restrictive health regimes in forms ranging from subtle noncompliance to open revolt, forcing physicians to adapt hospital and barrack designs to local preferences and practices. Moreover, European plantation physicians depended heavily on the labour and expertise of Batak, Minangkabau, Javanese, and Chinese assistants, nurses, or physicians, many of whom were trained through Dutch colonial educational programmes for indigenous medical staff such as Dokter Djawa School or STOVIA. STOVIA graduates in particular leveraged connections with European plantation physicians to pursue further education in the Netherlands, enhancing their professional status and expanding their role in shaping tropical medicine. The case of Deli plantation medicine hence also illustrates the complex interplay between the imposition of colonial medical authority, co-constructed by Europeans of various national and professional backgrounds, and the agency of indigenous medical workers as well as the everyday resistance of indentured labourers.

Conclusion

In 1907, the Geographic-Ethnographic Society of Zurich (*Geographisch-Ethnographische Gesellschaft Zürich*; GEGZ) acquired a collection of weapons, clothing, and a so-called "magic book" from Mentawai, Sumatra, and Borneo. These objects had been "collected" by the Swiss physician Dr. Conrad Kläsi, who joined the Dutch Colonial Army in 1879.[1] During and after his service in the KNIL, Kläsi amassed twenty-eight boxes filled with animal specimens, artworks, and ethnographica, which he shipped to Switzerland.[2] When the GEGZ transferred its collections to the newly founded Zurich Ethnographic Museum (*Völkerkundemuseum*) in 1913, Kläsi's objects became part of a permanent institutional archive, where they form material traces of the enduring repercussions of Dutch imperialism in German-speaking Europe. Kläsi was hardly the only physician to assemble such a collection during his service in the Dutch East Indies. Austrian medical mercenary Heinrich Breitenstein described spending his time off duty leaving "the fort to hunt, to collect beetles, to attend a Dajak festival or to pick rare orchids on the border of the jungle."[3] Parts of his collections were later donated to the Museum of Natural History in Vienna.[4] Meanwhile, the Czech National Museum in Prague holds an extensive collection of ethnographic objects from the island of Nias, compiled by the Czech medical officer Pavel Durdík.[5] Similarly, the German plantation physician Bernhard Hagen took advantage of his decade-long stay in Sumatra and New Guinea, collecting dozens of animal specimens, ethnographica and human remains, that are still housed at the Ethnological Museum (*Weltkulturenmuseum*) in Frankfurt and the Naturalis Biodiversity Centre in Leiden.[6]

[1] A. Steinmann, "Die Sammlung der Völkerkunde der Universität Zürich, ihre Entstehung und Wandlung bis heute," *Mitteilungen der Geographisch-Ethnographischen Gesellschaft Zürich* 41 (1941), 36.

[2] See H. Erni, "Nekrolog Konrad Kläsi," *Schweizerische Medizinische Wochenschrift* 48 (1935), 1152.

[3] H. Breitenstein, *21 Jahre Indien: Aus dem Tagebuche eines Militärarztes, Erster Theil: Borneo* (Leipzig: Th. Grieben's Verlag, 1899), 65.

[4] See, for example, F. Steindachner, "Jahresbericht für 1912,", *Annalen des k.k. naturhistorischen Hofmuseums XXVII.* (1912), 38; "Jahres-Versammlung am 7. April 1880," V*erhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* 30 (1880), 26.

[5] See D. Pospíšilová, I. Hladká, and A. Jezberová, *Pavel Durdík (1843–1903), Life and Work: Ethnological Collection of the Island of Nias* (Prague: National Museum, 2010).

[6] See M. Ligtenberg, "Contagious Connections: Medicine, Race, and Commerce between Sumatra, New Guinea, and Frankfurt, 1879–1904," *Comparativ* 31:5/6 (2021), 555–71.

These collections bear tangible witness to the manifold activities of physicians from the German-speaking regions of Switzerland, the German Empire, and the Habsburg Empire who served in the Dutch East Indies, while simultaneously revealing the transimperial routes through which colonial knowledge, objects, and ideologies circulated. By tracing the careers of more than 300 Germanophone physicians in Dutch imperial service between 1873 and the 1920s, this book has shed new light on the history of colonial medicine and on the profoundly transimperial character of medical knowledge production in the age of empire.

Transimperial Medicine in an Age of Empire

Through the analytical lens of *Germanophoneness*, this study has expanded both the temporal and spatial scope of Dutch and German imperial history. Instead of examining the recruitment of experts and expertise within isolated nation states, it delineated a linguistic and cultural sphere that cut across political borders, allowing it to highlight institutional and interpersonal exchanges that linked Switzerland, Germany, Austria-Hungary, and the Netherlands, as well as their shared entanglements with overseas empires.

One core finding is the dual role of the German language as a prerequisite for employment in Dutch colonial medical institutions and as a conduit for knowledge circulation well beyond the Dutch imperial sphere. Dutch officials often highlighted linguistic kinship and a shared "Germanic" or Protestant heritage to explain why Germanophone physicians were preferred recruits. For their part, physicians from German-speaking Europe had a deep impact on medical theory and practice in the Dutch colonies – an influence often overlooked in existing historiography on Dutch colonial medicine, which tends to limit its focus to medical exchanges within the Netherlands and their colonies.

At the same time, in the late nineteenth century, German emerged as a global scientific lingua franca. German-speaking physicians in the Dutch East Indies were part of a broader epistemic community that extended to Meiji Japan, where medical practitioners trained by German institutions adopted German as their language of scientific communication. German-speaking colonial physicians thus operated within a transimperial framework, linking Berlin, Batavia, and Tokyo through German-language medical publications and a shared educational and academic tradition.

Yet, these transimperial networks also had limitations. Linguistic and cultural boundaries restricted recruitment from non-German-speaking Swiss, Austrian, and German regions, while engagement with French-speaking Pasteurian bacteriology was modest. National or regional belonging continued to shape physicians' social lives and practices in the Dutch East Indies: physicians in Aceh maintained ties to their

home regions through correspondence, newspapers, and familiar consumer goods; plantation physicians mixed imperial cosmopolitanism with active membership in patriotic associations. Only rarely did foreign physicians opt for Dutch citizenship, even after decades of service. Rather than dismissing national identity as analytically obsolete, this study has shown how it coexisted and interacted with region, religion, "European civilisation," and a shared commitment to scientific objectivity.

By covering the period from 1873 to the 1920s, this book also broadens the temporal scope of German colonial history. It highlights German participation in foreign empires before, during, and after the German Empire's brief phase of formal colonial rule. In doing so, it fills significant gaps in the historiography of German bacteriology and laboratory science, demonstrating how German-language medical discourse shaped Dutch colonial medicine and how research produced in the Dutch Empire fed back into German medical and imperial ambitions. Medical officers in the KNIL contested early bacteriology, while hygiene regimes developed on Sumatran plantations were later mobilised for German projects in the South Pacific. These examples reveal colonial medicine as a co-constructed field shaped across multiple empires and by actors of diverse national backgrounds.

Medical Masculinities and Transimperial Careering

For many Swiss, German, and Austrian physicians, service in Dutch colonial military and civil medical institutions offered a pathway to career advancement. Their first-hand experience in the Dutch East Indies as well as their access to colonised patients, to government data, and to the infrastructures of the colonial hospitals and laboratories enabled them to publish on highly topical and contested diseases prevalent in the tropics. Some secured professorships at prestigious universities in the Netherlands or German-speaking Europe, where their colonial experience often set them apart from competitors. Their trajectories appear, at first sight, to confirm scholarship on "transimperial careering," which emphasises the professional advantages gained through service in foreign empires.

This book, however, complicates the familiar narrative of success and professional advancement by revealing that transimperial careers often unfolded in unexpected and non-deterministic ways. For many physicians, medicine itself was not always a lifelong vocation but often a means of achieving social mobility within the emerging Germanophone bourgeoisie. Understanding their careers, hence, requires careful attention to the intersection of class, gender, and professional ambition.

Masculinity proved to be a particularly valuable category for analysing the history of colonial physicians while avoiding an overly deterministic narrative of their trajectories. German-speaking physicians used their service in the Dutch

East Indies as a stage for the performance of *medical masculinity in the tropics*, a contingent set of gendered identities that blended scientific rationality, bourgeois respectability, and ideals of imperial manhood. Medical mercenaries in Aceh, for example, framed their exposure to hardship, danger, and physical exertion in tropical warfare as evidence of military bravery, while simultaneously stressing their self-discipline and rational comportment as markers separating them from lower-class European men. Plantation physicians, by contrast, articulated a form of scientific paternalism toward racialised indentured labourers: through family metaphors and disciplinary interventions in workers' everyday lives, they cast themselves as paternal guardians responsible for the health, morality, and productivity of "their" workers, thereby naturalising racial and gender hierarchies.

Practical experience formed a core component of medical masculinity in the Dutch East Indies. Many physicians distinguished themselves from laboratory scientists by elevating the epistemic value of hands-on, colonial fieldwork in their struggle for authority. Both military and civilian practitioners sought to convert their tropical experience into symbolic capital, claiming privileged insight into disease environments and dismissing the "armchair" expertise of metropolitan researchers. The growing confidence of European physicians at the turn of the twentieth century – bolstered by the laboratory revolution – reinforced this sense of superiority that often resulted in the outright dismissal of indigenous medical practices.

Their authority – and the supposedly hegemonic form of medical masculinity upon which it rested – was also fundamentally fragile. Colonial physicians often struggled to effectively treat tropical diseases, many of which they were largely unfamiliar with, to win the trust of indigenous patients, and to dominate the competitive colonial medical markets. Their claims to superiority were challenged from above by laboratory scientists who dismissed field observations as insufficiently rigorous, and from below by indigenous practitioners such as the (female) *dukun*, whose treatments enjoyed broad popularity among the local and European communities in the Dutch East Indies. Moreover, most Germanophone physicians ultimately left little trace in the history of medicine. Apart from a few well-known figures such as W. A. P. Schüffner, most faded into obscurity. Shifting recruitment policies, rising nationalist sentiments, and the limited size of the civil medical sector further constrained their career prospects.

Taken together, the findings in this book demonstrate that the history of German-speaking physicians in the Dutch East Indies is not a straightforward story of transimperial success but one of negotiation, contestation, and contingency. An intersectional perspective exposes the inherent instability of European medical masculinities and reveals how the colonial field emerged as a space in which medical knowledge, professional identities, racial and gender norms were continuously challenged and redefined.

Colonial Co-constructions of Medical Theory and Practice

By focusing on the lived experiences of medical practitioners in the colonial field, rather than on theoretical debates, this book has revealed the multiple contingencies that shaped modern European medical sciences: between field and laboratory, between military and civil medicine, and between colonial ideology and scientific objectivity. It thereby contributes to an emerging strand of literature that rejects a one-directional model of medical imperialism and instead highlights the hybrid, contested nature of colonial medical theory and practice.

One key contribution is the identification of two forms of situatedness in the production of medical knowledge in the Dutch East Indies. First, medical research was situated within specific *institutional contexts*. The agenda of the military hospitals, laboratories, and plantation estates directly shaped the research priorities of colonial physicians. Diseases such as beriberi, malaria, and cholera drew attention because they affected soldiers or plantation workers, hence populations deemed economically or politically vital to the success of the economic and military consolidation of the Dutch East Indies. Colonial institutions, in turn, provided access to patients, data, and laboratory infrastructure. On a broader scale, this book highlighted the often-overlooked role of colonial armies in medical knowledge production, as well as the influence of privatised, non-state interventions in colonial public health.

Second, medical knowledge was *individually situated*. Their positionality as European, university-educated, bourgeois men influenced the ways in which Germanophone physicians in Dutch colonial services diagnosed, treated, perceived and presented their patients. They medicalised the "licentiousness" of lower-class European soldiers according to bourgeois ideals of respectability and restraint, while their diagnoses of indigenous soldiers and plantation workers reinforced racial stereotypes. The medicalisation of race and the racialisation of medicine were mutually constitutive processes.

Extending the analysis from the early days of bacteriology of the 1870s to the 1920s reveals the tensions that structured the so-called laboratory revolution. While colonial practitioners adhered to contemporary scientific methods – conducting autopsies, maintaining detailed records on their patients, and using microscopy to investigate disease causation – European laboratory bacteriologists continued to rely on colonial field research, linking their microbiological findings to earlier notions of climatic and environmental determinism. Rather than a clear-cut paradigm shift, late nineteenth- and early twentieth-century medicine was marked by epistemic uncertainty. Through such uncertainties, race, class, and gender continued to shape European medical epistemologies, even as medical sciences were proclaimed to be universal and detached from social contexts. Medical mercenaries transferred medicalised and racialised notions of colonised bodies into the

medical practices, lecture halls, publication landscape, and collective memory of Germanophone Europe, spaces often portrayed as untouched by colonial ideologies.

Finally, this book challenges the view of European medicine as a unilateral imposition. Indigenous resistance, alternative healing traditions, and everyday negotiations shaped medical encounters and forced colonial physicians to adapt their practices. Javanese and Chinese physicians, laboratory assistants, and nurses appropriated Western medical knowledge to forge their own career trajectories. Colonial medicine thus emerges not as a top-down transfer but as a dynamic, contested field constituted through negotiation, adaptation, appropriation and opposition.

Limitations and Future Avenues

Despite the interventions outlined above, this study has its limitations. First, by focusing on the period from 1873 to the 1920s, it could not explore the late or postcolonial eras in detail. Historians have called for a deeper investigation of the connections between "colonial" medicine and mid-twentieth-century medical interventions in the so-called Global South, particularly in the contexts of developmentalism and the global health movement. While the colonial antecedents of global health are briefly addressed in Chapter four, they could only be hinted at here.

Second, future research could extend the spatial framework of transimperial medicine even further. Although the transimperial approach allowed engagement with empires beyond the Dutch sphere – such as Meiji Japan, the Ottoman Empire, and the German colonies – the primary focus remained on the Dutch East Indies. Entanglements between the Dutch and other empires could be explored more fully through sources from Japanese, Ottoman, or other archives. Similarly, by concentrating on actors from Germanophone Europe, this study does not account for physicians from other European "margins," such as Scandinavia or Eastern Europe. The cases of Czech officer Pavel Durdík or the numerous Danish physicians serving in the KNIL, for instance, were only mentioned in passing, but they could provide fruitful avenues for historians.

Third, the thematic focus on colonial medicine largely neglects the influence of medical mercenaries on neighbouring disciplines. Material traces preserved in Swiss, Austrian, and German museums indicate that fields such as zoology, ethnography, botany, and geology were shaped significantly by these men on the spot. A more comprehensive study of their impact on natural history and related disciplines is warranted.

Perhaps the most significant limitation concerns the absence of subaltern voices. By relying predominantly on colonial sources, the acts of resistance,

contributions, and intimate relationships of patients, soldiers, laboratory assistants, and concubines could only be reconstructed indirectly through European accounts. Future research should aim to recover indigenous and lower-class perspectives, highlighting subaltern agency in contesting and shaping European laboratory science, as well as the alternatives offered by local medical traditions. The long-term effects of Germanophone physicians and German-speaking medical discourse, laboratory sciences, and educational practices on modern Indonesian society also remain important areas for further exploration.

Addressing these gaps will require closer collaboration between Indonesian and European historians, alongside a redistribution of research funding that shifts resources from the Global North to the Global South. Moreover, such work must confront Western academia's own claims to scientific hegemony. Recognising the inherent partiality and situatedness of knowledge produced in European institutions is essential to amplifying diverse voices and challenging dominant narratives in Western colonial historiography.

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