Chemical compounds in the Congo

Pharmaceuticals and the 'crossed history' of public health in Belgian Africa (ca. 1905-1939)

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Proefschrift voorgelegd tot het behalen van de graad van Doctor in de Geschiedenis
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List of Abbreviations

AEF: Afrique Equatoriale Française
AIP: Archives de l'Institut Pasteur
AMI: Assistance Médicale aux Indigènes
AMIB: Assistance Médicale aux Indigènes Bénévole
DG: Direction Générale
EIC: Etat Indépendant du Congo
EMT: Ecole de Médecine Tropicale
FD: Fonds Dubois
FOREAMI: Fonds Reine Elisabeth pour l'Assistance Médicale aux Indigènes
GG: Gouvernement Général
HCB: Huileries du Congo Belge
IMT: Institut de Médecine Tropicale Prince Léopold
ITG: Instituut voor Tropische Geneeskunde
KADOC: Documentation and Research centre for Religion, Culture and Society
LN: League of Nations
LNHO: League of Nations Health Organisation
MAEAA: Ministère des Affaires Etrangères. Archives Africaines
PCA: Pharmacie Centrale de l'Armée
RA-CB: Rapports officiels du Congo Belge
RAC: Rockefeller Archive Center
RG: Record Group
RIMR: Rockefeller Institute for Medical Research
SAMI: Service de l'Assistance Médicale aux Indigènes
UCB: Union Chimique Belge

Table of Contents

Chapter 1
Introduction

1.1 The research question: pharmaceuticals and sleeping sickness control in the Belgian Congo

This study is about pharmaceuticals, in particular the science-based, mass-produced therapeutic agents that rose to prominence during the so-called therapeutic revolution of the long twentieth century. More specifically, it examines to what extent and how pharmaceuticals became central to the control of sleeping sickness in the Belgian Congo during the first decades of the twentieth century, and what this tells us about colonial public health.[1] Sleeping sickness or human African trypanosomiasis is a lethal disease endemic in large parts of Africa, caused by protozoa called 'trypanosomes' that are transmitted by tsetse flies. Taking on epidemic proportions in the early twentieth century, it became the main public health priority for the Belgian colonial administration. Moreover, the latter definitely resorted to pharmaceutical strategies to curb the spread of the disease. Especially during the interwar period, many efforts centred on what has been called a 'chimiothérapie sur une grande échelle': the mass treatment of sleeping sickness victims with chemical drugs.[2]

Focusing specifically on the pharmaceuticalisation of epidemic disease control in colonial Africa, this dissertation hopes to break new ground in the history of sleeping sickness control and twentieth-century therapeutics. In 1962, famous medical historian Erwin Ackerknecht argued that the history of therapeutics had long been neglected because it constituted, until recent times, 'the weakest spot in medicine.' Ackerknecht did not reject this portrayal of 'premodern' therapeutics, but instead stressed the educational benefits of studying previous therapeutic failures.[3] Such condemnations of

[1] I took inspiration for this question from Joao Biehl's analysis of the pharmaceuticalisation of public health in Brazil through the case of AIDS. See J. Biehl, 'Pharmaceutical governance' in A. Petryna, A. Lakoff and A. Kleinman (eds.), *Global Pharmaceuticals: Ethics, Markets, Practices* (Durham, 2006), pp. 206-239.

[2] J. Van Riel et P.-G. Janssens, 'Lutte contre les endémo-épidémies' dans *Apport Scientifique de la Belgique au développement de l'Afrique Centrale* (Bruxelles, 1962), p. 919.

[3] E. H. Ackerknecht, 'Aspects of the history of therapeutics', *Bulletin of the History of Medicine* 36 (1962), 389-390.

historical backwardness, based on an appreciation of the treatment standards of his own time, have since then been criticised as 'Whiggish' narratives.[4] But most historians would agree that the (long) twentieth century represents a crucial phase of transformation in the history of therapeutics. At the same time, there is a growing consensus that we are only beginning to understand the complexities and multiple dimensions of what has been termed 'the therapeutic revolution'.[5]

Significant contributions to a more nuanced therapeutic history of the twentieth century stem from a recent move to promote pharmaceuticals as objects of historical study 'in their own right', paralleling a fascination with medical drugs in other humanities and social science disciplines.[6] Among the revisions prompted so far by this historiographical development is a reconsideration of the 'chemical model' of therapeutic transformation. Whereas the latter attributes the major changes in the history of medical drugs to applied chemistry and the involvement of the (German) chemical industry since the late 1800s, Jean-Paul Gaudillière argues that before World War Two chemical drugs actually represented only a modest fraction of industrially manufactured medicines on the market in comparison with drugs of biological provenance.[7] Other historical overviews equally suggest that chemotherapy did not exactly become a dominant feature of biomedicine's therapeutic arsenal until after the war.[8]

While such claims add an important qualification to the dominant story by pointing to the necessary inclusion of biological drugs, the picture they paint is in fact no less partial.[9] More specifically, they reflect a rather Eurocentric reading of our pharmaceutical past in overlooking how the non-western world participated in and

[4] For a criticism of Ackerknechtian versions of therapeutic history, see G. B. Risse, 'The history of therapeutics' in V. Nutton and W. F. Bynum (eds.), *Essays in the History of Therapeutics*, *Clio Medica 22* (Amsterdam, 1991), pp. 3-11.

[5] Jean-Paul Gaudillière suggests that '(...) the therapeutic revolution remains to be revisited in a manner similar to what historians of science did to the scientific revolution of the seventeenth century.' See J. P. Gaudillière, 'Introduction: drug trajectories', *Studies in the History and Philosophy of Biological and Biomedical Sciences* 36 (2005), 604. Patrice Bourdelais calls for reflection on what it is that sets the period since the late nineteenth century apart as a 'rupture' in the long-term history of medical drugs. P. Bourdelais, 'Conclusion. Le médicament, une histoire plurielle' dans C. Bonah et A. Rasmussen (dir.), *Histoire et médicament aux XIXe et XXe siècles* (Paris, 2005), pp. 217-218.

[6] European Science Foundation, *Research Networking Programme. Standard Drugs and Drug Standards A Comparative Historical Study of Pharmaceuticals in the 20th Century* (Strasbourg, 2008), p. 2. See also S. J. Williams, J. Gabe and P. Davis, 'The sociology of pharmaceuticals: progress and prospects' (2008), University of Warwick Institutional Repository, http://wrap.warwick.ac.uk (Last accessed 17 March 2014); J. Collin, M. Otero et L. Monnais (dir.), *Le médicament au coeur de la socialité contemporaine: regards croisés sur un objet complexe*, *Collection Problèmes sociaux et interventions sociales 23* (Sainte-Foy, 2006).

[7] Gaudillière, 'Introduction: drug trajectories', 604-606.

[8] This seems the case, for example, in C. Bonah et S. Massat-Bourrat, 'Les "agents thérapeutiques". Paradoxes et ambiguïtés d'une histoire des remèdes aux XIXe et XXe siècles' dans Bonah et Rasmussen (dir.), *Histoire et médicament*, p. 39.

[9] On the inclusion of biologicals, see for example European Science Foundation, *Standard Drugs*, p. 5.

contributed to it. Chemically synthesised drugs, for example, played a central role in colonial therapeutics during the interwar period, as highlighted by Laurence Monnais' recent study on sulfa drugs in French Vietnam.[10] Moreover, before the Second World War there were significant developments in tropical chemotherapy, which targeted protozoan and parasitic diseases rather than the bacterial infections associated with temperate climates. But this, Helen Power contends, is often ignored because it does not fit 'history read as Euro-centric progress'.[11] Not that much seems to have changed, therefore, since Iago Galdston identified the period between the development of the chemical antisyphilitic drug Salvarsan in 1910 and the introduction of the antibacterial sulfa drugs in the mid 1930s as the 'doldrum years'.[12]

In spite of such historiographic blind spots, the prewar histories of modern chemotherapy and the colonial tropics were intimately connected, and this is especially evident in the case of sleeping sickness. The disease now features on the World Health Organisation's list of neglected tropical diseases, meaning that it presents very few incentives for pharmaceutical investment, given that the majority of the people affected belong to some of the poorest communities in the world.[13] Ironically, however, sleeping sickness and trypanosomes were crucial in the development of specific chemotherapy, the targeting of infectious disease pathogens with chemical compounds, in the early twentieth century.[14] Three of the five synthetic chemicals currently used to treat sleeping sickness - in spite of their shortcomings - were developed roughly between 1916 and 1950, at a time when European colonialism coincided with critical transitions in the forms and concepts of medical drugs.[15]

Although it has an intricate past that far predates the period of European colonialism starting in the late nineteenth-century, African trypanosomiasis indeed played a key role in the colonial history of the continent.[16] Besides the actual demographic impact of

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[10] L. Monnais, 'From colonial medicines to global pharmaceuticals? The introduction of sulfa drugs in French Vietnam', *East Asian Science, Technology and Society: An International Journal* 3 (2009), 257-285.

[11] H. J. Power, *Tropical Medicine in the Twentieth Century: A History of the Liverpool School of Tropical Medicine, 1899-1990* (London, 1999), p. 85.

[12] Quoted in Ackerknecht, 'History of therapeutics', 399.

[13] 'The 17 neglected tropical diseases', World Health Organization, http://www.who.int/neglected_diseases/diseases/en/ (Last accessed 21 April 2014); H. Veeken and B. Pécoul, 'Editorial: drugs for "neglected diseases": a bitter pill', *Tropical Medicine and International Health* 5 (2000), 309-310.

[14] On the link between sleeping sickness and Paul Ehrlich's chemotherapy, see D. Neill, 'Paul Ehrlich's colonial connections: scientific networks and sleeping sickness drug therapy research, 1900-1914', *Social History of Medicine* 22 (2009), 61-77.

[15] Namely Suramin (Bayer 205), Pentamidine and Melarsoprol. The fourth drug, Eflornithine was developed in 1990 and has been used in combination with Nifurtimox since 2009. See 'Trypanosomiasis, human African (sleeping sickness). Fact sheet N° 259', World Health Organization, Media centre, http://www.who.int/mediacentre/factsheets/fs259/en/ (Last accessed 21 April 2014); Veeken and Pécoul, '"Neglected diseases"', 309-310.

[16] M. Lyons, 'African trypanosomiasis (sleeping sickness)' in K. F. Kiple (ed.), *The Cambridge Historical Dictionary of Disease* (Cambridge, 1993), p. 555-556.

the early twentieth-century sleeping sickness epidemics, the disease also derived particular significance from its contemporaneous construction as one of the most serious threats to African labour populations and their livestock, and therefore to colonial regimes and economies. It quickly became a public health priority of colonial governments, dominated the research agenda of the newly established field of tropical medicine and contributed to the formation of medical services in African territories, notably in the Belgian Congo.[17]

The importance of trypanosomiasis to Africa's colonial history, grounded in epidemiological reality as well as political construction, is also reflected in historiography. Trypanosomiasis and the public health campaigns it gave rise to occupy a prominent place in medical histories of colonial sub-Saharan Africa, and constitute the subject of several monographs.[18] A great deal of these works contribute significantly to our understanding of the control strategies in various colonial contexts targeting trypanosomes, their human and animal hosts, or fly vectors, and elucidate how such policies reflected and attempted to advance the immediate political and economic interests of colonialism.

While large-scale treatment with chemotherapeutic agents has been discussed as a component of the public health campaigns in certain colonies, the pharmaceutical intricacies of this history do not often figure centrally in this scholarship, which is primarily interested in demonstrating the problematic, political nature of colonial medical interventions.[19] Analyses of sleeping sickness control do not always particularly focus on pharmaceuticals in themselves and can somewhat take their use for granted, leaving the impression that the mere availability of sleeping sickness drugs or at best the policy choices of colonial administrations sufficiently explain their presence overseas. In that way, they largely overlook the range of processes and forces that shaped pharmaceuticals' introduction and further spread, to a greater or lesser extent, in colonial African territories. Although some studies illuminate interesting aspects of this more complex story, such as the importation of sleeping sickness drugs as experimental medicines or the efforts of (certain) colonial doctors to sustain their use in

[17] M. Malowany, 'Unfinished agendas: writing the history of medicine of Sub-Saharan Africa', African Affairs 99 (2000), 330-333; M. Lyons, The Colonial Disease: A Social History of Sleeping Sickness in Northern Zaire (Cambridge, 1992), p. 102; K. A. Hoppe, Lords of the Fly: Sleeping Sickness Control in British Uganda (Westport, 2003), p. 11.

[18] For example M. Lyons, *Colonial Disease*; Hoppe, *Lords of the Fly*; M. Worboys, 'The comparative history of sleeping sickness in East and Central Africa, 1900-1914', *History of Science* 32 (1994), 89-102; R. Headrick, *Colonialism, Health and Illness in French Equatorial Africa* (Atlanta, 1994); J.-P. Bado, *Médecine coloniale et grandes endémies en Afrique* (Paris, 1996); W. Eckart, *Medizin und Kolonialimperialismus - Deutschland 1884-1945* (Paderborn, 1997); I. Hiroyuki, *Medizin und Kolonialgesellschaft. Die Bekämpfung der Schlafkrankheit in den deutschen "Schutzgebieten" vor dem Ersten Weltkrieg* (Münster, 2009).

[19] Perhaps symptomatic of this situation are the small factual inaccuracies about sleeping sickness drugs in these studies. See for example Lyons, 'African trypanosomiasis', p. 559; Lyons, *Colonial Disease*, pp. 145, 149.

the wake of political opposition, a fuller picture of this pharmaceuticalisation is still lacking.[20]

In placing sleeping sickness medicines and their dissemination explicitly at the heart of the enquiry, this dissertation offers a different perspective on the colonial history of human trypanosomiasis control. The focus is on the Belgian Congo before the Second World War as a suitable vantage point from which to study the intertwined histories of colonial Africa, public health and therapeutics. As highlighted notably by Maryinez Lyons, medical drugs - especially arsenic compounds - were a key component of the interwar efforts to tackle sleeping sickness in the colony. However, this dissertation starts from the premise that the presence of these pharmaceuticals should be properly problematised, and their development, introduction and distribution examined as central and integral components of historical analysis. In other words, it posits the apparent interwar pharmaceuticalisation of sleeping sickness control in the Belgian Congo as the explanandum. Moreover, it approaches this subject from the perspective of drug 'careers' or 'trajectories': it charts the beginnings and further fates of sleeping sickness drugs in the Congo, and examines how social and geographic boundaries were crossed in the course of their life journeys.[21] In so doing, I hope to underscore that public health in colonial Africa was not simply 'colonial', but took shape at the intersection of different social spheres, localities and spatial scales. How this perspective fits in with relevant historiographic developments, notably in the field of pharmaceutical and colonial medical history, will be discussed next.

[20] For example Neill, 'Ehrlich's colonial connections'; G. Lachenal, 'Chemoprophylaxis against sleeping sickness in late colonial Africa', *Wellcome History* 38 (2008), 4-5; N. Tousignant, 'Trypanosomes, toxicity and resistance: the politics of mass therapy in French colonial Africa', *Social History of Medicine* 25 (2012), 625-643. There generally seems to be more detailed attention for sleeping sickness drugs in the historiography of sleeping sickness control in French Africa. See for example Headrick, *Colonialism, Health and Illness*, pp. 67-94, 311-344.

[21] Gaudillière, 'Introduction: drug trajectories', 603-611; S. Snelders, C. Kaplan and T. Pieters, 'On cannabis, chloral hydrate and career cycles of psychotropic drugs in medicine', Bulletin of the History of Medicine 80 (2006), 95-110.

1.2 Historiographical context: pharmaceutical history and the history of medicine in colonial settings

1.2.1 A 'new' pharmaceutical history

The recent surge of historical interest in pharmaceuticals marks an important shift from older-style histories of therapy and pharmacy. Building on a therapeutic history that replaced initial surveys of heroic scientists and their treatment strategies with broader social histories of therapeutics, it represents a still further move, towards a 'history of remedies' focusing on the 'concrete objects of healing' in their cultural, social, political and economic dimensions.[22] The 'new pharmaceutical history' is also a far cry from an older historiography confined to the fortunes of pharmacists and pharmacies: it draws attention to a much wider array of actors and forces involved in the pharmaceuticalisation of societies, through which pharmaceutical companies turned into powerful players and medical drugs became omnipresent as solutions to medical and even social problems.[23] Previously neglected themes such as industrialisation, marketing, regulation, consumption are now readily included as pertinent aspects of pharmaceutical history.

Moreover, a particularly prominent trend in this new historiography is the adoption of a 'biographical approach' to pharmaceuticals, a perspective developed by medical anthropologists who by the 1980s had become interested in the apparent global spread of biomedical drugs rather than in the more conventional and 'exotic' ethnographic subjects of indigenous remedies and ethnopharmacology.[24] Inspired, among other things, by Igor Kopytoff and Arjun Appadurai's idea that objects can have biographies, their pharmaceutical anthropology conceives of medicines as 'material things' that have 'social lives' beyond their inherent pharmacological properties and physiological

[22] G. B. Risse, 'History of therapeutics', pp. 3-11; G. Van Heteren, M. Gijswijt-Hofstra and T. Tansey, 'Introduction' in M. Gijswijt-Hofstra, G. Van Heteren and T. Tansey (eds.), *Biographies of Remedies: Drugs, Medicines and Contraceptives in Dutch and Anglo-American Healing Cultures, Clio Medica 66* (Amsterdam, 2002), pp. 2-3.

[23] E. Siegel Watkins, 'From history of pharmacy to pharmaceutical history', *Pharmacy in History* 51 (2009), 3-13. For the idea of a novel pharmaceutical history, see also V. Hess, 'Psychochemicals crossing the wall. Die Einführung der Psychopharmaka in der DDR aus der Perspektive der neueren Arzneimittelgeschichte', *Medizinhistorisches Journal* 42 (2007), 61-84.

[24] S. van der Geest, S. Reynolds Whyte and A. Hardon, 'The anthropology of pharmaceuticals: a biographical approach', *Annual Review of Anthropology* 25 (1996), 153-178.

effects.[25] This means that pharmaceuticals can be followed as they move through different life stages, such as production, prescription, distribution and consumption, and between the particular settings and actors associated with each of these phases. Bringing medicines to 'life' in this way also implies the attribution of a certain agency to objects, although the degree to which researchers want to do so can vary. Few would argue that pharmaceuticals have a life or act of their own accord without the intervention of people, but some view them as non-human agents in the sense of actor-network theory.[26]

The notion that medicines have social lives is reflected in recent historical scholarship implicitly, but increasingly also through the explicit adoption of biography-related vocabularies. With their respective monographs on penicillin and the sulfonamides for example, Robert Bud and John Lesch write pharmaceutical histories that are in fact conceived as the life stories of specific drugs or drug families.[27] Some historians employ the terms 'biography' or 'life (cycle)' in connection with medicines in a fashion that does little to conceal their anthropological sources of inspiration.[28] Talking about cyclical 'career paths' to describe the alternation of highs and lows in the medical and public appreciation and use of certain drugs, Toine Pieters, Stephen Snelders and Charles Kaplan offer an intriguing variation on the familiar theme.[29] Or, calling for a historiography that examines twentieth-century therapeutics through the 'trajectories' or 'circulation' of drugs within and between the different social realms of medicine, science and industry, Jean-Paul Gaudillière, Christian Bonah and Anne Rasmussen have clearly embarked upon a similar endeavour.[30]

Unsurprisingly, a common thread in such historical works is the commitment to the analytical strategy of following medicines around as they journey through life, an approach evidently shared with pharmaceutical anthropologists. But more so than the

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[25] Appadurai extended economic analyses of commodities by including cultural perspectives. A. Appadurai (ed.), *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge, 1986); I. Kopytoff, 'The cultural biography of things: commoditization as process' in Appadurai, *Social Life of Things*, pp. 64-91; S. Reynolds Whyte, S. van der Geest and A. Hardon, *Social Lives of Medicines* (Cambridge, 2003), pp. 3-5.

[26] Reynolds Whyte, van der Geest and Hardon, *Social Lives of Medicines*, pp. 13-14.

[27] R. Bud, *Penicillin: Triumph and Tragedy* (Oxford, 2007); J. Lesch, *The First Miracle Drugs: How the Sulfa Drugs Transformed Medicine* (New York, 2007).

[28] For example V. Walsh and J. Goodman, 'The billion dollar molecule: Taxol in historical and theoretical perspective' in Gijswijt-Hofstra, Van Heteren and Tansey (eds.), *Biographies of remedies*, pp. 245-267; Gijswijt-Hofstra, Van Heteren and Tansey (eds.), *Biographies of remedies*; J. Goodman and V. Walsh, *The Story of Taxol. Nature and Politics in the Pursuit of an Anti-Cancer Drug* (Cambridge, 2001).

[29] T. Pieters, *Interferon: The Science and Selling of a Miracle Drug* (London, 2005); Snelders, Kaplan and Pieters, 'On cannabis', 95-110.

[30] Gaudillière, 'Introduction: drug trajectories', 603-611; J.-P. Gaudillière, 'Une marchandise pas comme les autres. Historiographie du médicament et de l'industrie pharmaceutique en France au XXe siècle' dans Bonah et Rasmussen (dir.), *Histoire et médicament*, pp. 115-119; C. Bonah et A. Rasmussen, 'Introduction. Pour une nouvelle histoire des médicaments en France au XIXe et XXe siècles' dans Bonah et Rasmussen (dir.), *Histoire et médicament*, pp. 9-13.

latter, who – according to Vivien Walsh and Jordan Goodman - analyse 'life cycles within prescribed stages', they allow the inclusion of an element of 'contingency' in their reconstruction of medicinal biographies.[31] In fact, pharmaceutical historians are particularly attentive to showing that nothing is inevitable or self-evident about the fates of medical drugs. They point out, for example, that for various reasons therapeutic agents did not always end up as successful drugs and could thus have 'eclipsed trajectories'.[32] Or they argue that the successes and failures of medicines were not straightforward but subject to cyclical patterns, illustrate how '(re)-appropriations' could change the original identities and intended uses of medicinal substances, and reveal how one and the same medicinal commodity could have various parallel lives.[33] How and why certain paths were followed while others were discarded or discontinued precisely constitutes the subject of historical investigations of this stance, including this dissertation.

Above all, the main rationale behind historians' empirical study of moving pharmaceuticals is to propose a circulatory understanding of pharmaceuticalisation as an alternative to linear models. The latter conceive the spread of medicines through society as a matter of scientific discoveries 'rationally and automatically' trickling down to the echelon of prescribers and consumers without any transformations, feedback or reversals in the process.[34] Drug trajectories and related concepts, however, emphasise the interactions and multidirectional flows between a plurality of settings, actors and interests that are at work in the emergence, spread and use of therapeutic substances.[35]

A benefit of following the movements of pharmaceuticals is therefore that it tells us something about the larger social structures in which pharmaceuticalisation processes take place. By circulating from one setting to the next, medicines reflect and constitute social relations, something anthropologists Adriana Petryna and Arthur Kleinman refer to as 'the pharmaceutical nexus'.[36] Similarly, historians have identified drugs and their trajectories as valuable analytical tools to probe the formation and workings of the

[31] Walsh and Goodman, 'Billion dollar molecule', pp. 246-247.

[32] Bonah et Massat-Bourrat, '"Agents thérapeutiques"', p. 41.

[33] Pieters, *Interferon*; Snelders, Kaplan and Pieters, 'Career cycles of psychotropic drugs'; Walsh and Goodman, 'Billion dollar molecule', p. 246; Bonah et Massat-Bourrat, '"Agents thérapeutiques"', p. 46; G. Attewell, 'Interweaving substance trajectories: tiryaq, circulation and transformation in the nineteenth century' in W. Ernst, P. B. Mukharji and A. Digby (eds.), *Crossing Colonial Historiographies: Histories of Colonial and Indigenous Medicines in Transnational Perspective* (Newcastle, 2010), pp. 1-20.

[34] Bonah et Massat-Bourrat, '"Agents thérapeutiques"', p. 46; Gaudillière, 'Marchandise pas comme les autres', p. 119.

[35] Gaudillière, 'Marchandise pas comme les autres', p. 118.

[36] Appadurai writes in relation to other objects with biographies: 'The path taken by these valuables is thus both reflective and constitutive of social partnerships and struggles for preeminence.' A. Appadurai, 'Introduction: commodities and the politics of value' in Appadurai (ed.), *Social Life of Things*, p. 19; A. Petryna and A. Kleinman, 'The pharmaceutical nexus' in Petryna, Lakoff and Kleinman (eds.), *Global Pharmaceuticals*, pp. 20-22.

broader networks implicated in historical instances of pharmaceuticalisation.[37] This, in turn, can modify our perspective on (pharmaceuticalised) twentieth-century health care systems or 'healing cultures': involving complex configurations of circulating medicines, they can be seen to take shape and operate at the intersection of distinct social worlds, and the stakes and stakeholders associated with them.[38] The view in this dissertation is that tracing the trajectories of sleeping sickness drugs can tell us something about public health in the Belgian Congo, and by extension, about the field of 'colonial medicine' more generally.

1.2.2 Historicising pharmaceutical interconnections: colonialism, medicines and 'colonial medicine'

As the previous section shows, historians are increasingly joining anthropologists in studying how medicines circulate between various social settings in the course of their lives. So far, however, much of this 'new' pharmaceutical history has been rather silent on the ways in which medicines not only transgressed the boundaries of distinct social spheres, but also crossed geographic and territorial borders. Self-contained territorial entities and spatial scales are often employed as the natural backgrounds against which to analyse drugs' social mobilities. Moreover, attempts to place local experiences in a broader context have been largely confined to comparative approaches, which fail to take actual border-crossing into account.[39]

By contrast, pharmaceutical anthropologists have duly acknowledged that medicines also move in a geographic sense, and for that reason can tell us something about processes of globalisation, or at least about spatial interconnections.[40] Yet historical instances of the formation and workings of such geographic interdependencies

[37] The idea of medical drugs as probing tools is formulated as 'den Stoff quasi als Sonde nutzen, um weitere Zusammenhänge und ein Netz von Einflussgrössen zu erfassen' in V. Balz, M. Bürgi, N. Eschenbruch und M. Hulverscheidt, 'Magic bullets, chemische Knebel, beherrschte Risiken? Zum Arbeitsfeld des DFG-Forschungsnetzwerks "Arzneistoffe im 20. Jahrhundert"', *Medizinhistorisches Journal* 43 (2008), 187.

[38] Bonah et Rasmussen, 'Nouvelle histoire des médicaments' p. 9-13. Godelieve Van Heteren also proposed something along those lines in calling for further studies of 'remedies' as 'indicators' of the multiple dimensions of modern 'cultures of healing'. See G. Van Heteren, 'Afterword: who cares? Remedies, care and cultures of healing in the twentieth century' in Gijswijt-Hofstra, Van Heteren and Tansey (eds.), *Biographies of Remedies*, p. 270.

[39] See for example, European Science Foundation, *Standard Drugs*. About the inadequacy of comparative approaches to capture 'the global as an empirical reality in and of itself', see B. Zimmerman, 'Histoire croisée and the making of global history' (2008), p. 2, European University Institute, Department of History and Civilisation, http://www.iue.it/HEC//ResearchTeaching/20082009-Autumn/SS-reading-Zimmermann.pdf (Last accessed 16 November 2010) .

[40] van der Geest, Reynolds Whyte and Hardon, 'Anthropology of pharmaceuticals'; Reynolds Whyte, van der Geest and Hardon, *Social Lives of Medicines*, pp. 3-19; Petryna, Lakoff and Kleinman (eds.), *Global Pharmaceuticals*.

constitute something of a blind spot in anthropological as much as in historical scholarship. Interestingly, a number of historians has now started to show how examining the link between modern colonialism and pharmaceuticals is an important way to address this gap in our understanding of the pharmaceutical past and present.

Laurence Monnais and Noémi Tousignant, for example, have recently argued that studying 'the colonial life of pharmaceuticals' can help clarify the historical roots of current patterns of pharmaceutical consumption in non-western settings.[41] Since about the 1960s, serious concerns have been raised about the '"pharmaceutical invasion of the South"', the growing presence of biomedical drugs in resource-poor contexts and the ensuing health hazards and financial costs.[42] This situation not only triggered the promotion of essential drug policies by the World Health Organisation, but also sparked a scientific interest in anthropologists, who embarked upon investigations of the seemingly ever-increasing popularity of pharmaceuticals in the South.[43] However, Monnais and Tousignant assert, this 'pharmaceutical invasion' and the associated 'risky' therapeutic behaviours have generally not been sufficiently examined from a historical perspective. Their analysis of Vietnamese responses to biomedical drugs during the first decades of the twentieth century therefore highlights the crucial role of European colonialism in the creation of 'complex forms of medical pluralism'.[44]

Although we should be wary of developing too simplistic assumptions about the reproduction of the colonial into the postcolonial period, this kind of work on medicines and colonialism usefully complements anthropological studies of pharmaceuticalisation in former colonies with historicising approaches.[45] But in particular, it also breaks new historiographical ground in illuminating the often-neglected spatial logics of pharmaceutical history. Including the colonial dimension helps to highlight, for example, the 'weight of locality' on the (global) trajectories of drugs.[46] Or it reveals the crucial contributions of the non-western world to pharmaceutical innovation and development, thus putting a finger on the unwarranted Eurocentric nature of common readings of the medicinal past that, if not completely ignoring the bearing of colonies

[41] L. Monnais and N. Tousignant, 'The colonial life of pharmaceuticals: accessibility to health care, consumption of medicines and medical pluralism in French Vietnam, 1905-1945', *Journal of Vietnamese Studies* 1 (2006), 131-168.

[42] Ibid., 132-133; Reynolds Whyte, van der Geest and Hardon, *Social Lives of Medicines*, p. 9.

[43] Reynolds Whyte, van der Geest and Hardon, Social Lives of Medicines, pp. 9-11. See also, for example, N. Kanji, A. Hardon, J. W. Harnmeijer, M. Mamdani and G. Walt, *Drugs Policy in Developing Countries* (New Jersey, 1992).

[44] Monnais and Tousignant, 'Colonial life of pharmaceuticals', 155.

[45] F. Cooper, *Colonialism in Question: Theory, Knowledge, History* (Berkeley, 2005), pp. 12-22; J.-F. Bayart, 'Les études post-coloniales, une invention politique de la tradition?', *Sociétés politiques comparées. Revue Européenne d'Analyse des Sociétés Politiques* 14 (2009), 27-31.

[46] Monnais, 'Colonial medicines to global pharmaceuticals', 281.

on the history of 'modern' drugs, have at best silently assumed them to be passive recipients of the fruits of Europe's technological progress.[47]

Yet this burgeoning literature on colonialism and medical drugs not only makes a strong case for taking a 'spatial turn' in pharmaceutical history. Perhaps rather obviously, it also contributes to colonial history by pointing us towards its little-known pharmaceutical dimensions. Although the movements of materia medica by far predate the age of European colonial empires, it is, after all, through colonialism that pharmaceuticals can be expected to have circulated on a significant geographic scale in the first decades of the twentieth century. Monnais remarks, however, that while historians have long analysed the mutually constitutive relationship between biomedicine and colonial empire, the development of pharmaceuticals and emergence of a pharmaceutical industry that occurred around the same time have generally not been connected to this story.[48] One could therefore reasonably argue for a revision of the history of medicine and health in colonial settings from a pharmaceutical point of view. Moreover, as will be explored in the following pages, tackling the subject through a pharmaceutical lens, as this dissertation seeks to do, can be a rewarding strategy to engage with some of the on-going debates in relation to the history of 'colonial medicine'.

The field of colonial medical history, it must be said, has grown considerably in sophistication and scope over the past few decades. Initially, the history of medicine in connection with the non-Western world to a significant extent consisted of (auto)biographic accounts of heroic European doctors in torrid climates, or it chronicled the scientific breakthroughs in the study of tropical diseases. Often such works were a vehicle for demonstrating the West's supposed triumph over indigenous backwardness and tropical insalubrity, and indeed, for justifying Europe's colonial projects altogether.[49] After decolonisation, they were joined by institutional histories charting the evolution of the national medical services of former colonies.[50] In the 1980s, however, at a time of revived academic interest in the question of colonialism, the history of medicine, health and imperialism (especially its Western European version in the nineteenth and twentieth centuries) came under ever-closer scrutiny.[51] Notably the simultaneous publication in 1988 of two edited volumes by David Arnold and by Roy MacLeod and

[47] For example, A. D. Osseo-Asare, 'Bioprospecting and resistance: transforming poisoned arrows into Strophantin Pills in Colonial Gold Coast, 1885-1922', *Social History of Medicine* 21 (2008), 269-290; Neill, 'Ehrlich's colonial connections'; Power, *Liverpool School of Tropical Medicine*, pp. 79-103; M. Hokkanen, 'Imperial networks, colonial bioprospecting and Burroughs Wellcome & Co.: the case of *Strophantus Kombe* from Malawi (1859-1915)', *Social History of Medicine* 25 (2012), 589-607.

[48] Monnais, 'Colonial medicines to global pharmaceuticals', 282.

[49] For example, J. R. Cornet, *Bwana Muganga (Hommes en blanc en Afrique Noire), Mémoires Académie Royales des Sciences d'Outre-Mer. Classe des Sciences Morales et Politiques* (Bruxelles, 1971), t. XLI.

[50] For example: A. Beck, *A History of the British Medical Administration of East Africa* (Cambridge, 1970).

[51] For a description of the revival of colonial studies, see Cooper, *Colonialism in Question*, pp. 33-55.

Milton Lewis respectively, reflected the establishment of 'colonial medicine' as a legitimate and engaging subfield of medical and/or colonial history.[52]

It was the beginning of a growing and diverse body of work that, rather than simply accepting previous assumptions about the spread of medicine as an unambiguously beneficial side effect of European colonialism, critically examined their intimate historical ties. A considerable number of historians have since showed how medicine served as a 'tool of Empire', but also reversely, how imperialism was instrumental in shaping biomedical developments.[53] Some studies, for example, have analysed the establishment of the scientific specialty of tropical medicine in different European countries around 1900 in its connections with the ideologies and practices of imperialism.[54] Inspired by developments in social and cultural history, scholars have also developed a range of specific approaches to the theme of medicine and colonialism as it played out in colonial settings.

A notable example is the development of a 'political economy of health' perspective, which considers sickness and health in their wider social context rather than as mere medical problems. This extensive work, much of which focuses on sub-Saharan Africa, points to the immense health costs of colonialism and its modes of production. It also draws attention to the political and economic rationales behind colonial medical interventions, aimed principally at indigenous labour populations and those responsible for their reproduction. Illuminating how the boundaries between health promotion and colonial administration were often blurred, it reveals, moreover, the great potential in colonial contexts for social engineering through medical campaigns.[55]

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[52] D. Arnold (ed.), *Imperial Medicine and Indigenous Societies* (New York, 1988); R. MacLeod and M. Lewis (eds.), *Disease Medicine and Empire: Perspectives on Western Medicine and the Experience of European Expansion* (London, 1988).

[53] The phrase 'tool of Empire' was coined by Daniel Headrick. See D. R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York, 1981). On this topic see also for example J. Comaroff, 'The diseased heart of Africa: Medicine, colonialism and the black body' in M. Lock and S. Lindenbaum (eds.), *Knowledge, Power and Practice: The Anthropology of Medicine and Everyday Life* (Berkeley, 1993), pp. 305-329; J. Farley, *Bilharzia: A History of Imperial Tropical Medicine* (Cambridge, 1991); Eckart, *Medizin und Kolonialimperialismus*.

[54] Michael Worboys was the first to insist on the role of the 'external (...) factor(...)' of European imperialism in the emergence of tropical medicine as a scientific specialty. See M. Worboys, 'The emergence of tropical medicine: a study in the establishment of a scientific specialty' in G. Lemaine, R. MacLeod, M. Mulkay and P. Weingart (eds.), *Perspectives on the Emergence of Scientific Disciplines* (Chicago, 1976), p. 75. On tropical medicine institutions in European metropoles, see also M. Worboys, 'Manson, Ross, and colonial medical policy: tropical medicine in London and Liverpool, 1899-1914' in MacLeod and Lewis (eds.), *Disease, Medicine and Empire*, pp. 21-37; Power, *Liverpool School of Tropical Medicine*; L. Wilkinson and A. Hardy, *Prevention and Cure: The London School of Hygiene and Tropical Medicine, a Twentieth-Century Quest for Global Public Health* (London, 2001); L. van Bergen, *Van koloniale geneeskunde tot internationale gezondheidszorg. een geschiedenis van de Nederlandse Vereniging voor Tropische Geneeskunde* (Amsterdam, 2007); D. M. Haynes, *Imperial Medicine: Patrick Manson and the Conquest of Tropical Disease* (Philadelphia, 2001).

[55] For example S. Feierman and J. Janzen (eds.), *The Social Basis of Health and Healing in Africa* (Berkeley, 1992); Headrick, *Colonialism, Health and Illness*; M. Turshen, *The Political Ecology of Disease in Tanzania* (New Brunswick,

Another strand of influential scholarship takes its principal inspiration from Foucault and social constructionism in analysing the complicity between medicine and colonial power. It examines, for example, how biomedical discourses constructed indigenous population groups as 'pathological' on the basis of biological or even cultural factors, as Megan Vaughan has shown for the case of British Africa.[56] Such pathologised representations of the colonised 'other' could then be easily invoked to justify, on sanitary grounds, measures of social control and policies solidifying colonial power relations, such as racial segregation.[57]

The remarkable amount of critical works on the history of medicine and health in colonial settings has firmly uprooted the long-standing apologetic tradition in historiography, and for that deserves ample credit. Yet in focusing so intensely on the question of 'what (was) colonial about colonial medicine', this literature is not entirely unproblematic either, as Waltraud Ernst has recently reminded us.[58] Because even if some might have greatly sophisticated and nuanced our understanding of colonialism itself, at the same time many studies still largely essentialise the history of medicine in colonial settings, by examining and emphasising its specifically 'colonial' character and thus proposing the 'colonial' as the most appropriate analytical category to grasp the object of their research.

We can in fact discern three major, interrelated ways in which the insistence on the 'colonial' label confines our reading of the medical past in relation to the colonial world. First, the notion of 'colonial' medicine suggests that it is distinct and disconnected from its metropolitan counterpart, as well as from 'indigenous' medicine.[59] When European doctors employed the phrase 'colonial', they often did so to convey a sense of difference: on the one hand, it connoted subordination and dependency vis-à-vis a metropolitan centre, on the other, superiority with regard to 'indigenous' medical practices.[60] The problem is that what was clearly a 'normative category' during the colonial period has been to a significant degree adopted as an 'analytic category' in medical historiography, resulting in a division of labour between historians of European, colonial and indigenous

1984); R. M. Packard, *White Plague, Black Labor: Tuberculosis and the Political Economy of Health and Disease in South Africa* (Berkeley, 1989); L. Manderson, *Sickness and the State: Health and Illness in Colonial Malaya, 1870-1940* (New York, 2002); M. Lyons, *Colonial Disease*.

[56] M. Vaughan, *Curing their Ills: Colonial Power and African Illness* (Stanford, 1991).

[57] For example, W. Anderson, *Colonial Pathologies: American Tropical Medicine, Race and Hygiene in the Philippines* (Durham, 2006); W. Anderson, 'Immunities of Empire: race, disease and the new tropical medicine, 1900-1920', *Bulletin of the History of Medicine* 70 (1996), 94-118; Manderson, *Sickness and the State*.

[58] According to Ernst, Roy Porter was the first to raise this question. See W. Ernst, 'Beyond East and West. From the history of colonial medicine to a social history of medicine(s) in South Asia', *Social History of Medicine* 20 (2007), 508; Shula Marks later repeated it in S. Marks, 'What is colonial about colonial medicine? And what has happened to the imperialism of health?', *Social History of Medicine* 10 (1997), 205-219.

[59] On colonial versus indigenous medicine, see Ernst, 'Beyond East and West.

[60] In fact, the notion of 'tropical' diseases itself was based on the conceptualisation of the tropics as the ultimate antipode of a temperate Europe. See D. Arnold, 'The place of "the tropics" in Western medical ideas since 1750', *Tropical Medicine and International Health* 2 (1997), 303-313.

medicine and largely perpetuating the Eurocentric, binary logic of the world that many critics of colonialism sought to eradicate.[61]

Secondly, the classification of medicine in colonial settings as 'colonial' tends to restrict the pertinent social dynamics involved to the asymmetric relations between colonisers and colonised.[62] Even with a more nuanced understanding of the 'colonial encounter' that moves beyond simple paradigms of coercion and acknowledges the limits of colonial power, the reciprocal, negotiated and mediated nature of the relationship, the fluid and constructed character of the categories of coloniser and colonised and so on, the initiatives of both Europeans and indigenous populations are still primarily viewed through the prism of, and thus reduced to, this one interaction.[63]

Finally, the 'colonial' label identifies single colonies as the natural spatial frameworks through which the overseas practice of medicine should be analysed. Heather Bell, for example, argues for the use of the term 'colonial' rather than 'imperial' or 'tropical' medicine, because it points to the particularities of medical developments in different colonial regimes.[64] While this emphasis on local specificities and contingencies helps underscore that there was neither a 'generic colonialism' nor a universal and stable 'western' medicine, promoting the colony as the only relevant unit of analysis masks how medicine in colonial settings also took shape within a much wider context.[65]

The historiography of sleeping sickness in particular has done much to highlight the 'colonial' nature of medicine in European colonial empires. Several historians have indeed sought to validate this analytical category by examining the various trypanosomiasis control strategies enacted within specific colonial contexts and by connecting these schemes to the nature and outlook of particular colonial regimes. Hence the prevalence of the 'political economy' paradigm in this literature, as Maureen

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[61] I borrow the idea of a confusion between normative and analytic categories from Cooper, *Colonialism in Question*, pp. 7-8.

[62] Also in Ernst, 'Beyond East and West'. Similarly, the concern to highlight the mutual constitution of tropical medicine and Empire has, as Douglas Haynes argues, amounted to a general neglect of other 'social processes' that were an integral part of its history. See D. M. Haynes, 'Social status and imperial service: tropical medicine and the British medical profession in the nineteenth century', in D. Arnold (ed.), *Warm Climates and Western Medicine: The Emergence of Tropical Medicine, 1500-1900, Clio Medica 35* (Amsterdam; Atlanta 1996), pp. 208.

[63] A. L. Stoler and F. Cooper, 'Between metropole and colony. Rethinking a research agenda' in F. Cooper and A. L. Stoler (eds.), *Tensions of Empire: Colonial Cultures in a Bourgeois World* (Berkeley, Los Angeles and London, 1997), pp. 6-9; Bayart, 'Etudes post-coloniales', 25; J. Vansina, 'Koloniale geschiedenis en Congo' in V. Viaene, D. Van Reybrouck en B. Ceuppens (red.), *Congo in België. Koloniale cultuur in de metropool* (Leuven, 2009), pp. 31-36. Examples of such more complex understandings of colonialism in the field of medical history are Hoppe, *Lords of the Fly;* Vaughan, *Curing their ills*; N. R. Hunt, *A Colonial Lexicon of Birth Ritual, Medicalization and Mobility in the Congo* (Durham, 1999); H. Tilley, 'Africa as a living laboratory: the African research survey and the British colonial empire: consolidating environmental, medical, and anthropological debates, 1920-1940', unpublished PhD thesis, University of Oxford (2001).

[64] H. Bell, *Frontiers of Medicine in the Anglo-Egyptian Sudan, 1899-1940* (Oxford, 1999), p. 1.

[65] Cooper, *Colonialism in Question*, p. 13.

Malowany notes.[66] Lyons, for example, sketches the interplay between the interests of colonialism in Congo and what she sees as the core of its public health policies: the control of African mobility and 'vertical' treatment campaigns so as to avoid addressing the broader social causes of disease.[67] Or Kirk Hoppe argues how in British Africa control measures 'within specific British-controlled territories depended on different colonial economies, environments, and political relationships'.[68] Comparative analyses of sleeping sickness policies may transcend the framework of a single colonial territory, but in the end only confirm the colony as the relevant point of reference.[69]

In spite of this predominant focus on the 'colonial' in the history of medicine in colonial settings, debates about its analytical value have in fact been part and parcel of the field since its inception. Some historians wondered, for example, whether there really was anything specifically 'colonial' about medicine in the colonies, and whether we should not trace parallels with metropolitan contexts given that all medicine entails some forms of 'colonizing (sic)'.[70] In other words, the '"colonial" as an analytic category' category should perhaps not, according to this point of view, be reserved for colonial settings as it is just as well present in the medical history of Europe.[71] Extending its application in this way, however, is not without risk. Equating the experience of colonies too readily with that of metropoles presents an ethical problem in that it downplays the very real 'structural differences' that without any doubt existed, to the extent of almost providing colonialism with apologetic arguments.[72] Moreover, the problem of employing the phrase 'colonial' to describe an ever-wider variety of situations and historical contexts is that it can become increasingly unclear what we actually mean by it.[73]

A growing number of studies, however, challenges the categorisation of medicine in colonial settings as 'colonial' in more persuasive ways, not by promoting an expanded use of the label, but by showing how it fails to capture significant dimensions of this past. One important trend, to which this dissertation hopes to contribute, is the attention for other interactions than just those between colonisers and colonised. For example, examinations of the plurality and fractures among Europeans, of their different and sometimes competing agendas help to render them 'partially detached from, rather than collapsed into the immediate priorities of colonialism', and indicates that a much wider range of social processes and dynamics was at work in the medical

[66] M. Malowany, 'Unfinished agendas: writing the history of medicine of Sub-Saharan Africa', *African Affairs* 99 (2000), 333.

[67] Lyons, *Colonial Disease*, pp. 199, 223-224.

[68] Hoppe, *Lords of the Fly*, p. 15.

[69] Worboys, 'Comparative history of sleeping sickness'; Hiroyuki, *Medizin und Kolonialgesellschaft*.

[70] Arnold, quoted in Marks, 'What is colonial', 206-207.

[71] W. Anderson, 'Postcolonial histories of medicine', in F. Huisman and J. H. Warner (eds.), *Locating Medical History. The Stories and Their Meanings* (Baltimore; London, 2004), p. 288.

[72] Ernst, 'Beyond East and West', 511.

[73] See for example Cooper, *Colonialism in Question*, pp. 3-32.

history of the colonial world.[74] The latter point is also brought home by analyses that include 'indigenous' medicine as an autonomous but fluid part of the medically plural environments that colonies in fact were.[75]

Another significant way in which recent scholarship confronts the automatic 'colonial' branding of medicine in colonial contexts, is by abandoning forms of 'methodological nationalism' in favour of relational approaches - a concern shared with many other branches of historiography.[76] Historians of medicine have indeed been calling for investigations of the 'multidirectional flows' of practices, ideas, objects and people across national, colonial and imperial borders in which overseas territories took part.[77] By tracing how medical developments within specific colonies were also shaped through interactions with metropoles, with other colonies and even other empires, the 'colonial' as a spatial 'category of analysis' is not altogether discarded, but de-essentialised and 'contextualized (sic)'.[78] One major implication of tracing such actual exchanges is that it is not simply on the basis of deconstructing normative categories that 'European' and 'colonial' medicine cannot longer be viewed as having completely distinct and separate histories. Through evidence of circulation, their histories become intimately connected, although not in a diffusionist sense, but not without any notion of asymmetry either.[79]

In light of these recent developments in particular, it appears that 'colonial' has to be used with such caution that it has become inadequate and even somewhat misleading as

[74] W. Beinart, K. Brown and D. Gilfoyle, 'Experts and expertise in colonial Africa reconsidered: science and the interpenetration of knowledge', *African Affairs* 108 (2009), 418-419. See also, for example, the conference 'Fracturing Colonial Medicine' held at the Centre for the Social History of Health and Healthcare in Glasgow, April 23-24 2009. Nancy Hunt argues for a 'more complicated' colonial history that does 'not leave (Belgian colonisers) intact as a single social category' in N.R. Hunt, 'Rewriting the soul in a Flemish Congo', *Past and Present* 198 (2008), 214.

[75] See for example, Ernst, 'Beyond East and West, 512; L. Hesselink, *Inheemse dokters en vroedvrouwen in Nederlands Oost-Indië, 1850-1915* (Amsterdam, 2009); Hunt, *A Colonial Lexicon*.

[76] On the abandonment of 'methodological nationalism' see P.-Y. Saunier, 'Learning by doing: notes about the making of the Palgrave Dictionary of Transnational History', *Journal of Modern European History* 6 (2008), 161.

[77] S. Bhattacharya, 'Medicine', in A. Iriye and P.-Y. Saunier (eds.), *The Palgrave Dictionary of Transnational History* (Basingstoke, 2009), pp. 708-711. See for example also B. Stuchtey, 'Introduction: towards a comparative history of science and tropical medicine in imperial cultures since 1800' in B. Stuchtey (ed.), *Science across the European Empires, 1800-1950* (London, 2005), pp. 1-45; D. J. Neill, 'Transnationalism in the colonies: cooperation, rivalry, and race in German and French tropical medicine, 1880-1930', unpublished PhD thesis, University of Toronto (2005); W. Anderson, 'Where is the post-colonial history of medicine?', *Bulletin of the History of Medicine* 72 (1998), 522-530.

[78] This argument is inspired by Eric Van der Vleuten's view on transnational history as a way to 'contextualize', rather than abandon the nation-state as a 'category of analysis'. E. Van der Vleuten, 'Toward a transnational history of technology: meanings, promises, pitfalls', *Technology and Culture* 49 (2008), 983-984, 989.

[79] K. Raj, 'Colonial encounter and the forging of new knowledge and national identities: Great Britain and India, 1760-1850', *Osiris* 15 (2000), 119-134; D. Arnold, *Science, Technology, and Medicine in Colonial India* (Cambridge; New York, 2000).

an overarching label to capture the medical past in colonial settings. This dissertation, therefore, prefers to think of this history in terms of multiple intersecting currents and dynamics, where issues of colonial power relations and the realities of colonial borders coexist and are intertwined with other social and spatial dimensions. More specifically, it focuses on the movements of medical drugs implicated in pharmaceuticalisation processes as one possible yet fruitful way to shed light on some of these intersections and contribute to a 'crossed history' of public health in the Belgian Congo. To write a history of public health as a history of social and spatial intersections from the point of view of pharmaceuticals, this dissertation adopts the research approach of 'histoire croisée', which will be explained in the next section.

1.3 Approach and sources: towards a 'crossed history' of public health in colonial Congo

1.3.1 What is 'histoire croisée'?

'Histoire croisée' or 'crossed history' here refers to the specific research approach crafted by Michael Werner and Bénédicte Zimmerman and described, for example, in their 'programmatic' 2006 article.[80] Its origins lie in the debates about the respective merits and limitations of comparative history and cultural transfer studies, to which it proposes an alternative framework, fit to capture the multidirectional interactions and complex 'relational configurations' through which historical change is effected, obviously in non-linear ways. 'Histoire croisée' is built up around the notion of 'intercrossings' or 'intersections', which Werner and Zimmerman insist are multiple in kind, and exist or operate on both an empirical and an analytical level. The 'histoire croisée' approach is thus concerned with the interwoven intercrossings inherent in the research object itself (for example through the circulation of ideas, practices, material objects, people etcetera) and those produced by the researcher who actively crosses different viewpoints. A tool for examining research questions and problems beyond the reach of other approaches, 'histoire croisée's' explicit consideration of the

[80] M. Werner and B. Zimmerman, 'Beyond comparison: histoire croisée and the challenge of reflexivity', *History and Theory* 45 (2006), 30-50.

interrelationship between the empirical and the analytical, and of their 'historicity', also gives it a crucial reflexive dimension.[81]

'Histoire croisée' is by no means unique in opening up uncharted territories of historical research by attending to cross-border interactions and their effects. As part of a much broader group of approaches bent on transcending single units of analysis, it shares many concerns with other and perhaps better-known relational perspectives like global and transnational history. As noted by Pierre-Yves Saunier, there exists in fact a wide array of similar 'histories' studying 'connections and circulations', albeit under different names and guided by diverse motivations.[82] Some of these, notably 'connected histories' and 'entangled history' or 'Verflechtungsgeschichte' have even developed specifically in relation to the colonial question, aspiring, for instance, to uncover the interconnections between Europe and its (former) colonies.[83] Although they are very closely related to the 'histoire croisée' approach, here I explicitly opt for the latter from the conviction that its particularities make it especially suited for the purposes of this dissertation. What sets 'histoire croisée' apart from other modes of writing relational histories - an insistent reflection on how research objects and perspectives affect each other as well as a great deal of flexibility in considering the sort of borders that can be crossed - is precisely what enhances an examination of the social and spatial circulations of medicines, and of the wider analytical implications of the empirical 'intercrossings' thus produced.

1.3.2 'Histoire croisée', pharmaceutical and colonial medical history

As a relatively new research perspective, 'histoire croisée's' theoretical framework has yet to be fully translated into empirical studies. Of late, however, the 'crossing' metaphor has been gaining an ever-greater influence in the two historiographic domains of particular relevance to this dissertation, pharmaceutical and colonial medical history. Focusing on pharmaceutical trajectories across different social sectors, several recent histories of medical drugs have in fact already adopted notions and strategies of empirical 'intersection' and non-linearity without necessarily theorising 'histoire croisée' as a specific research perspective. 'New' pharmaceutical historians are also aware of researchers' active crossing of different points of view, perhaps even of different disciplinary subfields, as a corollary of tracing border-crossing medicinal biographies. Christian Bonah and Anne Rasmussen, for example, clearly express the close connection between the empirical and the analytical when they state: 'the study of

[81] Ibid., 32.

[82] Saunier, 'Learning by doing', 162-165.

[83] W. Lepenies (ed.), *Entangled Histories and Negotiated Universals. Centers and Peripheries in a Changing World* (Frankfurt/Mein, 2003). On 'Verflecthungsgeschicte', see S. Conrad and S. Randeria (eds.), *Jenseits des Eurozentrismus. Postkoloniale Perspektiven in den Geschichts- und Kulturwissenschaften* (New York, 2002).

the constitution, circulation and transformation of 'therapeutic agents' allows crossing the medical, scientific, economic, legal, regulatory, administrative and ethical practices and perspectives that make up contemporary health care systems'.[84] Similar considerations have prompted Elizabeth Siegel Watkins to reflect upon conventional subdivisions in historiography. More specifically, she challenges the labelling of pharmaceutical history as a 'sub-discipline of the history of medicine' rather than as an autonomous field that investigates the central position of pharmaceuticals in modern societies from an interdisciplinary perspective.[85] A specific focus on circulating pharmaceuticals and pharmaceuticalisation processes can thus help to expand our perspective on health care systems with themes and social realms less commonly studied in the field of medical history, as well as place the latter's traditional subjects in a broader, relational context.

An engagement with (processes of) 'intercrossing' as an alternative to a history and historiography centred on clearly circumscribed, pre-fixed and self-contained entities is also becoming increasingly apparent in recent writings of historians of medicine in colonial settings. References to Werner and Zimmerman's specific research program are more explicit here, arguably because the use of essentialising categorisations, as we have seen, has been so salient in this field. Waltraud Ernst, for example, notes the newfound appeal of dynamic relational perspectives like 'histoire croisée' to medical historians of South Asia attempting to overcome – beyond adopting what she finds equally static notions of 'hybridity' – dichotomies of 'colonial' versus 'indigenous' medicine.[86] In a similar vein, a recently published volume criticises the exaggerated 'compartmentalisation' of the historiography of medicine in (former) colonial territories, notably along geographic and chronological lines, and calls for a 'crossing (of) colonial historiographies' that enables 'conceptual and methodological interaction' between largely distinct scholarly traditions as well as uncovering empirical 'crossovers' between different medical systems and practices. The advantage of such an endeavour, the editors suggest, is that the particular outlook resulting from one's own historiographical positioning is thrown into sharp relief and its potential limitations are revealed.[87]

This volume clearly has great merit in pointing to the rich possibilities offered by relational approaches and 'histoire croisée' in particular to escape 'the pitfalls endemic in the genre of colonial medical history, whether of essentialism, reductionism, or dichotomizing (sic) paradigms (...)'.[88] Applying the 'histoire croisée' toolbox to empirical

[84] Bonah and Rasmussen, 'Pour une nouvelle histoire', pp. 12-13.

[85] Watkins, 'Pharmacy to pharmaceutical history', 4-5.

[86] Ernst, 'Beyond East and West', 513-515. Zimmerman and Werner also note that 'histoire croisée', with its focus on historical processes, is not so much a history of 'hybridization (sic)'. See Werner and Zimmerman, 'Beyond comparison', 38.

[87] A. Digby, W. Ernst and P. B. Mukharji, 'Introduction. Crossing historiographies, connecting histories and their historians' in Ernst, Mukharji and Digby (eds.), *Crossing Colonial Historiographies*, p. ix-xxii.

[88]Ibid., p. xx. It must be said, however, that the editors do not always seem to live up entirely to this agenda.

studies, however, is not an easy task given the inevitable limitations to what a single researcher can reasonably manage. If, like Waltraud Ernst remarks, one stays true to 'histoire croisée''s principle that 'there is no such thing in history as an isolated entity that does not involve entanglement (or croisement)', one could endlessly go on looking for intercrossings and end up 'linking everything with everything', thus losing focus.[89] Studying the full extent of empirical intercrossings that in some way had a bearing on the history of medicine in colonial settings is therefore as good as impossible in the context of this research project, and as Werner and Zimmerman acknowledge themselves, in practice the researcher will have to select a 'point of departure' or a problematisation from which to 'construct' the object of research.[90]

Keeping in mind that neither 'biomedicine' nor 'indigenous medicine' were static, homogenous and neatly separated entities, the main focus here will nonetheless be on the former rather than the latter. Bringing together the fields of pharmaceutical history and colonial medical history, the aim is to write a 'crossed history' of public health in colonial Congo by concentrating more specifically on the pharmaceuticalisation of sleeping sickness control.[91] The 'histoire croisée' approach, as follows from the previous paragraphs, lends itself extremely well to a multidimensional study of pharmaceuticalisation processes pertaining to the colonial world. It allows one to follow the intertwined empirical circulations of pharmaceuticals, both socially and geographically, and accordingly approach the subject from different analytical viewpoints. From the vantage point of mobile medicines, in this case the chemical drugs that were at some point part of the pharmaceutical fight against sleeping sickness, this study wishes to demonstrate how public health in the Belgian Congo was shaped through the 'intercrossing' of different localities, social spheres and spatial scales.

Ultimately, an emphasis on the intersections brought about by pharmaceuticals and on the networks and configurations that go into processes of pharmaceuticalisation should reveal how colonial dimensions, in terms of social relations and spatial frameworks, were intertwined with other elements in the history of public health in the Belgian Congo. Following the spatial trajectories of trypanocidal drugs, for example,

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One of the conclusions drawn from the dialogue between specialists in different fields is that 'colonial', as an analytical category, should not be restricted to the places and time period commonly associated with the term. The editors rather argue for its 'extension (...) to a much wider range of societies', so as to make it a 'more heterogeneous' category and present a 'more multifaceted view of colonialism' (p. xiii). While the spatial and temporal continuities and discontinuities of colonialism, and in particular the place of colonial empires in the much broader history of imperialism, are legitimate and valuable subjects of historical investigation, the question is whether simply applying the colonial label to a wider range of contexts does not generate new problems of essentialism.

[89] Ernst, 'Beyond East and West', 515.

[90] Werner and Zimmerman, 'Beyond comparison', 39-40.

[91] Interestingly, Guy Attewel also draws on 'histoire croisée' in his study of the parallel trajectories of the medicinal commodity known as 'theriac' and 'tiryaq' in the nineteenth century to highlight the 'porosity' and thus problematic nature of 'self-evident analytical categories' in (medical) historiography. See Attewel, 'Interweaving substance trajectories', 2010, pp. 1-20.

elucidates the multidirectional, cross-border exchanges of chemotherapeutic substances and knowledge in which the Belgian colony partook. Thus one can situate its medical practices within a broader relational geography while still taking into account how local circumstances affected and shaped the circulation of biomedical technologies. In addition, the notion of drug trajectories across social settings, and the networked conception of health care systems it implies, also make it possible to discern multiple but interlinked actors and interests at work in biomedicine in colonial settings, thus offering opportunities for considering a wider variety of social dynamics involved. More specifically, it allows for an integration of the social worlds, practices and sometimes diverging agendas of different actors as intertwined components of the medicinal sleeping sickness campaign in Congo through their association, in one way or another, with sleeping sickness drugs.

1.3.3 'Histoire croisée' in practice

But how does one, in practical terms, embark upon a 'histoire croisée' of public health through an examination of pharmaceuticalisation? Werner and Zimmerman propose 'pragmatic induction' as a general methodological guideline for conducting historical research that avoids using completely *a priori* circumscribed analytical frameworks. As they explain, it entails 'starting from the object of study and the situations in which it is embedded, according to one or more points of view – previously defined, it is true, but subject to continual readjustments in the course of empirical investigation.'[92] The underlying idea is that what are relevant analytical frames, units and scales is not simply for the researcher to decide, but also derives from, or is an intrinsic part of, the object under study itself. Importantly, empirical objects relate to different contexts, levels and scales at the same time, and this should be reflected in the researcher's analysis, not as a 'juxtaposition of situations', but by clarifying how they operate together and interact with each other. As 'histoire croisée' combines micro and macro, action and structure in a consideration of their co-constitution and interdependence, pharmaceuticals are seen here as pertaining to both the 'local' and the 'global', and their movements as 'structuring' as well as 'structured'.[93]

In line with the principle of 'pragmatic induction', this study has taken as an empirical starting point the arsenical compounds that were the mainstay of pharmaceutical sleeping sickness control in the Belgian Congo before the Second World War. More specifically, the focus is on the trajectories of Atoxyl and Tryparsamide, although aspects of other drugs' biographies have sometimes been included to better contextualise the former medicines' life stories. Following the origins and fates of Atoxyl and Tryparsamide as tools of disease prevention in the Congo, this dissertation has not

[92] Werner and Zimmerman, 'Beyond comparison', 47.

[93] Ibid., 47-48; Zimmerman, 'Histoire croisée and the making of global history', pp. 9-19.

confined beforehand the relevant analytical framework to one pre-fixed locality, social scene and spatial scale, but allowed for adjustments and in particular considered intercrossings as indicated by the voyages of the pharmaceuticals themselves. To keep the research practically feasible, however, a certain selection of scenes and localities nevertheless imposed itself. Analytical choices were chiefly made on the basis of what in the course of my research appeared as the most relevant, representative, or influential sites in the pharmaceuticalisation of sleeping sickness control in the Congo that had hitherto been least studied and for which (sufficient) archival material was available.

In any case, the emphasis in this study is not so much on a single, self-contained or monolithic unit or scale of analysis. Colonial doctors and the Belgian Congo naturally feature centrally in the story, but attention centres especially on the interactions within this pertinent group and geographic context, and on the exchanges with other social groups (such as scientists, political authorities, patients and the pharmaceutical industry) as well as other localities (including Belgium, the French Congo, and the United States) as important components and drivers of Atoxyl and Tryparsamide's trajectories in the colony. And just like the analytical framework has to a large extent been guided and shaped by the empirical realities of circulating pharmaceuticals, so has the temporal framework. The period under scrutiny falls roughly between 1905, when Atoxyl was introduced in the Congo as an experimental sleeping sickness drug, and 1939, largely coinciding with a downturn in Tryparsamide's career as a sleeping sickness control pharmaceutical in the colony.

In terms of primary sources, this dissertation draws on a wide range of materials documenting relations between the pertinent contexts and actors implicated in Atoxyl and Tryparsamide's trajectories in the Belgian Congo. For this study I have used written material, both published and unpublished documents, found in European and American archives and libraries. The main sources consulted are those produced (in abundance!) by different levels of the Free State/Belgian colonial administration. In the form of (annual) reports, correspondence, legislation books, monographs and so on, they provide a wealth of information about sleeping sickness and the organisation, activities and internal as well as external relations of the colonial medical service and its agents, both in Brussels and in the Congo. I have fruitfully drawn upon this heterogeneous collection to examine relevant issues such as drug development and evaluation, the formulation of pharmaceutical policies, and drug distribution. To complement these administrative sources, I have also consulted archival and/or published materials pertaining to and produced by other individuals and institutions, most notably medical institutes and researchers (e.g. the Prince Leopold Institute of Tropical Medicine, the Pasteur Institutes, the Rockefeller Institute for Medical Research...) and missionaries (more specifically Jesuits). Medical and pharmaceutical industry press, and colonial-interest journals or publications should also be mentioned among the sources employed.

Some of the archival funds and publications described above have been used before in other studies, but I have generally read them in a different light, by taking on a

specifically pharmaceutical perspective or focusing on connections with the Belgian Congo. Other (parts of) source collections, such as the 'Fonds Gouvernement Général' within the colonial administration's papers or the archives of the tropical medicine institute in Antwerp have not, or less extensively, been tapped by historians so far.

Based on the primary source material used, I have tried as much as possible to integrate and link different viewpoints in connection with the problem of pharmaceuticalisation in the Congo. The focus, therefore, is more on the intercrossing of different worlds than on in-depth descriptions of single sites and spheres in themselves (leaving room for more fine-grained analyses in the future).[94] The choices made and available sources used, however, amount to certain limitations that need to be taken into account. For example, the local implementation of pharmaceutical sleeping sickness control has been studied in rural rather than urban environments. This does not mean that pharmaceuticals were not distributed and consumed in cities during the period under scrutiny, quite on the contrary, but rural populations were particularly exposed to human trypanosomiasis and for that reason constituted the primary targets of mass treatment campaigns after the First World War. Moreover, the specific focus is on the Kwango district in the southwest of Congo. It played an important role in the formulation of sleeping sickness policy and constituted an important focus of pharmaceutical control efforts in the interwar period, but did not necessarily reflect the experiences throughout the whole Belgian colony. More fundamentally, this dissertation focuses on the interactions and tensions regarding pharmaceutical treatment between Europeans in colony and metropole as a less studied component of public health in the Belgian Congo, rather than on Africans and coloniser-colonised interactions.[95] As sleeping sickness victims, experimental subjects and medical auxiliaries, Africans of course played a key role in shaping drug trajectories. Their responses - as described in colonisers' written accounts - are included in as far they influenced European protagonists' views and actions concerning drugs, but a detailed analysis of indigenous receptions and (shifting) perceptions of sleeping sickness medicines, their determinants, and the socio-cultural processes involved are beyond the scope of this study.[96]

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[94] Gaudillière talks about 'boundary investigations' in the case of research into drug trajectories. See Gaudillière, 'Introduction: drug trajectories', 605.

[95] On African responses to the sleeping sickness campaign, see for example Lyons, *Colonial Disease*, pp 162-198. According to Tousignant (2012), Lyons' 'discussion of drug treatment does not explore the political context of representations or modulations of their effects beyond Africans' perception of drugs as entangled with the violence and transformation brought by colonialism'. See Tousignant, 'Politics of mass therapy', 627 (note 6). On African 'meaning-making' and the role of Congolese 'middle figures' in the medicalisation of childbirth, see Hunt, *A Colonial Lexicon*.

[96] African voices did not make it onto paper with similar ease and in equally great number as those of European agents. Moreover, incorporating the perspectives of consumers of pharmaceuticals and of participants in clinical drug trials in general is recognised as a very challenging task for pharmaceutical historians. See for example H. M. Marks, *The Progress of Experiment. Science and Therapeutic Reform in the United*

1.4 Overview

The overall argument in this study is that the pharmaceuticalisation of sleeping sickness control in the Belgian Congo was not a linear and top-down process, but a much more contingent, interactive and fluctuating one. It did not involve a straight sequence of drug discovery, production, distribution, prescription and consumption, nor a simple transfer of biomedical technology from Western metropoles to colonial Africa. Instead, the process of pharmaceuticalisation in the Congo is viewed here primarily in terms of the 'career cycles' of two arsenical compounds, Atoxyl and Tryparsamide. As described by Snelders, Kaplan and Pieters, a drug career cycle typically consists of three main phases: a first phase of 'initial enthusiasm' and 'expanding use', a second stage characterised by 'rising criticism and disappointment', and finally a period of 'contracting use'. Importantly, these phases 'need not be sequential', but can 'overlap' and thus temporarily coexist. Moreover, a drug can come back and begin a new cycle with a different application for its use.[97] Atoxyl and Tryparsamide's careers as sleeping sickness drugs in the Congo followed this broadly common pattern of promise, disillusionment and decline. More specifically, we can distinguish three successive, but partially overlapping, cycles in the period roughly between 1905 and 1939, the first two of which involved Atoxyl and the other one Tryparsamide. Importantly, these cyclical trajectories at once reflected and constituted various interactions across social and geographic borders. Studied through the lens of moving pharmaceuticals, public health in the Belgian Congo thus appears as the outcome of 'intercrossings' between different localities, spatial scales and social spheres, and this in turn calls for reflection on the 'colonial' as a defining category in the history of medicine in colonial settings.

This dissertation is organised in four parts. The first three give a broadly chronological overview of Atoxyl and Tryparsamide's general career cycles in the Belgian Congo, with the different chapters describing one or more phases, while the fourth presents a case study of pharmaceutical sleeping sickness control in the Kwango district to illustrate how developments at a more local level helped shape these trajectories.

Part I discusses Atoxyl's rise to prominence as a tool of sleeping sickness control before the First World War. It begins with a brief description of how the disease came to preoccupy the Congo Free State at the turn of the twentieth century, so as to contextualise the adoption of Atoxyl treatment in the official policy of the 'Etat Indépendant du Congo' (EIC) in 1906 (Chapter 2). Then it takes a step back to trace the beginnings of Atoxyl's trajectory in the Congo. Before it truly came into view as a means of disease prevention, the drug lived through a short first career as a curative treatment

States, 1900-1990 (Cambridge, 1997), p. 13; Bonah, '"Agents thérapeutiques"', p. 30.

[97] Snelders, Kaplan and Pieters, 'On cannabis', 95, 97.

for sleeping sickness. German-manufactured Atoxyl was introduced as an experimental drug on a competitive Congolese market for sleeping sickness remedies in 1905. It soon spread as a compulsory curative treatment for African sleeping sickness victims isolated in lazarets, but almost immediately entered a phase of criticism as reports of serious adverse reactions and limited curative effects accumulated. It subsequently disappeared from the spotlight as a true sleeping sickness cure, but nevertheless remained in use (Chapter 3). Next, I discuss how Atoxyl started a new, second career cycle in the Congo when laboratory doctors in Leopoldville redefined Atoxyl therapy as a strategy of disease prevention rather than a curative act. After the Belgian takeover of the EIC, the drug gradually came to be viewed as the most realistic option for tackling sleeping sickness, but despite growing enthusiasm it was not yet applied on a large scale before the First World War (Chapter 4).

Part II concerns the mass-scale drug treatment of African sleeping sickness victims undertaken in the 1920s to curb the disease's spread and, more broadly, solve the colony's demographic (i.e. labour force) crisis. It first describes the continuation of Atoxyl's career as a tool of sleeping sickness control. After the war, optimism was translated into widespread use, especially of the French- and Belgian-manufactured versions of the drug. Yet once again, expansion soon overlapped with a wave of disenchantment as drug toxicity and limited curative powers diminished expectations of Atoxyl's effectiveness in the everyday practice of sleeping sickness control. This amounted to an erosion of the drug's use, in particular the French and Belgian brands (Chapter 5). The original German version was eventually also eclipsed by the arrival of the new and more powerful sleeping sickness drug Tryparsamide, whose initial career phase is discussed next. Introduced in the Belgian Congo in 1920, it was hailed as a medicine that could potentially eradicate sleeping sickness by 1925 (Chapter 6). This initial optimism led to a dramatic surge in consumption in the second half of the 1920s, especially when a Belgian-manufactured version of the compound was developed and marketed as 'Tryponarsyl' (Chapter 7).

Part III deals with the gradual downturn of mass Tryponarsyl treatment in the 1930s. Administered on a vast scale since the late 1920s, the drug's second career phase soon took off. It came to be associated with drug toxicity and especially drug resistance, which undermined initial enthusiasm about its effectiveness in the total eradication of sleeping sickness in the Belgian Congo. Although its mass deployment was initially sustained and even credited with significant reductions in sleeping sickness incidence and prevalence, by the second half of the 1930s Tryponarsyl and more generally Tryparsamide's career in the Congo entered a final phase of decline as a tool of sleeping sickness eradication (Chapter 8).

Finally, part IV presents a case study of pharmaceutical sleeping sickness control in the Kwango district in the southwest of the colony. It discusses the local origins and implementation of mass Atoxyl (Chapter 9) and Tryponarsyl (Chapter 10) treatment, not as a self-contained level of events, but one connected to the broader developments in

the fates of these sleeping sickness drugs. It pays particular attention to the tensions generated by mass treatment, notably between public and private sector medical providers.

PART I.

ATOXYL AND THE BEGINNINGS OF PHARMACEUTICAL SLEEPING SICKNESS CONTROL BEFORE WORLD WAR I

Chapter 2
Sleeping sickness control in the Congo Free State

This introductory section briefly sketches the historical context in which sleeping sickness became a prominent preoccupation of the Congo Free State administration at the turn of the twentieth century. It describes what early control measures were taken under the influence of an emerging transnational elite of tropical medicine specialists, and how Atoxyl therapy made its first appearance in official sleeping sickness policy by the end of 1906.

2.1 What is sleeping sickness?

African trypanosomiasis is an infectious disease that affects both humans and animals. It is caused by the trypanosome, a 'protozoan hemoflagellate parasite', and transmitted through the bites of tsetse flies, which belong to the *Glossina* genus.[98] Human African trypanosomiasis, with which this dissertation is concerned, is more commonly known as sleeping sickness. It is endemic in sub-Saharan Africa's 'tsetse belt', an area of about eleven million square kilometres between approximately 20 degrees North and 20 degrees South latitude where tsetse flies occur. The disease can take on epidemic proportions 'for a variety of natural and sociopolitical reasons'.[99]

There are two types of sleeping sickness: a chronic form occurring in western and central parts of sub-Saharan Africa (including in the former Belgian Congo), and the more virulent, acute form of east and south Africa. The former is caused by *Trypanosoma brucei gambiense* and transmitted by the 'riverine' or *palpalis* group of tsetse. Humans are the principal trypanosome 'reservoir' here, meaning that disease transmission typically occurs through flies previously infected by human carriers of the parasite. *Trypanosoma brucei rhodesiense* and *glossina morsitans* or 'savanna' tsetse are responsible for acute sleeping sickness, and in this case wild animals act as the main host.[100]

[98] Lyons, 'African trypanosomiasis', p. 552.

[99] Lyons, 'African trypanosomiasis' pp. 552, 554.

[100] Ibid. p. 552-553; D. Steverding, 'The history of African trypanosomiasis', *Parasites & Vectors* 1 (2008), 1 (available only online at http://www.parasitesandvectors.com/content/pdf/1756-3305-1-3.pdf); Hoppe, *Lords of the Fly*, p. 7.

Without treatment both Gambian and Rhodesian sleeping sickness are fatal, although the speed at which the disease runs its course differs significantly between them. In both varieties there are two distinct stages. In the 'primary' or 'haemolymphatic' phase, trypanosomes are present in the infected individual's blood and lymph juice. The 'secondary' or 'meningoencephalitic' phase includes the central nervous system as trypanosomes enter the victim's cerebrospinal fluid.[101] Sleeping sickness provokes a vast range of clinical symptoms, including fever, headache, and swollen lymph nodes (e.g. in the cervical area), as well as disorders reflecting the 'neurological degeneration' of the advanced stage, such as 'irascibility', 'mental deterioration' and the characteristic 'lethargy' that gives the disease its name.[102] Within six to eighteen weeks, sufferers of acute sleeping sickness die after falling into a coma or as a result of complications like pneumonia. In cases of chronic human trypanosomiasis, death occurs on average within two to three years.[103]

As it entails parasites, fly vectors as well as human or animal hosts, sleeping sickness has an extremely complex epidemiology that requires a good understanding of the disease's ecology.[104] It also has a very long history in Africa, where it has had a significant demographic impact, notably shaping patterns of 'human settlement'.[105] Before the discovery of sleeping sickness aetiology in 1903, the endemic disease had been known and recognised for centuries, including by Arabic and European slave traders.[106] Africans themselves had adapted to their 'disease environment' and developed a 'balanced ecological relationship' with parasites and insect vectors to deal with trypanosomiasis. By the late nineteenth century, however, European colonisers' brutal interference in African lives and societies disrupted this equilibrium, which in turn resulted in the spread and epidemic flare-up of sleeping sickness in certain regions.[107] In the Congo, for example, increases in the disease were 'directly connected' to demands for (rubber) tax and labour.[108] The period of European colonialism in Africa starting in the late nineteenth century saw two major sleeping sickness epidemics. The first one occurred between 1899 and 1906 in Uganda's Busoga region and the Congo basin, causing an estimated 250,000 and 500,000 deaths respectively. In several African territories,

[101] Steverding, 'History of African trypanosomiasis', 1; Lyons, 'African trypanosomiasis', p. 555; Hoppe, *Lords of the Fly*, p. 7.

[102] Lyons, 'African trypanosomiasis' p. 555; Lyons, *Colonial Disease,* pp. 43-43; Hoppe, *Lords of the Fly,* p. 7.

[103] Hoppe, *Lords of the Fly*, p. 7; Lyons, 'African trypanosomiasis', pp. 553, 555.

[104] Lyons, 'African trypanosomiasis', pp. 553, 555; Lyons, *Colonial Disease*, p. 53.

[105] Lyons, 'African trypanosomiasis', p. 555. Animal trypanosomiasis also hampered cattle rearing in the African tsetse belt, and thus had a significant impact on nutrition. See for example, Steverding, 'History of African trypanosomiasis', 1.

[106] Steverding, 'History of African trypanosomiasis', 2-3 ; Lyons, 'African trypanosomiasis', p. 555; Malowany, 'Unfinished agendas', 330.

[107] Lyons, *Colonial Disease*, pp. 48-51, 54-55, 65; Lyons, 'African trypanosomiasis', p. 558.

[108] Lyons, *Colonial Disease*, pp. 32-36.

including the Belgian Congo, another spate of epidemics took place after the First World War.[109]

2.2 'Sleeping sickness exceptionalism' in the early twentieth century

Human African trypanosomiasis today features on the World Health Organization's list of neglected tropical diseases. It is hard to imagine a sharper contrast with the disease's status during the early decades of the twentieth century. This period was characterised by what Guillaume Lachenal has described as 'the making of sleeping sickness exceptionalism', involving its representation as an exceptional disease warranting exceptional attention.[110] Maryinez Lyons as well has highlighted how in the wake of the Uganda epidemic, sleeping sickness immensely occupied colonial governments and scientists, in a manner not dissimilar to AIDS several decades later.[111] As a mysterious and fatal disease it came to symbolise the 'threat of tropical Africa' at the turn of the twentieth century, and captivated broad audiences, not in the least the nascent tropical medicine community.[112]

Tropical medicine emerged as a distinct and 'recognized (sic) field of teaching, research and professional practice' in the late nineteenth-century, in a context of European colonial expansion in Asia and Africa.[113] Its scientific roots lay in the development of microbiology, which posited specific micro-organisms as the cause of infectious disease and entailed a laboratory-based approach to medicine, and parasitology, the study of parasites and vectors.[114] Although tropical medicine's first focus was malaria, sleeping sickness came to dominate the research agenda and, as Deborah Neill has demonstrated, was in fact key to consolidating the field's stature and

[109] Steverding, 'History of African trypanosomiasis', 4-6; Lyons, 'African trypanosomiasis', pp. 556, 558; 'Trypanosomiasis, human African (sleeping sickness). Fact sheet N° 259', World Health Organization, Media centre, http://www.who.int/mediacentre/factsheets/fs259/en/ (Last accessed 21 April 2014).

[110] G. Lachenal, 'The Campaign against African Trypanosomiasis. Classic Lessons and Untold Stories', Global Health Histories Seminar, Geneva, 5.5.2009, http://www.who.int/global_health_histories/seminars/presentation31.pdf (Last accessed 21 April 2014).

[111] Lyons, *Colonial Disease,* p. 68.

[112] Hoppe, *Lords of the Fly*, p. 38; D. J. Neill, *Networks in Tropical Medicine. Internationalism, Colonialism, and the Rise of a Medical Specialty, 1890-1930* (Stanford, 2012), p. 104.

[113] M. Worboys, 'Emergence of tropical medicine', p. 75.

[114] The focus on pathogenic micro-organisms entailed a crucial shift away from an older 'medical geography', the notion that the physical and social environment affect disease. Neill, *Networks in Tropical Medicine*, pp. 13-14, 15-16.

power in the early 1900s: 'more than any other disease', Neill argues, '(it) cemented expert authority because crises lead to a great deal of uncertainty and cause a significant reliance on expert knowledge and advice'.[115]

Armed with microscopes and gripped by an 'air of urgency and competition', ambitious researchers set out to Africa to discover the disease's causative agent and search for a means to control and treat it. The result was a 'scientific scramble' in the early twentieth century that saw multiple sleeping sickness expeditions, many of which were international in character, sent to East and Central Africa with the backing of the major colonial powers.[116] The metropolitan press in turn eagerly reported on advances in the race to conquer colonial Africa's 'scourge'.[117] The first big breakthrough came in 1903, with the identification of the trypanosome as the cause and the tsetse fly as the vector of the disease by Aldo Castellani and David Bruce, sent on a Royal Society expedition to Uganda.[118] The discovery of the aetiological chain stimulated further research into sleeping sickness epidemiology, therapy and other areas. Investigating this high-profile disease in tropical Africa provided young medical scientists with significant opportunities to establish an international reputation and boost their careers.[119] As John L. Todd, a Canadian researcher at the Liverpool School of Tropical Medicine, explained to his brother in July 1903 before embarking upon an expedition to the Congo Free State: 'tryps are a big thing and if we have luck, I may make a name yet'.[120]

Confronted with an 'unprecedented health crisis in Africa', the colonial powers welcomed and actively supported research into sleeping sickness, even up to the point of facilitating scientific collaboration across imperial borders.[121] Economic and political considerations spurred them into action against the disease, the significance of which was that it turned medical attention in the colonies to African populations.[122] The events in Uganda and other territories raised the spectre of huge losses in the African labour force, thus threatening to seriously hamper economic development. Taking part in the international fight against the epidemic was also politically expedient in a context of

[115] Neill, *Networks in Tropical Medicine*, p. 9.

[116] Lyons, *Colonial Disease*, p. 69; Hoppe, *Lords of the Fly,* p. 28; M. Lyons, 'Medicine and empire: the funding of sleeping sickness research in the Belgian Congo ', in M. Twaddle (ed.), *Imperialism, the State and the Third World* (London; New York, 1992), pp. 143-147; M. Mertens and G. Lachenal, 'The history of "Belgian' tropical medicine from a cross-border perspective', *Revue Belge de Philologie et d'Histoire* 90 (2012), 1254-1255.

[117] Hoppe, *Lords of the Fly*, p. 38.

[118] Neill, *Networks in Tropical Medicine*, p. 106.

[119] Lyons, *Colonial Disease*, pp. 64-66; Hoppe, *Lords of the Fly*, pp. 28, 29; Lyons, 'Medicine and empire', p. 148.

[120] John Todd to his brother, 8.7.1903, 'John L. Todd, 1876-1949. Letters compiled and edited by Bridget Todd Fialkowski, 1977', Wellcome Library, Archives and Manuscripts, Dutton, Joseph Everett and Todd, John Lancelot, Ms.5691.

[121] Neill, *Networks in Tropical Medicine*, p. 104.

[122] Lyons writes with regard to the Belgian Congo that 'sleeping sickness was the single most important factor responsible for the early provision of a medical service which eventually resulted in a broader public health policy and programme'. M. Lyons, 'Public health in colonial Africa: the Belgian Congo' in D. Porter (ed.), *The History of Public Health and the Modern State*, *Clio Medica 26* (Atlanta, 1994), p. 365.

growing cooperation but also competition between European nation-states. It was a source of prestige and could boost colonial powers' reputations. This was particularly evident in the case of the Congo Free State, whose king Leopold II keenly promoted sleeping sickness research to counter the 'anti-Congo campaign' accompanying the red rubber controversy.[123]

2.3 Control measures in the Congo Free State: cordons sanitaires, isolation and the beginnings of Atoxyl treatment

Sleeping sickness first became the subject of medical policy in the Congo in 1903, when it was listed as one of the Free State's 'contagious epidemic disease(s)'. In the absence of a clear understanding of its aetiology and epidemiology, early instructions focused on the isolation of infected individuals.[124] Meanwhile, the Free State administration tried to get a better grasp of the problem and possible ways of tackling it. It actively supported local fact-gathering, notably by the Liverpool School of Tropical Medicine. King Leopold II, a personal connection of Alfred L. Jones, who financed the School and had important commercial interests in the Congo, funded its scientific expedition to the Free State between 1903 and 1905.[125] Administrators in Brussels also sought advice from international parasitology experts such as Alphonse Laveran, discoverer of the malaria protozoal parasite, and were basically on the lookout for 'any information that might place (them) on the path of discoveries allowing to fight sleeping sickness'.[126]

Tropical medicine researchers' elucidation of the disease's aetiology put colonial authorities on the path of control measures focusing on either the human or the fly factor in the chain of causation. As administrators obtained information about the sleeping sickness situation in the Congo Free State, they introduced measures that

[123] Neill, *Networks in Tropical Medicine*, p. 104; Lyons, *Colonial Disease*, pp. 64, 68-71, 73-75; Hoppe, *Lords of the Fly*, pp. 11-15, 27-28; Lyons, 'Medicine and empire', pp. 139-143; Mertens and Lachenal, 'History of "Belgian" tropical medicine', 1254.

[124] 'Arrêté du 26 Août, n° 21, rangeant la maladie du sommeil parmi les maladies contagieuses épidémiques' dans Etat Indépendant du Congo. Gouvernement local, *Recueil mensuel des ordonnances, arrêtés, circulaires, instructions et ordres de service* (Boma, 1903), p. 124; Circular from vice-Governor General Fuchs to Chefs territoriaux, commandants des camps d'instructions, médecins de l'Etat, 5.5.1903, AA, Hygiène, 846.276.

[125] On sleeping sickness, the Congo and the Liverpool School, see Lyons, *Colonial Disease*, pp. 67-101; Lyons, 'Medicine and empire', pp. 141, 144.

[126] Secretary of State to A. Laveran, 27.2.1904, Ministère des Affaires Etrangères. Archives Africaines (MAEAA), Hygiène, 846.276; Secretary of State to Governor General, 30.3.1904, MAEAA, Hygiène, 846.276.

centred on halting the disease's spread to territories deemed unaffected via the control of human trypanosome hosts. Most notably, they instituted 'cordons sanitaires', for example around the Uele district in the Congo's northeast, to protect non-infected districts, and prescribed the isolation of infected individuals in lazarets.[127] From 1905 onwards, instructions were issued to doctors and other colonial agents to prevent sleeping sickness victims from contaminating areas that had not yet been afflicted. These orders included the erection of observation posts to screen travelling Africans for trypanosomiasis (and thus control their movements), and the detection of suspected cases, i.e. individuals with swollen lymph glands, within European stations. Doctors had to diagnose potential sufferers by looking for trypanosomes in blood and lymph juice samples, and if necessary send them to lazarets established outside of disease-free zones, where they were held in 'forcible confinement'.[128] Early sleeping sickness regulations also included measures to minimise the risk of infection by separating humans from tsetse flies, notably brush clearing (to destroy fly habitat) around and sanitation in villages and posts.[129]

The main inspiration behind the Free State's sleeping sickness policy, as Lyons has shown, were the findings of the Liverpool School expedition. Its members confirmed that human trypanosomiasis in the Congo was in fact a *T. Gambiense* problem, and offered an epidemiological understanding that, while reflecting metropolitan biases rather than local realities, proved highly influential in shaping early control measures. Based on the flawed view that epidemic sleeping sickness in the Free State had 'spread from west to east' through population movements, the Liverpool scientists recommended controlling African mobility and isolating suspected victims to contain its spread to the supposedly unaffected regions of the north.[130]

The emphasis on controlling African mobility and isolating sleeping sickness victims in the Free State are a testament to the significant role played by an elite of tropical medicine professionals in shaping colonial public health strategies at the beginning of the twentieth century. As Deborah Neill has argued, these researchers and clinicians formed an 'epistemic community', a powerful transnational network whose collective views on infectious disease and African populations were highly influential in determining, or even limiting, the range of policy options open to colonial authorities. Based on 'a shared European heritage, similar training, and common commitment to a global, scientific "civilising mission"', they promoted an approach to sleeping sickness

[127] Lyons, *Colonial Disease*, pp. 106-120, 125.

[128] Ibid., pp. 108-109, 234-235; Neill, *Networks in Tropical Medicine*, p. 125.

[129] 'Règlement coordonnant les mesures prises pour enrayer la maladie du sommeil' dans Etat Indépendant du Congo. Gouvernement local*, Recueil mensuel des ordonnances, arrêtés, circulaires, instructions et ordres de service* (Boma, 1906), pp. 239-240.

[130] Lyons, *Colonial Disease*, pp. 90-101. Lyons also notes that the Liverpool view did not necessarily correspond with the '*actual* epidemiology' of sleeping sickness in the Congo - which she deems a 'very contentious' issue - but nevertheless crucially influenced the Free State's policy responses (p. 93).

control that reflected a reductionist and racialised view of epidemic disease.[131] Dedicated to the application of a universally valid laboratory science to 'save' tropical Africa, these experts largely neglected the local natural and social environments (including the privations caused by colonial exploitation) in which trypanosomiasis epidemics took shape.[132] Instead, they focused on sleeping sickness as a problem of microscopic parasites, hosted by African bodies, transmitted by insect vectors, and primarily spread via population movements.[133] African sleeping sickness victims were thus reduced to human trypanosome carriers who constituted a public health threat and needed to be controlled to prevent further infection, whereas European sufferers were seen as individual patients in need of medical care. The result was a set of similar early sleeping sickness measures in Uganda, the Congo, and German East Africa that, while including some degree of tsetse fly control, emphasised targeting the African human factor, mostly via surveillance and the isolation of infected individuals in 'segregation' or 'concentration camps'.[134]

As in other African colonies, medicines also featured in the Free State's efforts to deal with sleeping sickness.[135] In 1906, Leopold II launched a substantial monetary prize for the discovery of an effective cure.[136] Moreover, by the end of the same year, State regulations included drug treatment of lazaret patients with Atoxyl, an arsenic compound first found effective in experimental trypanosomiasis by scientists at the Liverpool School of Tropical Medicine in 1905. In the Congo, early cases of sleeping sickness were to receive Atoxyl injections every four to five days, while victims in the advanced stages of the disease were to be treated with a regimen of Atoxyl injections, oral doses of strychnine sulphate, an alkaloid stimulant, and cold showers.[137] Rather than constituting a means of disease prevention and control in itself, however, drug treatment was primarily a component of the Free State's isolation strategy, geared towards keeping parasite carriers away from the rest of the population.[138] Before the introduction of Atoxyl therapy in the Congo, African individuals found infected had faced an indefinite stay and almost certain death in the segregation camps. Now the administration expected that they would simply remain quarantined until they were cured in the course of 'a few weeks or a few months'.[139]

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[131] Neill, *Networks in Tropical Medicine*, pp p. 2, 6-7, 58-59, 63, 70.

[132] Ibid., pp. 16, 58, 63.

[133] Lyons, *Colonial Disease*, p. 40.

[134] Neill, *Networks in Tropical Medicine,* pp. 110, 113, 115-116.

[135] Neill, *Networks in Tropical Medicine*, p. 108, 110, 115*;* Hoppe, *Lords of the Fly*, pp. 12-15.

[136] Lyons, *Colonial Disease*, pp. 234; J. Burke en J. Mortelmans, 'Rol van België in de strijd tegen de slaapziekte en dierlijke trypanosomiasis en hun studie', *Mededelingen der Zittingen van de Koninklijke Academie voor Overzeese Wetenschappen* 26 (1980), 118.

[137] 'Règlement coordonnant les mesures prises pour enrayer la maladie du sommeil', pp. 238-243.

[138] On drug treatment as a 'form of prophylactic action', see Tousignant, 'Politics of mass therapy', 628.

[139] A. Broden to Governor General, 1907, MAEAA, Hygiène, 847.283. Overall, the arrival of Atoxyl did not alter the fact that the Liverpool-recommended cordon sanitaire was the mainstay of Free State sleeping sickness

Chapter 3
Atoxyl and the early twentieth-century Congolese market for sleeping sickness remedies

This chapter takes a step back to explore the beginnings of Atoxyl's trajectory in the Congo. More specifically, it charts the drug's short career as a curative treatment for human trypanosomiasis victims at the beginning of the twentieth century, in the context of a competitive Congolese market for sleeping sickness remedies.

Before it came into view as a cure for sleeping sickness, Atoxyl had already started life as a pharmaceutical. An organic arsenic compound first synthesised in the nineteenth century, it was marketed by a German company in the early twentieth century as a medicinal chemical that was less toxic than the inorganic arsenicals traditionally used for a variety of conditions. When researchers at the Liverpool School of Tropical Medicine in 1905 discovered its 'trypanocidal' or trypanosome-killing properties in experimentally infected laboratory animals, Atoxyl was on its way to becoming the first scientific sleeping sickness drug.

The pharmaceutical's introduction and clinical use in the Congo was not the result, however, of colonial physicians simply adopting a metropolitan scientific discovery because of its inherent therapeutic efficacy. Rather, the drug's fate as a sleeping sickness cure was characterised by (overlapping) phases of optimism and 'expanding use' on the one hand, and 'criticism and disappointment' on the other.[140] Moreover, this career path was shaped by interactions between European laboratory scientists cum tropical medicine experts, drug manufacturers, the Congo administration, clinicians and African

policy. In fact, Todd himself insisted in December 1906 that 'even if atoxyl itself turned out to be an absolute specific remedy for Sleeping Sickness, still every effort must be used, through the institution of quarantine methods, to prevent the spread of the disease'. See Lyons, *Colonial Disease*, p. 103; Sir Alfred Jones to Secrétaire Général Liebrechts, 27.12.1906, MAEAA, Hygiène, 847.280.

[140] On different phases in the career cycles of drugs and the idea that they 'need not be sequential', but 'often overlap' and can be 'coexistent', see Snelders, Kaplan and Pieters, 'On cannabis', 97, 102, 111.

patients. In that way, it reflected and constituted social and spatial relations that were typically 'colonial' in important respects, but also included other dimensions. What stands out among the interactions feeding into Atoxyl's cycle as a sleeping sickness cure in the Congo was the beginning of a new configuration of science, industry and medicine unfolding between metropole and colony, and across imperial borders. The administration of the Free State played a vital role in enabling the development of a new scientific medicine in the Congo, although some of its actions at the same time undermined it. In addition, its interventions in the area of sleeping sickness therapy clearly entailed asymmetries between metropolitan and colonial opinions, between colonisers and colonised, and between collective and individual interests, provoking opposition from some European doctors and African sleeping sickness victims alike.

This chapter starts with a sketch of the early twentieth-century Congolese market for sleeping sickness remedies to highlight that nothing was self-evident about the adoption of a pharmaceutical commodity with laboratory-established efficacy to treat trypanosomiasis victims. When Atoxyl was introduced in the Free State, it did not land on 'virgin' territory, but entered a medical market, driven by state demand, where different medicines and therapeutic approaches were competing for 'cultural authority and commercial success'.[141] Rivalries between the colonial medical profession and the proprietary drug industry, as well as between remedies recommended on the basis of clinical observation and therapies grounded in laboratory evidence, constituted important areas of competition in this market. As the product of both the laboratory and the proprietary drug industry, Atoxyl therefore entered this arena in a remarkable capacity. The next section discusses how the drug was in fact part of a broader wave of competing trypanocidal chemical compounds emerging, before the First World War, from a crucial alliance between metropolitan laboratory researchers and a (predominantly German) segment of the pharmaceutical industry to produce and advance scientific medicines. The final section examines how Atoxyl was introduced and came to be used as a sleeping sickness cure in the Congo. As clinicians in colonial Africa had access to larger numbers of human trypanosomiasis victims, metropolitan drug developers sought their collaboration to establish the therapeutic value of new trypanocidal compounds, shape their application as sleeping sickness drugs and in the process create a market for them.[142] The Free State administration facilitated this endeavour by enabling and stimulating its doctors to experiment with Atoxyl and other compounds on African sleeping sickness cases - thus participating in and contributing to inter-imperial networks of trypanocidal drug development - and by quickly incorporating, in its official sleeping sickness measures, an Atoxyl-based regimen as a

[141] F. Huisman, 'Struggling for the market: strategies of Dutch pharmaceutical companies, 1880-1940', in V. Quirke and J. Slinn (eds.), *Perspectives on Twentieth-Century Pharmaceuticals* (Frankfurt, 2010), p. 65.

[142] On the co-constitution of therapeutic knowledge, drugs and drug markets, see N. Oudshoorn, '"United we stand": the pharmaceutical industry, laboratory and clinic in the development of sex hormones into scientific drugs, 1920-1940', *Science, Technology and Human Values* 18 (1993), 5-24.

compulsory curative treatment for African trypanosome carriers isolated in lazarets. The administration's optimism and instructions to expand Atoxyl's (experimental) use, however, coexisted with more critical views from colonial clinicians who pointed to limited curative powers and toxic side-effects contributing to African resistance to the lazaret regime. Brussels eventually also grew more disappointed with Atoxyl as a sleeping sickness cure, but sustained its use while encouraging further experimentation with a wide range of potential remedies in the hope of finding a better alternative.

3.1 Competing remedies and therapeutic approaches

Atoxyl was not the first nor the only drug that came into view as a treatment for sleeping sickness in the Congo at the beginning of the twentieth century, but represented one therapeutic possibility in what was in fact a much wider market. The concept of the 'medical market' was introduced in the 1980s by historians of medicine in early modern England to describe health care as a '(metaphorical) marketplace' where suppliers of medical goods and services competed for the custom of purchasers who could freely choose from a variety of treatment options.[143] Understood not just in a 'limited economic', but in a broader socio-cultural sense, the notion of the medical market has since been applied to a wide range of contexts, often to challenge the notion of a linear progress of professional medicine.[144] Importantly, historians have argued that the granting of a state-sanctioned monopoly to the regular medical profession in (late) nineteenth-century Europe, which marginalised unorthodox practitioners, did not so much terminate the medical market as transform it.[145] In England, for example, state regulation 'exclude(d) the practice of medicine from the operation of market forces', but the same could not be said of the selling and use of medicines. This was evident in the substantial growth in the nineteenth and twentieth centuries of a proprietary medicines business working outside, and in competition with, the regular medical profession. It entailed a 'hardening of the boundaries' between the 'professional' and the 'commercial'

[143] Huisman, 'Struggling for the market', p. 64; M. S. R. Jenner and P. Wallis, 'The medical marketplace', in M. S. R. Jenner and P. Wallis (eds.), *Medicine and the Market in England and its Colonies, c.1450-c.1850* (Basingstoke, 2007) p. 1; Hesselink, *Inheemse dokters en vroedvrouwen*, p. 16.

[144] Huisman, 'Struggling for the market', pp. 63-65; Jenner and Wallis, 'Medical marketplace', pp. 1-3; 7-8. Liesbeth Hesselink has even applied the concept to the colonial context of the Dutch East Indies in the late nineteenth and early twentieth centuries. Hesselink, *Inheemse dokters en vroedvrouwen.*

[145] Jenner and Wallis, 'Medical marketplace', pp. 9-10.

within modern health care.[146] Importantly, progress in medical science did not simply make the medical market disappear in the modern era either.[147]

This becomes evident when we look at the Congolese sleeping sickness therapy market in the early twentieth century. To meet their demand for a sleeping sickness remedy, the Free State and later Belgian Congo authorities received a wide spectrum of treatment proposals. Suggestions came from a remarkable variety of providers in the Congo, Belgium and much further beyond - a testament to the disease's high profile across the globe.[148] Several were issued directly in response to the royal call for a cure and the associated reputational and monetary rewards for 'solving' the captivating puzzle of trypanosomiasis.[149] The treatment options put forward reflected a broad 'therapeutic field', from surgical procedures to drug, electro- and radiotherapy**,** and originated from both within and outside the sphere of regular medicine, i.e. from members of the medical profession, proponents of alternative, 'folk' medicine such as homeopathy, as well as lay individuals.[150] The majority of the cures contemplated, however, involved some form of drug therapy, including indigenous herbal remedies picked up by European observers, biological drugs such as antisera and vaccines, or medicinal chemicals.[151]

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[146] M. Brown, 'Medicine, quackery and the free market: the "war" against Morison's pills and the construction of the medical profession, c. 1830-1850' in Jenner and Wallis (eds.), *Medicine and the Market in England*, pp. 238-239, 240, 257-258.

[147] Dutch historians in particular have argued that increased state intervention and progress in medical science did not make the medical market disappear in the modern era, but merely 'changed the rules of the game'. For example Hesselink, *Inheemse dokters en vroedvrouwen*, pp. 18-19. Frank Huisman shows how 'market forces' - economic, but especially cultural - were crucial in the emergence of a science-based pharmaceutical industry in the Netherlands between 1880 and 1940. F. Huisman, 'Van bedreiging tot bondgenoot. De transformatie van de farmaceutische industrie in Nederland, 1880-1940', *Tijdschrift voor Sociale Geschiedenis* 25 (1999), 443-478; Huisman, 'Struggling for the market'.

[148] Proposals came from as far as Ethiopia, India and Argentina, for example. Serre to Governor General, 21.2.1909, MAEAA, Hygiène, 848.286; Mr. Gérard to Minister of Foreign Affairs Davignon, 20.3.1908, MAEAA, Hygiène, 857.367; Anonymous to Minister of Foreign Affairs, 30.3.1907, MAEAA, Hygiène, 857.367; Minister of Colonies to Minister of Foreign Affairs, 28.2.1911, MAEAA, Hygiène, 849.293.

[149] For example: Dr E. Van den Dungen to Minister of Colonies, 6.8.1911, MAEAA, Hygiène, 849.293; Mr. Gérard to Minister of Foreign Affairs Davignon, 20.3.1908, MAEAA, Hygiène, 857.367; Jacob Böhler to King Albert I, 22.4.1910, MAEAA, Hygiène, 848.289; Lucien Gillet to King Albert I, 17.4.1910, MAEAA, Hygiène, 848.289.

[150] For example: Zerbini to Governor General, 17.10.1907, MAEAA, Hygiène, 847.283; E. Van Campenhout to Secrétaire Général, 1.12.1903, MAEAA, Hygiène, 846.276; Mr. Moser to Minister of Colonies, 1912, MAEAA, Hygiène, 849.294; Dr E. Van den Dungen to Minister of Colonies, 6.8.1911, MAEAA, Hygiène, 849.293; Félix Lallemand to E. Van Campenhout, 19.1.1908, MAEAA, Hygiène, 847.284; Anonymous to Minister of Foreign Affairs, 30.3.1907, MAEAA, Hygiène, 857.367; J. De Nobele et O. Goebel, 'Essais de radiothérapie dans les trypanosomiases expérimentales', *Annales de la Société de Médecine de Gand*, 86 (1906), 56-67. On the broad 'therapeutic field' in twentieth-century medicine, see Bonah et Rasmussen, 'Pour une nouvelle histoire', p. 12. On the distinction between 'professional, folk and popular sectors' of health care, proposed by Arthur Kleinman, see for example Reynolds Whyte, van der Geest and Hardon, *Social Lives of Medicines,* p. 98.

[151] For example: Serre to Governor General, 21.2.1909, MAEAA, Hygiène, 848.286; 'L'Ecole de médecine tropicale

While the popularity and use of medical drugs varied throughout the history of therapeutics, they had become particularly salient in Western medicine by the late nineteenth century.[152] This situation was linked to a number of important evolutions in the history of medical therapy. First of all, the second half of the nineteenth century saw European laboratory scientists develop a multitude of innovative and powerful therapeutic agents, beginning first with synthetic chemical drugs such as antipyretics, and later also comprising biologicals like antisera and vaccines.[153] Alongside this 'pharmacological fever' came an acceleration in the 'commercialization (sic) and industrialization (sic) of pharmacy', which saw the small-scale drug compounding and dispensing of apothecaries replaced with the large-scale trade and manufacture of ready-made, standardised and cheaper medicinal preparations by commercial drug firms.[154] This drug industry operated inside and outside of regular medicine, manufacturing 'legal' medicines described in official pharmacopeias as well as secret remedies, and prescription as well as over-the-counter drugs directly advertised to the public, often as panacea.[155] Their products comprised both traditional materia medica and therapeutic novelties, and could be sold as generic drugs or as proprietary medicines, which became known as 'pharmaceutical specialties'.[156] In fact, a growing segment of the drug trade consisted of proprietary medicines protected by trade secrets, trademarks or patents - although only 'preparation processes', and not pharmaceuticals themselves, could be patented in European countries before the Second World War (unlike in the United States, where medical drugs as such were patentable).[157]

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de Liverpool. Expédition au Congo, 1903', MAEAA, Gouvernement Général (GG), 15221 (GG); Minister of Colonies to A. Broden, 12.4.1921, Instituut voor Tropische Geneeskunde (ITG), Onderzoek, 5.2.5; E. Van Campenhout to Secrétaire Général, 1.12.1903, MAEAA, Hygiène 846.276; A. Broden to Governor General, 4.4.1903, MAEAA, Hygiène, 846.275; Secretary of State to Governor General, 9.10.1906, MAEAA, Hygiène, 847.280; Dr Pierre Polidori to Secretary of State, 11.1905, MAEAA, Hygiène, 846.277.

[152] For a historical overview of drugs and therapeutics, see for example. Ackerknecht, 'History of therapeutics,' 389-399.

[153] Marks, *Progress of Experiment*, pp. 17-18. On the 'therapeutic revolution' in the late nineteenth century, see also C. M. Rosenberg, 'The therapeutic revolution: medicine, meaning and social change in nineteenth-century America', in M. J. Vogel and C. M. Rosenberg (eds.), *The Therapeutic Revolution. Essays in the Social History of American Medicine*, pp. 3-25.

[154] Bonah et Massat-Bourrat, '"Agents thérapeutiques"'; V. Quirke, 'Foreign influences, national styles, and the creation of a modern pharmaceutical industry in Britain and France', *Pharmacy in History* 52 (2010), 134; Huisman, 'Bedreiging tot bondgenoot', 453, 475.

[155] Huisman, 'Bedreiging tot bondgenoot', 443, 449, 452, 476.

[156] Quirke, 'Foreign influences', 134; S. Chauveau, 'Le statut légal du médicament en France, XIXe-XXe siècles' dans Bonah et Rasmussen (dir.), *Histoire et médicament*, p. 90.

[157] Huisman, 'Bedreiging tot bondgenoot', 450, 472; Marks, *Progress of Experiment*, p. 19; J.-P. Gaudillière, 'How pharmaceuticals became patentable: the production and appropriation of drugs in the twentieth century', *History and Technology* 24 (2008), 101-102.

Finally, intertwined with the trends above was a therapeutic 'paradigm shift' in the late nineteenth century.[158] Earlier, regular therapeutic practice had been dominated by the principle of 'patient specificity'. It meant that physicians devised medical treatments that were uniquely adapted to the specific situation of their patients, which amounted to 'extremely complex therapeutic strategies'.[159] However, a change in aetiological theory, replacing the notion of illness as a state of humoral imbalance provoked by 'general destabilizing (sic) forces' with a concept of diseases as distinct clinical entities with specific causes, supported a shift towards 'disease-specific treatment'.[160] This entailed the 'match(ing) (of treatment) to a specific disease or even to its cause', with all patients suffering from the same disease being prescribed the same medicines.[161] Drugs became 'specifics' and therapeutics came to reflect a universalist ideal, focusing on 'reproducible', uniform treatments that were no longer (entirely) patient- and context-specific.[162] This universalism was linked to the rise of laboratory medicine, but was also echoed in the standardisation of industrial drug production and the 'lay' concept of self-medication panacea.[163]

As a result of these therapeutic transformations, at the turn of the twentieth century there was an ever-expanding, but increasingly disorganised supply of standard preparations and medicinal novelties targeting specific diseases and competing for a share of the drug market.[164] On the early twentieth-century Congolese market for sleeping sickness remedies, the drug treatments proposed reflected two important areas of competition. The first one involved rivalries between the medical profession and the proprietary drug industry, which largely stemmed from the fact that the practice of medicine in the Congo was regulated since the late nineteenth-century, while no legislation controlling the import and selling of medicines existed until after the First World War.[165]

The Congo authorities were thus often targeted by manufacturers of branded panacea of unknown composition who had no first-hand knowledge of sleeping

[158] J. Collin, 'Une épistémologie médicale en changement. Raisonnements thérapeutiques entre science et croyances' dans Collin, Otero et Monnais (dir.), *Médicament au coeur de la socialité contemporaine*, p. 129. See also J. H. Warner, *The Therapeutic Perspective: Medical Practice, Knowledge, and Identity in America, 1820-1885* (Cambridge, 1986), p. 100; Huisman, 'Struggling for the market', p. 87.

[159] Collin, 'Epistémologie médicale en changement', pp. 133-134.

[160] Warner, *Therapeutic Perspective*, pp. 62, 87.

[161] Ibid., p. 102.

[162] Collin, 'Epistémologie médicale en changement', pp. 131, 143; Warner, *Therapeutic Perspective*, p. 100; Huisman, 'Struggling for the market', p. 87.

[163] Collin, 'Epistémologie médicale en changement', p. 143-144

[164] Bonah et Massat-Bourrat, '"Agents thérapeutiques"', p. 40.

[165] Legislation on the practice of medicine ('art de guérir') in the Congo was in existence since 1894. Legislation concerning the selling and import of medicines came with the regulation of the colonial pharmaceutical profession since the 1920s. G. Trolli, J. Vanhove et A. Marquet, 'Exposé de la législation sanitaire du Congo Belge et du Ruanda-Urundi' dans L. Hennebicq, J. Wathelet et G. Ciselet (dir.), *Les Novelles. Corpus Juris Belgici. Droit Colonial*, t. III (Bruxelles, 1938), pp. 569-570, 572-573.

sickness, but nonetheless added the disease to their cure-alls' list of indications.[166] For example, between 1910 and 1911 the Johannesburg Maningo company promoted its drug 'Maningo' as a sleeping sickness remedy in capsule form to the Belgian Colonial Minister. The drug was marketed as a 'specific for the prevention and cure of insect-borne diseases' such as malaria, and a cure for 'leprosy, exczema (sic), rheumatism and all other diseases due to Impure blood'. To protect its commercial interests, Maningo wanted to keep the formula secret.[167] However, because many such concoctions were intended for self-medication and directly advertised to consumers (or in this case to the colonial state as a source of medicinal demand), they circumvented physicians as the 'only legitimate prescriber(s) of treatment' and thus constituted a threat to the medical profession's authority.[168] State doctors in the Congo therefore tended to be dismissive of such secret remedies.[169] For example, the colony's chief medical officer, who had apparently found out that Maningo's active ingredient was quinine, did not want to try out the drug in the treatment of sleeping sickness cases as he anticipated negative results, and suggested that it was better to use generic quinine for malaria.[170] Or, confronted with a Colombian-manufactured panacea branded 'Curarina', several physicians found it as good as impossible to give a scientific assessment of a drug the contents of which they did not know, and Alphonse Broden of the Leopoldville medical laboratory concluded that 'every serious doctor' would 'attach no other value to this so-called panacea than that of a well-made publicity'.[171]

This is not to say that regular physicians in the Congo (as elsewhere) refrained from prescribing pharmaceutical specialties.[172] In fact, most prescription drugs were imported there as ready-made medicinal preparations, and these also came in branded versions. The problem, however, was that not all general practitioners were deemed equally scientifically competent to assess the therapeutic claims made in pharmaceutical advertisements.[173] Moreover, some clinicians in the Congo tended to base their

[166] For example: Mr. Gérard to Minister of Foreign Affairs Davignon, 20.3.1908, MAEAA, Hygiène, 857.367; Minister of Colonies to Mr. H. Eppenberger-Luchsinger, 17.5.1929, MAEAA, Hygiène, 4404.304.

[167] The Maningo Company to Minister of Colonies, 21.3.1910, MAEAA, Hygiène, 848.289; The Maningo Company to Governor General, 25.1.1911, MAEAA, GG, 15128 (GG).

[168] J. Liebenau, *Medical Science and Medical Industry. The Formation of the American Pharmaceutical Industry* (Basingstoke, 1987), p. 26; Huisman, 'Bedreiging tot bondgenoot', 453, 476.

[169] For example, Secretary of State to Dr Montry, 5.7.1907, MAEAA, Hygiène, 857.367.

[170] Dr Cammermeyer to Governor General, 28.3.1911, MAEAA, GG, 15128 (GG).

[171] Dr Cammermeyer to Governor General, 15.4.1909, MAEAA, Hygiène, 830.38; A. Broden to Governor General, 29.4.1909, MAEAA, Hygiène, 830.39. Eventually the Colonial Minister warned that one should be cautious of 'inventors or promotors of new remedies' without knowledge of African diseases, as in most cases their products lacked every 'scientific basis'. Minister of Colonies to Minister of Foreign Affairs, 18.5.1911, MAEAA, Hygiène, R146.593.

[172] For example: Dr Pierre Polidori to Secretary of State, 11.1905, MAEAA, Hygiène, 846.277.

[173] Minister of Colonies Renkin complained in 1911 that state doctors, in their requests for drug supplies, asked for too many pharmaceutical specialties, many of which were 'articles de luxe et de fantaisie'. Minister of Colonies Renkin to Governor General, 30.6.1911, MAEAA, GG, 16819 (GG). By 1924, state doctors' demands for

therapeutic knowledge and practices regarding sleeping sickness on the 'empiricism' of clinical observations rather than on the 'rationalism' of a scientific medicine that sought to establish drugs' pharmacological effects in laboratory experiments before introducing them to clinical practice.[174] For example, state doctor Gaston Daniel proposed an iodine-based sleeping sickness treatment after 'expériences pratiques' in a military camp in Bas-Congo between 1910 and 1912, and suggested to have it tried out on a larger number of trypanosomiasis victims. When in 1913 he was asked to have his empirical remedy examined by a laboratory doctor first, he protested that no laboratory consideration could 'prevail' against his own 'experimental method' pursued for more than three years.[175] Despite the historically close ties between tropical medicine and microbiology, therefore, there was a certain ambiguity towards laboratory medicine among at least some clinicians practicing in the colony, especially since tropical medicine diplomas were not a formal requirement for state doctors until 1910.[176] In that sense, the tension between clinical and laboratory medicine, or between empirical and rational therapeutics, constituted a second area of 'competition' on the early twentieth-century Congolese market for sleeping sickness remedies.

non-approved pharmaceutical specialties needed to be assessed by the Congo's Chief Medical Officer. 'Projet de circulaire sur l'établissement des états de besoins, réquisitions et du budget du Service de l'Hygiène', 14.11.1924, MAEAA, GG, 16847 (GG).

[174] Before the First World War, for example, several doctors devised their own treatment strategies (often consisting of standard medicinal chemicals) based on their own clinical observations rather than on preliminary laboratory research. For example: Dr Zerbini to Governor General, 17.10.1907, MAEAA, Hygiène, 847.283; Secretary of State to Governor General, 9.10.1906, MAEAA, Hygiène, 847.280; Dr Cammermeyer, 'Rapport sur le traitement de la maladie du sommeil, pendant l'année 1908, par méthode: atoxyl-mercure-iodure', 3.2.1909, MAEAA, Hygiène, 848.285; Circular to state doctors from vice-Governor General Lantonnois, 23.8.1909, MAEAA, Hygiène, 848.287; Dr Pierre Polidori to Secretary of State, 11.1905, MAEAA, Hygiène, 846.277. On 'rational therapeutics', see Marks, *Progress of Experiment*, pp. 21-22. On the tensions between 'clinical empiricism' and a 'new rationalism' grounded in laboratory medicine since late nineteenth-century therapeutics, see for example Warner, *Therapeutic Perspective*, pp. 57, 80; Collin, 'Epistémologie médicale en changement', p. 131.

[175] Dr G. Daniel to A. Broden, 5.11.1913, ITG, Onderzoek, 5.2.1; Director General (2e Direction Générale (DG)) to Minister of Colonies' cabinet, 30.12.1913, MAEAA, Hygiène, 4403.297.

[176] Trolli, Vanhove et Marquet, 'Exposé de la législation sanitaire', p. 570. On the close ties between the microbiology laboratory and tropical medicine, see Neill, 'Transnationalism in the colonies', pp. 2, 106.

3.2 A marriage of laboratory science and industry: Atoxyl and the 'birth' of trypanocidal compounds

On this Congolese market of competing sleeping sickness remedies and therapeutic approaches, Atoxyl started its journey as the product of a remarkable alliance between laboratory science and (a segment of the) pharmaceutical industry.[177] Both shared an interest in enhancing the scientific character of therapeutics, and at the beginning of the twentieth century found an important target in sleeping sickness to pursue this agenda. The result was a range of industrially manufactured chemical compounds that were 'trypanocidal', i.e. lethal for the trypanosomes of experimentally infected laboratory animals.

The discovery of the trypanosome in 1903 established disease-specific treatment acting against this particular micro-organism as 'scientific' sleeping sickness therapy. The move towards disease-specific therapy rooted in experimental laboratory science had been initiated in the second half of the nineteenth century. Under the influence of experimental physiology, therapeutic practice shifted its focus from restoring the individual body's humoral imbalance to 'altering specific (abnormal) physiological processes'.[178] With the rise of the branch of laboratory medicine known as bacteriology, disease-specific therapy gained an even greater momentum by the 1870s-1880s. Building on the germ theory of infectious disease, which established 'specific micro-organisms' as the cause of infections, bacteriology provided an enormous boost to the notion of 'etiological (sic) specificity' and its therapeutic corollary: the treatment of infectious diseases by destroying their specific pathogenic agents.[179]

The prominence of the germ theory and the development of procedures for isolating and growing pathogenic micro-organisms through the rise of bacteriology in the late nineteenth century naturally stimulated experimental therapeutic research on infectious diseases.[180] The first therapies resulting from laboratory investigations into the actions of medicinal substances on experimentally infected animals were biological remedies, which were especially successful in bacterial infections. With the discovery of protozoal trypanosomes as the causative agents of African trypanosomiasis, the disease soon enough became the object of this 'experimental therapeutics', and thus contributed to a widening of the search for specific therapies beyond antibacterial

[177] On the development of an alliance between science and the 'ethical' segment of the drug industry, see for example Huisman, 'Bedreiging tot bondgenoot', 463.

[178] Warner, *Therapeutic Perspective*, p. 101.

[179] Ibid., p. 277-280; D. Greenwood, *Antimicrobial Drugs: Chronicle of a Twentieth Century Medical Triumph* (Oxford; Toronto, 2008), p. 3.

[180] J. Parascandola, 'The theoretical basis of Paul Ehrlich's chemotherapy', *Journal of the History of Medicine and Allied Sciences* 36 (1981), 30; Liebenau, *Medical Science and Medical Industry*, p. 36.

drugs.[181] Not only was sleeping sickness a high-profile disease at the centre of the new field of tropical medicine, itself closely linked with laboratory medicine, but trypanosomes proved ideal study objects because - unlike many other human diseases - trypanosome infections could be easily reproduced in experiment animals.[182]

Although some laboratory researchers explored biological cures (without much success), the search for a specific drug against trypanosomes turned overwhelmingly to chemical substances.[183] Natural chemicals had been used empirically for centuries in therapeutic practice. By the late eighteenth and early nineteenth centuries, chemistry began to be exploited for drug development with the 'extraction of active principles from plants', leading to drugs like morphine (from opium) and quinine (from cinchona bark).[184] Subsequent attempts to synthesise rather than isolate these natural products had remarkable consequences for pharmaceutical history. By the mid-nineteenth century, the search for a synthetic version of quinine that would be cheaper and easier to supply led to the accidental discovery of synthetic dyes derived from coal tar, a 'waste industrial by-product'. This gave rise to a synthetic dyestuffs industry, notably in Germany, which by the 1880s also turned to pharmaceutical research. It resulted in new synthetic chemical drugs, most notably analgesics and antipyretics, including Aspirin.[185] With these first synthetic pharmaceuticals treating disease symptoms rather than causes, the next step was the 'rational, systematic search for specific chemotherapeutic agents against various infectious diseases'.[186]

The founder of specific chemotherapy, or at least the coiner of the term, was Paul Ehrlich, a German medical scientist whose research on histological staining with synthetic dyes led him to pursue 'pharmacotherapeutic investigations'. The experimental treatment of two human malaria cases with methylene blue in 1891 marked the beginning of his search for synthetic chemicals that could cure infectious diseases.[187] After a stint in immunological therapy research at the Robert Koch Institute for Infectious Diseases in Berlin - for which he received a Nobel Prize in 1909 - Ehrlich resumed his chemotherapeutic work in 1898. By 1906, he was able set up an extensive research program at the Georg-Speyer Haus for Chemotherapy, built next to the

[181] Parascandola, 'Theoretical basis', 21.

[182] Ibid., 30; Headrick, *Colonialism, Health and Illness*, p. 84.

[183] For examples of research on biological cures, see A. Broden to Governor General, 4.4.1903, MAEAA, Hygiène, 846.275; R. Mouchet and A. Dubois, Annual report of the Leopoldville lazaret), 10.1.1913, ITG, Fonds Dubois (FD) 34; L. Van Hoof, 'Thérapeutique de la maladie du sommeil et des trypanosomiases animales africaines', *Revista Médica dé Angola* 4 (1923), 89-91.

[184] W. O. Foye, 'Introduction. Origins of medical chemistry ', in D. A. Williams, T. L. Lemke and W. O. Foye (eds.), *Foye's Principles of Medicinal Chemistry* (Baltimore; Philadelphia, 2002), pp. 1-2; V. Quirke and J. Slinn, 'Perspectives on twentieth-century pharmaceuticals: an introduction' in Quirke and Slinn (eds.), *Perspectives on Twentieth-Century Pharmaceuticals*, pp. 7-8.

[185] J. Goodman, 'Pharmaceutical industry', in R. Cooter and J. Pickstone (eds.), *Medicine in the 20th Century* (Amsterdam, 2000), p. 142; Quirke and Slinn, 'Perspectives on twentieth-century pharmaceuticals', p. 8.

[186] Parascandola, 'Theoretical basis', 30.

[187] Ibid., 24-25.

Frankfurt Institute for Experimental Therapy to support his studies.[188] Together with his co-workers, Ehrlich investigated the activity of dyes against trypanosomes in experimentally infected animals, and found that Trypan Red was effective in mice, although not in larger animals.[189]

Besides synthetic dyes, the group also focused on arsenic compounds given their long-standing empirical use in medical practice, including in trypanosome infections before the discovery of sleeping sickness aetiology.[190] In 1903, Ehrlich conducted in vitro tests with an organic arsenic compound synthesised by the French pharmacist Antoine Béchamp in 1863 and introduced as a medicine for conditions in which arsenic was indicated by the Berlin chemical manufacturer 'Vereinigte Chemische Werke Charlottenburg' in 1901. The latter had named the drug 'Atoxyl' because of its low toxicity compared with the inorganic arsenicals commonly used in therapeutics.[191] The German scientist initially rejected the drug as it showed no trypanocidal effect in the test tube. However, medical researchers Wolferstan Thomas and Anton Breinl from the Liverpool School of Tropical Medicine found in 1905 that Atoxyl killed trypanosomes in the blood of experimentally infected laboratory animals.[192] This discovery further tweaked Ehrlich and other scientists' interest in the trypanocidal action of arsenicals and other chemical compounds.

Among other notable sleeping sickness chemotherapy researchers were the French Pastorians Alphonse Laveran, Félix Mesnil and Maurice Nicolle. In 1902, the parasitologist Laveran had managed to experimentally infect mice with trypanosomes, thus enabling the development of specific chemotherapy research, and together with Mesnil tried treating them with arsenious acid at the Paris Pasteur Institute, albeit without much success.[193] Laveran subsequently studied 'associations médicamenteuses', for example of Trypan Red and arsenious acid, and by 1907 proposed treatment with orpiment, another inorganic arsenical.[194] Mesnil and Nicolle between 1906 and 1907

[188] Ibid., 26-27, 29.

[189] Ibid., 30; Greenwood, *Antimicrobial Drugs*, p. 54.

[190] Parascandola, 'Theoretical basis', 31; Foye, 'Origins of medical chemistry', p. 7. On the long-standing medical use of arsenic, see also W. R. Cullen, *Is Arsenic an Aphrodisiac? The Sociochemistry of an Element* (Cambridge, 2008), pp. 1-55.

[191] Headrick, *Colonialism, Health and Illness,* p. 86; S. Riethmiller, 'From Atoxyl to Salvarsan: searching for the magic bullet ', *Chemotherapy* 51 (2005), 236; Greenwood, *Antimicrobial Drugs*, p. 55; Vereinigte Chemische Werke Aktiengesellschaft Charlottenburg, 'L'atoxyl dans le traitement de la trypanosomiase', s.d., ITG, Onderzoek, 5.2.8; Vereinigte Chemische Werke Aktiengesellschaft Charlottenburg to Secrétaire Général, 4.2.1907, MAEAA, Hygiène, 857.369.

[192] Parascandola, 'Theoretical basis', 31; Greenwood, *Antimicrobial Drugs*, p. 56.

[193] Laveran had famously discovered the protozoal parasite causing malaria in 1880. Headrick, *Colonialism, Health and Illness*, pp. 85-86; Parascandola, 'Theoretical basis', 31; Foye, 'Origins of medical chemistry', p. 6; Lesch, *First Miracle Drugs*, p. 19.

[194] Van Hoof, 'Thérapeutique de la maladie du sommeil', 88; Secretary of State to Governor General, 17.10.1905, MAEAA, Hygiène, 846.277; A. Dubois, *Chimiothérapie des trypanosomiases*, *Mémoires de l'Institut Royal Colonial Belge - Section des Sciences Naturelles et Médicales*, (Bruxelles, 1946), t. XV, p. 53.

experimented with various dyes, and found Trypan Blue and Afridol Violet most effective in mice.[195] Around the same time, they played a role in introducing antimony, another element with a long medical history, to chemotherapeutic trypanosomiasis research. Together with his collaborator E. Brimont, Mesnil in 1907-1908 discovered the trypanocidal qualities of the antimony compound tartar emetic (potassium antimony tartrate) in experimental infections, a finding that was also reported independently by Henry Plimmer and John Thomson at the British Lister Institute of Preventive Medicine.[196]

This empirical search for effective trypanocidal drugs in the early twentieth century was not only important from a practical point of view, but also because it helped Ehrlich develop the principles of specific chemotherapy that would come to shape much of the research on trypanocides and other synthetic drugs.[197] Ehrlich was essentially looking for 'magic bullets': chemical medicines that were highly 'parasitotropic' but not 'organotropic', i.e. compounds that destroyed pathogenic micro-organisms without damaging their host.[198] Suitable chemotherapeutic agents had an acceptable 'chemotherapeutic index', with as large a difference as possible between their toxic and therapeutic dose.[199] They ideally allowed for a treatment strategy called '*therapia sterilisans magna*', the destruction of all the body's pathogens with a single dose. Another possible strategy highlighted by Ehrlich was 'combination therapy', the use of multiple compounds to treat a single disease so as to enhance therapeutic efficacy without increasing drug toxicity, and avoid the emergence of drug-resistant pathogens.[200]

Ehrlich had long been interested in the relation between the 'chemical structure' and 'pharmacological activity' of compounds. In his search for magic bullets, he began altering the structure of Atoxyl after the discovery of its trypanocidal action to improve the drug's chemotherapeutic index. It resulted in the creation of hundreds of new organic arsenicals that were tested in vivo at the Georg-Speyer Haus in the treatment of experimental trypanosomiasis, and from 1909 onwards also syphilis (caused by spirochetes, bacteria that were assumed to be similar to trypanosomes at the time).[201] Compound number 418 (arsenophenylglycin) showed great promise as a trypanocide, while number 306 (acetylatoxyl) and number 606 (arsphenamine) appeared effective in

[195] Headrick, *Colonialism, Health and Illness*, p. 85; Greenwood, *Antimicrobial Drugs,* p. 54.

[196] Dubois, *Chimiothérapie des trypanosomiases*, pp. 127-128; Van Hoof, 'Thérapeutique de la maladie du sommeil', 113; 'Joint discussion No. 1. Section of Therapeutics and Pharmacology, with the Section of Tropical Diseases and Parasitology. November 13, 1928. Discussion on the Special Uses of Antimony', *Proceedings of the Royal Society of Medicine* 22 (1929), 562; W. Sneader, *Drug Discovery: A History* (Hoboken, 2005), p. 57.

[197] Headrick, *Colonialism, Health and Illness*, pp. 84, 87.

[198] Parascandola, 'Theoretical basis', 21-22.

[199] Headrick, *Colonialism, Health and Illness*, p. 85.

[200] Parascancola, 'Theoretical basis', 40-41.

[201] Ibid., 25-26, 31-32; Greenwood, *Antimicrobial Drugs*, p. 58.

(some) trypanosome infections as well as against spirochetes. The team made a 'water-soluble variant' of the latter compound called 'neoarsphenamine' in 1912.[202]

Crucial to the development of Ehrlich's specific chemotherapy and the making of anti-infective chemical drugs was the presence of a 'hugely successful fine chemicals industry based on synthetic organic chemistry' in Germany. As mentioned above, synthetic dyestuff companies in particular had taken advantage of favourable German patent laws and connections with academic chemists to launch into industrial research and pharmaceutical innovation.[203] Ehrlich's chemotherapeutic research program presented them with exciting new opportunities in the field of antimicrobial therapy. In Frankfurt, the medical scientist had developed close ties with local dyestuff manufacturers such as Hoechst and Leopold Cassella and Company, who supplied him with synthetic dye samples for therapeutic experimentation.[204] In addition, these chemical firms took on the mass-production and commercial distribution of new compounds synthesised in Ehrlich's lab. For example, Hoechst marketed acetylatoxyl as Arsacetin.[205] Moreover, when the Georg-Speyer Haus could not handle the enormous demand for the anti-syphilitic arsphenamine, Ehrlich reached an agreement with the company, which in 1910 went on to manufacture and market the compound and later also its derivative as Salvarsan and Neosalvarsan respectively.[206]

The German chemical industry was also linked to prewar trypanocide research and development outside of Germany. For example, the Elberfeld firm Friedrich Bayer and Company, set up in 1863 to 'exploit (...) the potential of (...) synthetic aniline dyes' and manufacturer of the drug Aspirin, delivered dyes to the Pasteurian tropical medicine experts Mesnil and Nicolle.[207] And the 'Vereinigte Chemische Werke Charlottenburg' of course benefitted from the sleeping sickness therapy research with Atoxyl by the Liverpool School of Tropical Medicine, which was crucial in shaping the arsenical drug into a trypanocidal compound. In Britain itself, where no comparable, research-oriented dyestuff industry existed, the drug firm Burroughs Wellcome & Co. nevertheless soon launched a cheaper version of Atoxyl, with a 'closely related' chemical formula, under

[202] Parascandola, 'Theoretical basis', 32-33; Greenwood, *Antimicrobial Drugs*, p. 58; Riethmiller, 'From Atoxyl to Salvarsan', 240.

[203] Lesch, *First Miracle Drugs*, pp. 4, 15, 17; J. Liebenau, 'Ethical business: the formation of the pharmaceutical industry in Britain, Germany and the United States before 1914', *Business History* 30 (1988), 117-119; S. Baverey-Massat-Bourrat, 'De la copie au nouveau médicament. Le laboratoire de chimie thérapeutique et Rhône-Poulenc: un réseau alternatif d'innovation', *Entreprise et histoire,* 36 (2004), 48-49; E. Hickel, 'Das Kaiserliche Gesundheitsamt (Imperial Health Office) and the chemical industry in Germany during the Second Empire: partners or adversaries?' in R. Porter and M. Teich (eds.), *Drugs and Narcotics in History* (Cambridge; New York, 1995), p. 98.

[204] Greenwood, *Antimicrobial Drugs*, p. 54.

[205] A. Broden, 'Rapport sur le fonctionnement du Lazaret des trypanosés à Léopoldville durant le 1er semestre 1909', 22.9.1909, MAEAA, Hygiène, 844.162.

[206] Greenwood, *Antimicrobial Drugs*, pp. 59; Parascandola, 'Theoretical basis', 34.

[207] Greenwood, *Antimicrobial Drugs,* pp. 49, 54.

the trade name of Soamin.[208] Established by two US-born pharmacists in 1880 to sell American proprietary medicines, the company gradually developed a manufacturing and research infrastructure, thus becoming Britain's 'first science-based drug company'. Building on a tradition of product diversification that included analysing rival firms' drugs, Burroughs Wellcome & Co.'s production plant in Dartford became involved in experimental research into arsenicals in the early twentieth century.[209]

For German chemical manufacturers, who dominated the international synthetic dye market, taking advantage of specific chemotherapy research was part of an ongoing strategy to diversify into synthetic pharmaceuticals in the wake of a double price crisis affecting dyes and raw materials. Relying on innovation helped them secure competitive advantage over established German firms trading in standard medicinal chemicals, and was also linked to an internationalisation strategy.[210] The 'practical success' of Salvarsan and Neosalvarsan in particular demonstrated that chemical synthesis could yield profitable drugs for the specific treatment of infectious diseases. It encouraged the search for other therapeutic chemicals on the basis of Ehrlich's methods and principles.[211] Tellingly, in 1910 the Bayer company established a chemotherapy laboratory to 'exploit (this) new science'.[212] As John Lesch has argued, this amounted to an incorporation of Ehrlich's chemotherapy research program into the German chemical industry's 'own pharmaceutical research effort', and formed part of a historical process of 'industrialization (sic) of pharmaceutical invention' underlying German dominance in synthetic chemical drugs R&D in the first half of the twentieth century.[213]

For Bayer and other companies capitalising on specific chemotherapy research - externally or in-house - at the beginning of the twentieth century, science did not simply drive innovation, however, but also served another purpose. The association with science allowed these firms to distinguish themselves and their prescription pharmaceuticals from the 'unethical' manufacturers of proprietary medicines, who made up a significant segment of the drug industry and whose secret remedies and over-the-counter panacea betrayed exclusively commercial motives.[214] The rise of businesses profiling themselves, by contrast, as 'ethical' was part of a 'qualitative(...)'

[208] Greenwood *Antimicrobial Drugs*, pp. 270, 277; J. Slinn, 'Research and development in the UK pharmaceutical industry from the nineteenth century to the 1960s' in Porter and Teich (eds.), *Drugs and Narcotics*, p. 173; Liebenau, 'Ethical business', 119.

[209] Quirke, 'Foreign influences' 137-138, 141; E. M. Tansey and R. C. E. Milligan, 'The early history of the Wellcome Research Laboratories, 1894-1914' in J. Liebenau, G. J. Higby and E. C. Stroud (eds.), Pill Peddlers: Essays on the History of the Pharmaceutical Industry (Madison, 1990), p. 92.

[210] Liebenau, 'Ethical business', 117; Quirke, 'Foreign influences', 134.

[211] Parascandola, 'Theoretical basis', 34, 43.

[212] Greenwood, *Antimicrobial Drugs*, p. 271.

[213] Quirke and Slinn, 'Perspectives on twentieth-century pharmaceuticals', p. 10; Lesch, *First Miracle Drugs*, pp. 4-5.

[214] Liebenau, *Medical Science and Medical Industry*, p. 109; Huisman, 'Bedreiging tot bondgenoot', 476-477.

transformation in drug manufacturing that accompanied the 'quantitative(...)' move towards industrial-scale production since the nineteenth century. Starting with the cultivation of a scientific image as a 'strategy of (...) demarcation', it culminated in the emergence of an increasingly science-based pharmaceutical industry in the twentieth century, developing and mass-producing quality-controlled, standardised prescription drugs that were the fruits of medical laboratory science, and thus appealed to the proponents of a rational therapeutics.[215]

3.3 Making (a market for) Atoxyl: clinical investigators and the Congo administration[216]

By the early twentieth-century, scientific medicines, including synthetic chemicals like Atoxyl, were of course not simply 'ready-made laboratory products' manufactured on an industrial scale, but 'artefacts created in networks of different groups of actors'. As Nelly Oudshoorn has argued, the medical profession constituted a crucial node in these webs of drug development.[217] To evaluate the safety and efficacy of new compounds in the treatment of human diseases, clinicians were needed to experiment them on patients. In this way, some physicians went beyond their traditional role as therapists and became involved in therapeutic knowledge production and the making of 'rational' remedies, grounded in experimental science.[218] It was on this clinical determination of drugs' therapeutic value that their market launch by ethical pharmaceutical companies depended. At the same time, clinical trials could be very much 'part of the marketing process', according to Oudshoorn, as they 'linked (prescription) drugs to their audiences', the profession of medical prescribers, thus creating a market for them. Moreover, the development and testing of medical drugs sometimes continued after their commercialisation.[219] Atoxyl was a case in point, as researchers in Liverpool helped find a new application for a drug that was already distributed by its German manufacturer as a remedy for 'all complaints for which arsenic is indicated'.[220] In that sense, drug development should not be viewed as a neatly linear sequence of research,

[215] Liebenau, *Medical Science and Medical Industry*, pp. 5-8; Huisman, 'Struggling for the market', pp. 66, 81; Quirke and Slinn, 'Perspectives on twentieth-century pharmaceuticals', pp. 8-9.

[216] Significant parts of this section have been published before in Mertens and Lachenal, 'History of "Belgian" tropical medicine'.

[217] Oudshoorn, '"United we stand"', 20-21.

[218] C. Bonah, *Histoire de l'expérimentation humaine en France: discours et pratiques, 1900-1940* (Paris, 2007), pp. 31, 48.

[219] Oudshoorn, '"United we stand"', 7, 20-21.

[220] Vereinigte Chemische Werke Aktiengesellschaft Charlottenburg, 'L'atoxyl dans le traitement de la trypanosomiase', s.d., ITG, Onderzoek, 5.2.8.

testing and marketing, but as the 'collective(...) creation' of medicines and markets for these medicines through interactions between relevant actors from the worlds of science, medicine and industry.[221] As will be described below, in the case of Atoxyl, the Congo administration played a most vital role in making a colonial drug market.

Because of a dearth of sleeping sickness victims in Europe, metropolitan chemotherapy researchers and pharmaceutical companies naturally had to rely on clinical investigators in African colonies to establish whether the trypanocidal compounds coming out of their laboratories were efficacious and safe to use in the treatment of human trypanosomiasis. At the beginning of the twentieth century, the 'larger patient base' of territories such as Uganda, German East Africa, Togo, Cameroon and French Equatorial Africa (AEF) generated important cross-border, even inter-imperial, networks of trypanocide development.[222] With drug experimentation taking off in the Free State as well, the Congo became a crucial participant in this web of pharmaceutical innovation.

Before the introduction of laboratory-made trypanocidal compounds, sleeping sickness therapy in the Congo - as elsewhere - was a generally empirical affair, based on clinicians' own observations and experience. Faced with a mysterious, fatal disease, colonial isolation and a lack of therapeutic guidance, many doctors were left to devise their own sleeping sickness treatments on a trial-and-error basis. Several resorted to the small-scale experimentation of empirical remedies, mostly involving existing medicinal chemicals. Within the medical profession this sort of 'therapeutic experimentation' was typically seen as an acceptable part of the art of medicine, undertaken in individual patients' own interests. In the case of sleeping sickness, not attempting to therapeutically intervene amounted to certain death, and could in that sense be considered a less ethical option.[223] Although some claimed a certain degree of success in the treatment of a few isolated cases, the flip side of physicians' considerable clinical freedom was an overwhelming feeling of therapeutic 'powerless(ness) against the trypanosome'.[224]

When information regarding the laboratory breakthroughs with trypanocidal chemicals reached the Congo, some clinicians grew more ambitious and wanted to try

[221] Oudshoorn, '"United we stand"', 5-6, 20-21.

[222] W. U. Eckart, 'Medical experiments at the colonial periphery: the fight against sleeping sickness in German East Africa and Togo' in V. Roelcke and G. Maio (eds.), *Twentieth Century Ethics of Human Subjects Research. Historical Perspectives on Values, Practices and Regulations* (Stuttgart, 2004) pp. 40-57; W. U. 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 (2002), 69-89; Neill, *Networks in Tropical Medicine*, pp. 114, 165-181; Headrick, *Colonialism, Health and Illness*, p. 88; Neill, 'Ehrlich's colonial connections', 65.

[223] Bonah, *L'experimentation humaine*, pp. 48, 79.

[224] Alex Legros, 'Maladie du sommeil', 9.8.1903, MAEAA, Hygiène, 846.276; Dr Pierre Polidori to Secretary of State, 11.1905, MAEAA, Hygiène, 846.277; E. Van Campenhout to Secrétaire Général, 1.12.1903, MAEAA, Hygiène 846.276.

out these specifics in a more 'serious and persistent' way.[225] Moreover, it seems that the rationale of experimentation started to shift from trying to effect a cure in individual patients to producing therapeutic knowledge, which was not necessarily of direct benefit or even harmful to the trypanosomiasis victims under observation, but could be helpful to others.[226] The question of sleeping sickness therapy presented doctors in the tropics with exciting research opportunities, and many appeared keen to establish the efficacy of new remedies in human cases first. In addition, colonial practitioners increasingly understood that extended experimentation could provide them with therapeutic guidance, at least if information about individual doctors' trials was exchanged.[227] The result was that some embarked upon therapeutic investigations involving larger numbers of sleeping sickness victims. However, as therapeutic practice in the Congo was transitioning from its empirical roots to an undertaking more firmly grounded in experimental science, the boundaries between 'therapeutic experimentation' to help infected individuals and 'scientific experimentation' to advance collective knowledge were sometimes blurred.[228] Also, clinicians did not always distinguish between empirical and rational remedies in their search for a sleeping sickness cure (although most were less willing to experiment remedies of unknown composition).[229] In addition to pursuing the discoveries of metropolitan laboratories, many continued trying out their own empirical remedies.[230]

Medical experiments that constituted 'research rather than treatment', aimed at developing appropriate therapeutic protocols rather than ensuring the well-being of individual participants, can of course be considered highly problematic. Wolfgang Eckart has described how German Africa, as the moral and legal periphery of the 'Kaiserreich', constituted an ideal territory for medical experiments that were unacceptable in the metropole, namely pharmacological trials with dangerous sleeping sickness drugs on African subjects who were forcibly confined and certainly did not consent.[231] In that sense, German colonies were a 'literal, and not just metaphorical

[225] Dr Zerbini to Governor General, 28.11.1905.11.28, MAEAA, Hygiène, 847.278.

[226] Bonah, *L'experimentation humaine*, p. 48; S. Ferber, *Bioethics in Historical Perspective* (Basingstoke, 2013), p. 101. Dr Pierre Polidori, for example, conducted an experiment comparing outcomes in four groups of patients at the Boma hospital for 'blacks'. Three groups received various regimens containing Atoxyl, whereas the last group was 'under observation and without treatment'. P. Polidori 'Rapport médical', 3.2.1907, MAEAA, Hygiène, 847.282.

[227] Dr Grossule, for example, called on the colonial administration to facilitate the exchange of therapeutic information among State doctors. Dr Grossule, 'Rapport sur les résultats obtenus dans le traitement de la trypanosomiase par la méthode préconisée par le Professeur Laveran', 7.11.1908, MAEAA, Hygiène, 848.285.

[228] Bonah, *L'experimentation humaine*, p. 48.

[229] Secretary of State to Dr Montry, 5.7.1907, MAEAA, Hygiène 857.367.

[230] For example: Dr Cammermeyer, 'Rapport sur les différents traitements essayés pour combattre la maladie du sommeil', 17.7.1909, MAEAA, Hygiène, 848.287; Dr Zerbini to Governor General, 5.9.1906; MAEAA, Hygiène, 847.279.

[231] Eckart, 'Colony as laboratory', 77, 84, 87; Eckart, 'Medical experiments', 65-66 ; Eckart, *Medizin und Kolonialimperialismus*, pp. 162-173.

laboratory'.[232] However, as Neill remarks, such questionable experiments were not confined to German territories in Africa, nor even to colonial contexts, in a period without 'more specific international ethical codes' on the subject.[233] What foremost determined their occurrence in colonial Africa, including in the Congo, was the pivotal influence of a transnational tropical medicine elite and its racialised medical discourse constructing African trypanosomiasis victims as public health hazards rather than as individuals in need of medical care.

In the Free State, the infectious disease control measures recommended by the Liverpool School of Tropical Medicine contributed to the sort of systematic, larger-scale therapeutic trials that were aimed at the production of (policy-relevant) knowledge and helped turn the Congo into 'a vast field of experimentation' for sleeping sickness remedies.[234] As described in the previous chapter, these measures instituted case detection and the forced admission of trypanosome-infected Africans into 'native hospitals', or more often, their isolation in lazarets. As elsewhere, the institutionalisation of ill people significantly boosted scientific experimentation by creating readily accessible 'research populations'.[235] Just like their colleagues in neighbouring colonies, doctors in charge of these prison-like segregation camps in the Congo came to consider them not only as a component of the state's public health policy, but also as prime experimental sites for sleeping sickness therapy research. In 1911, the director of Coquilhatville's lazaret, for example, declared that it was 'a very good instrument for studies and research for doctors'.[236]

In addition to issuing decrees that aided the creation of ideal settings for experimentation, the Congo administration also played a more direct role in stimulating and facilitating drug trials to advance therapeutic knowledge and inform medical policy. Faced with an epidemic disease that showed little consideration for colonial borders and a dearth of tropical medicine experience in Belgium, the Free State relied heavily on foreign medical expertise and informal inter-imperial cooperation to tackle the sleeping sickness problem. These cross-border exchanges, and especially the Free State's special relation with the Liverpool School of Tropical Medicine, helped initiate a 'pattern of state-instructed medical inquiry' in the Congo that soon included the issue of sleeping sickness therapy.

To gain a deeper understanding of sleeping sickness aetiology, pathology and epidemiology, researchers from the Liverpool School's Congo expedition had relied heavily on governmental efforts to collect information and specimens for them from territorial and medical staff as well as from missionaries. Even after the expedition had

[232] Tilley, 'Africa as a living laboratory', p. 9; Eckart, 'Colony as laboratory', 70.

[233] Neill, 'Ehrlich's colonial connections', 74-75. Neill, *Networks in Tropical Medicine*, p. 166

[234] Dubois, *Chimiothérapie des trypanosomiases*, p. 6. On Indochina as an 'open field of experimentation' for pharmaceuticals, see Monnais, 'Colonial medicines to global pharmaceuticals', 273.

[235] Ferber, *Bioethics in Historical Perspective*, p. 104.

[236] Commissaire Général Borms, 'Extrait. District de l'Equateur. Rapport annuel', MAEAA, 10.5.1911, MAEAA, Rapports officiels du Congo Belge (RA-CB), 80.3.

left the Congo, Todd continued to do so to advance his scientific agenda.[237] When Liverpool scientists found Atoxyl to be effective in the treatment of trypanosome-infected lab animals, he recommended attempting Atoxyl treatment on human trypanosomiasis cases as part of the School's broader collaboration with the Free State.[238] By early 1906, Brussels shipped samples of the drug to the Congo, and in return requested periodic reports from experimenters to get a sense of its therapeutic value.[239] A similar scenario followed an appeal made by Laveran around the same time to trial his combination therapy of arsenious acid and Trypan Red: metropolitan administrators soon secured a quantity of the synthetic dye and dispatched it to doctors in possession of a microscope to start experimentation in Africa.[240] A circular from the vice-Governor General later that year again instructed lazaret doctors to record and report treatment outcomes with arsenicals, Trypan red and Atoxyl in each patient.[241]

Soon enough, it was Atoxyl that drew most attention, albeit not exactly as a miracle cure for human trypanosomiasis. State doctor Umberto Zerbini, for example, reported that Atoxyl injections improved the general condition of his patients at Boma's hospital for 'blacks' and produced a 'temporary disappearance of trypanosomes' from their blood. In his view, however, this did not mean that they were really cured. Moreover, he signalled that the arsenical did not have any effect in advanced cases of sleeping sickness.[242] In Brussels, military physician Jean Emile Van Campenhout confirmed that Atoxyl alone was not enough to cure victims in the secondary phase.[243] In the summer of 1906, he nevertheless claimed to have devised a course of Atoxyl treatment that solved this problem. Van Campenhout had left for the Congo in 1890, shortly after obtaining his medical diploma from the Free University of Brussels, and spent much of the next ten years there, devoting most of his time to 'various administrative or military tasks'.[244]

[237] For example: J. L. Todd to Governor General, 10.4.1904, MAEAA, GG, 15221 (GG); J. L. Todd to Liebrechts, 13.7.1908, MAEAA, Hygiène, 861.601.

[238] J. L. Todd to Secrétaire Général, 5.4.1906, MAEAA, Hygiène, 847.278.

[239] Secretary of State to Governor General, 26.2.1906, MAEAA, Hygiène, 847.278; Secretary of State to Governor General, 9.1.1906, MAEAA, Hygiène, 847.278.

[240] Secrétaire Général to Commandant Liebrechts, 29.8.1905, MAEAA, Hygiène, 846.277; Secretary of State to Governor General, 17.10.1905, MAEAA, Hygiène, 846.277; Secretary of State to Governor General, 9.1.1906, MAEAA, Hygiène, 847.278; Secretary of State to Governor General, 29.1.1906, MAEAA, Hygiène, 847.278.

[241] Circular from vice-Governor General Lantonnois regarding the creation of lazarets, 24.8.1906, MAEAA, Hygiène 847.279.

[242] Dr Zerbini to Governor General, 5.9.1906, MAEAA, Hygiène, 847.279; Dr Zerbini to Governor General, 7.12.1905, MAEAA, Hygiène, 847.278.

[243] E Van Campenhout to Félix Mesnil, 27.6.1906, Archives de l'Institut Pasteur (AIP), Fonds F. Mesnil, MES.10, Correspondants étrangers. Belgique.

[244] A. Dubois, 'Jean-Emile VAN CAMPENHOUT' dans Académie Royale des Sciences d'Outre-Mer, *Biographie Belge d'Outre-Mer* (Bruxelles, 1968), t. VI, col. 167. Looking back on his colonial career, Van Campenhout admitted that medicine had only been an accessory occupation when he wrote: 'Il est assez délicat pour un médecin ayant résidé à la Colonie à cette période de parler de la vie médicale d'alors. En effet, presque toujours, sauf pendant quelques semaines de mon séjour, au début du mois de juillet 1890 et plus tard pendant une partie de

During a final term starting in May 1899, he was charged with founding and directing a medical laboratory in Leopoldville and began studying sleeping sickness, but military obligations and illness hampered and prematurely ended these efforts.[245] In 1906, he became the first director of the 'Ecole de Médecine Tropicale' (EMT), an educational institution established in Brussels by Leopold II to prepare physicians aspiring to a medical career in the Free State.[246] Affiliated with the School and also directed by Van Campenhout was the 'Villa Coloniale de Watermael', which hospitalised diseased colonial agents.[247] Among the patients that year was a European employee of the Compagnie du Kasai, whom the director claimed to have cured from meningoencephalitic sleeping sickness with a month-long regimen of subcutaneous Atoxyl injections, oral doses of strychnine sulphate (a highly poisonous alkaloid used as a stimulant by clinicians) and cold showers.[248]

Van Campenhout promptly informed the Free State's Interior Department in Brussels about his remarkable therapeutic success, so that practitioners in the Congo could apply the remedy to advanced cases of sleeping sickness.[249] Needing little convincing, the administration quickly distributed the scheme's details to its doctors, along with an invitation to communicate any ensuing treatment results.[250] When the EMT director announced favourable results in a second European patient not long afterwards, new instructions to apply the treatment on African late-stage victims were issued to State doctors, together with a shipment of Atoxyl and strychnine sulphate.[251] Among those reporting back was lazaret doctor Coronisio, who from Kasongo informed the Governor General that four previously lethargic Africans 'almost did not sleep anymore' after just twenty days of Atoxyl-strychnine treatment.[252]

Brussels hardly waited for feedback from the Congo, however, to include Van Campenhout's regimen in official policy. In December 1906, despite the relapse of one of the Watermael cases a month earlier, a new Free State regulation coordinating the measures to control sleeping sickness prescribed Atoxyl injections, combined with strychnine sulphate and showers in advanced cases, for the lazaret treatment of

mon troisième séjour, mes occupations n'étaient pas exclusivement médicales; celles-ci n'étaient souvent qu'accessoires dirais-je.' E. Van Campenhout, Autobiographical note on his colonial career, MAEAA, Hygiène, 4469.940.

[245] Dubois, 'VAN CAMPENHOUT', col. 167.

[246] 'Note au sujet de l'Ecole de Médecine Tropicale', 22.8.1933, MAEAA, Hygiène, 4441.

[247] Dubois, 'VAN CAMPENHOUT', col. 167; R. Baetens, 'Het Prins Leopold Instituut voor tropische geneeskunde te Antwerpen: een overzicht', *Studium* 2 (2009), 119; Neill, *Networks in Tropical Medicine*, p. 25.

[248] E. Van Campenhout to Secrétaire Général, 22.7.1906, MAEAA, Hygiène, 847.279; E. Van Campenhout, 'Traitement de la maladie du sommeil', 22.7.1906, MAEAA, Hygiène, 850.299-300.

[249] E. Van Campenhout to Secrétaire Général, 22.7.1906, MAEAA, Hygiène, 847.279.

[250] Secretary of State to E. Van Campenhout, 25.7.1906, MAEAA, Hygiène, 847.279; vice-Governor General Lantonnois to state doctors, 3.8.1906, MAEAA, Hygiène, 850.299-300.

[251] E. Van Campenhout to Secrétaire Général, 13.9.1906, MAEAA, Hygiène, 847. 279; vice-Governor General Lantonnois to state doctors, 22.9.1906, MAEAA, Hygiène, 850.299-300.

[252] Dr Coronisio to Governor General, 27.11.1906, MAEAA, Hygiène, 847.281.

trypanosome-infected Africans.[253] Van Campenhout would later claim that 'it (was) by the EIC in the first place that (Atoxyl) ha(d) been prescribed on a large scale since the year 1906'.[254] By enabling and stimulating clinicians to trial trypanocidal compounds and especially by adopting mandatory Atoxyl treatment in public health policy, the Free State administration not only helped shape this chemical's application as a sleeping sickness drug, but also aided the early creation of a Congolese market for it.

It soon became clear, however, that some found the EIC's therapeutic decision-making a little premature. Reviewing the new sleeping sickness regulations soon after they were issued, Todd remarked that the prescribed doses of Atoxyl were too large. Moreover, seemingly unconvinced by claims of quick, definitive recoveries, he advocated larger-scale human experimentation to study the long-term effects of Atoxyl, and in particular investigate whether the drug could produce a 'permanent cure' given 'past experience' of relapses.[255] Todd's comments were largely inspired, it seems, by his doubts regarding the standards of drug therapy research supported by the Free State. Having previously expressed some concern that the Congo's doctors were not 'making their observations on the effect of (Atoxyl) carefully and continuously', the Liverpool scientist identified Boma's hospital for Africans as the preferred setting for such research.[256] 'The conditions at Boma (were) extremely favourable', he explained, as it had a 'large' hospital, surrounded by a 'wall' that allowed keeping patients 'in perfect control' during treatment. In addition, apparently cured cases could be 'enrolled as labourers' so that they could be 'kept under constant observation at Boma for long periods'.[257]

As more observations on the effects on Atoxyl therapy surfaced from the Congo in the following months, further doubts were raised about its (longer-term) safety and efficacy. It turned out that several patients had not recovered, but eventually died after treatment with Van Campenhout's regimen. Moreover, there were reports of drug-induced ocular problems, notably impaired vision and even blindness.[258] Such poor therapeutic results certainly did little to increase the popularity of the prison-style isolation centres among the Congolese population. They fuelled perceptions that lazarets were nothing but 'death camps', places 'from which the only exit was the grave'.[259] As Zerbini explained, 'in (the African people's) limited mind, the measure of

[253] E. Van Campenhout to Secrétaire Général, 1.11.1906, MAEAA, Hygiène, 847.280; 'Règlement coordonnant les mesures prises pour enrayer la maladie du sommeil', pp. 238-243.

[254] E. Van Campenhout, 'Note concernant la lettre de Sir A. Jones et annexes', 15.1.1908, MAEAA, Hygiène 847.284.

[255] J. L. Todd to Secrétaire Général Liebrechts, 5.12.1906, MAEAA, Hygiène, 847.280.

[256] J. L. Todd to Secrétaire Général, 5.4.1906, MAEAA, Hygiène, 847.278.

[257] J. L. Todd to Secrétaire Général Liebrechts, 5.12.1906, MAEAA, Hygiène, 847.280.

[258] For example: Dr Errera, 'Complément au rapport sanitaire pour le 2e semestre 1906', 31.1.1907, MAEAA, Hygiène, 847.282; Dr Pierre Polidori, 'Rapport médical', 3.2.1907, MAEAA, Hygiène, 847.282.

[259] M. Lyons, 'From "Death Camps" to cordon sanitaire: the development of sleeping sickness policy in the Uele district of the Belgian Congo, 1903-1914', *Journal of African History* 26 (1985), 81.

being imprisoned in a lazaret mean(t) being condemned to death'.[260] Especially those who had not been infected for a long time generally suffered few clinical symptoms and therefore very much resented being 'interned' and subjected to unfamiliar and potentially dangerous medical procedures. In other colonies as well, ineffective and toxic drug treatments provoked substantial African resistance to sleeping sickness segregation camps.[261]

This situation led some practitioners in the Congo, including Zerbini, to question the ethics of the EIC's lazaret treatment policy. He wondered, for example, whether public health considerations justified the forced confinement and treatment of Africans who, while having been found to carry trypanosomes, did not display clinical symptoms of sleeping sickness and thus were in his view not truly ill yet. As a doctor, he objected to hospitalising and subjecting such individuals against their will to a treatment that did not cure and potentially even harmed them. Significantly, - and contrary to the racialised views of many tropical medicine experts - their being 'black' did not make undermining their 'individual liberty' any more acceptable in his eyes. In sum, as far as early-stage cases were concerned and given the shortcomings of Atoxyl, the risks of mandatory lazaret treatment outweighed the public health benefits for Zerbini.[262]

The Boma hospital doctor was not the only person hesitating to impose Atoxyl treatment on unwilling trypanosome carriers, indicating that even in a colonial African context, the boundaries of what was morally acceptable in the name of epidemic disease control were not a given, but open to debate.[263] It seems that at least to some extent, objections to EIC sleeping sickness policy reflected tensions about the transition from an individualistic, 'liberal medicine' to the 'collective orientation' of 'social' or 'state medicine' in a public health campaign, coinciding with frictions between a reductionist laboratory model of epidemiology and a more holistic clinical medicine.[264] Zerbini was clearly worried about the 'conflicts of interest (...) pitting the health of the individual against the well-being of the population as a whole'.[265] Moreover, for him indigenous patients were more than human trypanosome carriers, and their health status was determined by more than the mere presence or absence of protozoal parasites.[266] In legal circles as well, the issue of Atoxyl therapy appeared to be anything but clear-cut. An

[260] Dr Zerbini to Governor General, 17.10.1907.10.17, MAEAA, Hygiène 847.283.

[261] Neill, *Networks in Tropical Medicine*, p. 129.

[262] Dr Zerbini to Governor General, 17.10.1907, MAEAA, Hygiène, 847.283.

[263] On the notion that 'risk and benefit are not absolutes', but historically contingent categories in medical (research) ethics, see for example *Bioethics in Historical Perspective*, pp. 101-103; V. Roelcke, 'Introduction: historical perspectives on human subjects research during the 20th century, and some implications for present day issues in bioethics' in V. Roelcke and G. Maio (eds.), *Twentieth Century Ethics of Human Subjects Research: Historical Perspectives on Values, Practices and Regulations* (Stuttgart, 2004), pp. 11-18.

[264] Bonah, *L'expérimentation humaine* 2007, p. 59.

[265] Ibid., p. 37.

[266] His namesake Arthur Zerbini, director of the Yakoma lazaret, also displayed 'more holistic' views on sleeping sickness, emphasising, for example, the role of nutrition and socio-economic conditions in preventing infection. See Lyons, *Colonial Disease*, pp. 119-120; Neill, *Networks in Tropical Medicine*, p. 125.

indication of this can be found in the reply of Robert de Meulemeester, director of Justice in Boma, to a medical practitioner's concerns. He defended the Free State government's right in principle - as was the case for metropolitan administrations - to prescribe measures contravening individual freedom, including the compulsory treatment of infected persons with a disease-specific cure, in order to protect public health. The proviso, however, was that medical professionals recognised such measures as 'at least useful'. Moreover, imposing a treatment that invariably exposed all patients to the risk of blindness was another matter, de Meulemeester argued. In that case, patients needed to be informed about the dangers they were exposed to, and give their consent.[267]

While at least some Free State doctors posited that mandatory Atoxyl therapy for all trypanosome-infected Africans was not 'useful' and excessively dangerous, in Brussels its risks and benefits were clearly weighed differently. In the absence of a designated medical department within the Free State's metropolitan administration, EMT director Van Campenhout acted as a close adviser on health-related matters pertaining to the Congo, and in that position carried significant weight in medical decision-making - more so than doctors in the Congo. He argued in favour of continuing the use of Atoxyl, given that the trypanocide had produced the best results yet in the treatment of human trypanosomiasis. Although not denying that the drug could cause blindness, he judged that the risk was much less significant than some feared, in that it only occurred in advanced cases who were beyond curing anyway.[268]

Thus in Van Campenhout's view, Atoxyl's drawbacks were real but not enough to warrant a withdrawal from the EIC's sleeping sickness control measures. Most likely, his opinions were much informed and reinforced by the tropical medicine community in Europe. In June 1907 and early 1908, for example, the EMT director attended the International Conference on Sleeping Sickness in London, where metropolitan experts such as Laveran and Ehrlich insisted on the 'value of Atoxyl treatment and drug therapy research', which of course suited their scientific agenda.[269] Not surprisingly, Van Campenhout advocated a sustained use of Atoxyl, while also encouraging further experimentation on Congolese trypanosomiasis victims to overcome its drawbacks and search for a better alternative. To minimise the risk of blindness, for example, he suggested more dose-ranging research on Atoxyl to establish what dose was least harmful. In addition, he supported research in the hope of finding a truly powerful cure and from the conviction that 'every doctor ha(d) the right to try out every treatment

[267] Director of Justice Demeulemeester, 'Note pour Monsieur le Directeur du Service Médical', 24.10.1907, MAEAA, GG, 15181 (GG).

[268] E. Van Campenhout, 'Note sur la lettre de M. le Gouverneur Général du 2 Novembre N° SP 1798 et annexes', 29.11.1907, MAEAA, Hygiène, 847.283.

[269] Neill, *Networks in Tropical Medicine*, pp. 121-123, 168.

that would seem useful to him'.[270] In a context where medicine was still transitioning from being an 'art' based on clinical observation to a 'science' governed by the laboratory, Van Campenhout presided over a climate of therapeutic investigation in the Congo that was unstructured in the sense that it was open to any physician and almost any remedy - except perhaps for secret panacea.[271] 'Before the real failures of all medicines employed (...) nothing in my opinion stands in the way of trying out the medication', he argued in response to a new empirical remedy proposed in 1910.[272] When deaths followed the administration of experimental treatments, they were often attributed to the fact that the patients in question had been advanced cases.[273]

Under his guidance, the Free State and - by 1908 - Belgian colonial administrators ordered the 'scientific' experimentation of many other purported sleeping sickness drugs and treatment schemes after Atoxyl's incorporation in sleeping sickness policy and the growing recognition of its limitations, thus further instigating doctors to take up more systematic research into trypanosomiasis therapy.[274] Among the substances they wanted to see trialled were not only those recommended by foreign metropolitan experts on the basis of laboratory experiments, such as orpiment and tartar emetic, but also the remedies proposed by clinicians themselves, including doctor Cammermeyer's 'Satoxyl' cure, a 'solution' of Atoxyl, mercury and iodide, or even a missionary's arsenic- and quinine-based therapy.[275] Therefore, no clear distinction was made between rational and empirical remedies, nor did the colonial government - although it tended to favour doctors in possession of a microscope - necessarily discriminate between laboratory-orientated doctors and more clinically-minded practitioners. Therefore, although it supported experiments that in some instances met the emerging scientific standards of the time - trials based on prior laboratory investigations of drug actions and conducted in controlled clinical settings by competent physicians - it would be wrong to regard the

[270] E. Van Campenhout, 'Note sur la lettre de M. le Gouverneur Général du 2 Novembre N° SP 1798 et annexes', 29.11.1907, MAEAA, Hygiène, 847.283.

[271] On medicine's transition from art to science at the turn of the twentieth century, see for example Bonah, *L'experiméntation humaine*, p. 31.

[272] E. Van Campenhout, 'Note concernant le procédé du R.P. Cambier', 3.2.1910.2.3, MAEAA, Hygiène, 848.288.

[273] For example in the case of Satoxyl: Dr Cammermeyer, 'Rapport sur les différents traitements essayés pour combattre la maladie du sommeil', 17.7.1909, MAEAA, Hygiène, 848.287.

[274] For example: Secretary of State to Governor General, 1907.9.7, MAEAA, Hygiène, 847.283.

[275] Dr Grossule, 'Rapport sur les résultats obtenus dans le traitement de la trypanosomiase par la méthode préconisée par le Professeur Laveran', 7.11.1908, MAEAA, Hygiène, 848.285; Minister of Colonies to Governor General, 14.2.1909, MAEAA, Hygiène, 848.285; Dr Cammermeyer, 'Rapport sur le traitement de la maladie du sommeil, pendant l'année 1908, par la méthode: atoxyl-mercure-iodure', 3.2.1909, MAEAA, Hygiène, 848.285; Secretary of State to Governor General, 17.10.1905, MAEAA, Hygiène 846.277; Circular to state doctors from vice-Governor General Lantonnois, 23.8.1909, MAEAA, Hygiène 848.287; Père Cambier to Minister of Colonies, 29.1.1910, MAEAA, Hygiène 848.288; Minister of Colonies Renkin to Governor General, 2.9.1910, MAEAA, GG, 15128 (GG); Minister of Colonies to Père Cambier, 8.12.1909, MAEAA, Hygiène, 848.288.

Congo's administration as an outright champion of what was then considered a 'rational' therapeutics.[276]

3.4 In summary

Before it became a tool of disease prevention, Atoxyl lived through a short career cycle as a sleeping sickness cure in the Congo. The drug's clinical use there cannot simply be explained by its pharmacological effects, however, but should be viewed in light of the growing convergence, since the late nineteenth century, between laboratory science, ethical pharmaceutical industry and western medicine in which colonial Africa partook. The compound was introduced as an experimental drug in the Congo by a metropolitan administration taking advice from Europe's tropical medicine community, and thus creating opportunities for an industrially manufactured laboratory discovery on what was a competitive market for sleeping sickness remedies. Despite a lack of conclusive scientific evidence, however, Brussels quickly imposed its use as part of a compulsory therapeutic regimen with the expectation that it would heal Africans forcibly isolated in sleeping sickness lazarets. Atoxyl almost immediately entered a second phase of growing criticism and disappointment as colonial physicians reported severe adverse reactions and limited curative powers. A context of colonial domination where collective interests were valued over individual African well-being, reductionist approaches over more holistic solutions, and metropolitan views over colonial opinions, in combination with a certain trypanocidal action nevertheless ensured that Atoxyl remained in use in the Congo - despite losing its status as a veritable cure for sleeping sickness, as evidenced by the climate of experimentation to discover a better remedy. How the drug soon started a new career cycle as a tool of disease prevention will be discussed in the next chapter.

[276] Marks, *Progress of Experiment,* pp. 17-41.

Chapter 4
Atoxyl as a tool of sleeping sickness control[277]

The previous chapter discussed how Atoxyl began its life in the Congo as an experimental drug and was quickly pushed as a curative treatment for African lazaret patients by the Free State administration. As the trypanocide's limitations became increasingly apparent and attention shifted to finding a better remedy, it 'disappeared from the spotlight' as a true sleeping sickness cure, although official sleeping sickness policy sustained its use in the Congo.[278] Atoxyl soon made what can be considered a comeback, however, garnering fresh enthusiasm as a different rationale for its application was found. This chapter examines the start of the first phase of this new cycle in the drug's career in the Congo, which involved a redefinition of trypanocide treatment as a 'form of prophylactic (i.e. preventive) action' and saw Atoxyl rise to prominence as a promising tool of sleeping sickness control before the First World War.[279]

The novel twist in Atoxyl's trajectory was once again shaped by interactions between different groups, notably medical scientists, doctors, administrators and African trypanosome carriers, in Belgium and the Congo as well as other metropoles and colonies. It also reflected an interplay between global circulation and local appropriation. Crucial in the process was the role of Belgian laboratory doctors in more closely aligning laboratory science, the ethical pharmaceutical industry and medicine in the Congo. In a bid to advance public health as well as their own professional interests, they sought to promote scientific medicine in the Congo - something they felt the metropolitan administration fell well short of. Their agenda comprised a regulation of the Congolese sleeping sickness remedy market via well-controlled clinical trials, and the organising of sleeping sickness control on a sound scientific basis, rooted in '"modern" (i.e. microbiological) epidemiology' and proper clinical research, but also adapted to local realities, including African resistance to lazarets.[280] Their embeddedness in the transnational tropical medicine community and especially in cross-border networks of chemotherapeutic exchange informed and bolstered their own clinical investigations, which amounted to Atoxyl's appropriation as a locally useful preventive

[277] Parts of this chapter have been published before in Mertens and Lachenal, 'History of "Belgian" tropical medicine'.

[278] Snelders, Kaplan and Pieters, 'On cannabis', 103.

[279] Tousignant, 'Politics of mass therapy', 628.

[280] J. A. Mendelsohn,'From eradication to equilibrium: how epidemics became complex after World War I' in C. Lawrence and G. Weisz (eds.), *Greater than the Parts: Holism in Biomedicine, 1920-1950* (London, 1998), p. 306.

agent. It also helped them and their views gain recognition and consideration from a Belgian colonial administration keen on boosting its reputation by supporting medical reform, a process that was reinforced by the Leopoldville laboratory director's move to the Brussels school of tropical medicine. Further research in Leopoldville pointing to Atoxyl's value as a prophylactic instrument in ambulatory medical practice, and clinicians' struggle to implement other measures of sleeping sickness control ensured increasing support for itinerant treatment with the trypanocide as a strategy of disease prevention by the First World War.

This chapter starts with outlining how the Leopoldville laboratory doctors came to be involved in 'scientific' drug evaluations, and how this informed their opposition to a top-down sleeping sickness policy that overlooked local scientific expertise and medical experience. It then describes how they were able to capitalise on inter-imperial scientific connections to distinguish themselves as the Congo's foremost sleeping sickness drug therapy researchers. As the Belgian doctors started positioning the Leopoldville laboratory as the colony's therapeutic arbiter, the next section shows, they came to play an increasingly important role in shaping local trypanocide trajectories. They began to act as pharmaceutical gatekeepers, influencing which circulating sleeping sickness remedies could be included in the Congo's therapeutic arsenal, and shaping trypanocides, especially Atoxyl, into tools of disease prevention rather than medical cures. Finally, this chapter examines how the Leopoldville laboratory's views on trypanocides and epidemic disease control gained greater influence on and prominence in sleeping sickness policy after the Belgian take-over of the Congo Free State, although they were not yet applied on a large scale before the First World War.

4.1 Opposing metropolitan medical decision-making

As mentioned in the previous chapter, the mandatory, Atoxyl-based lazaret treatment instituted by the EIC authorities met with opposition from at least some clinicians in the Congo who felt uneasy about subjecting reluctant Africans in the early stages of sleeping sickness to a drug treatment, the individual risks of which appeared to outweigh the public health benefits. Among the most vocal opponents of Free State and later Belgian sleeping sickness policy, however, were two laboratory doctors in Leopoldville who were heavily engaged in sleeping sickness drug therapy research. Significantly, they did not so much question the ethics of imposing treatments of little benefit to individual patients as challenge the top-down nature of medical decision-making regarding the Congo. This resulted from an apparent metropolitan failure to recognise the authority

they felt entitled to, as champions of scientific medicine with significant overseas experience, over sleeping sickness matters.

The Leopoldville medical laboratory had been established by Van Campenhout in 1899 at the instigation of the Société Belge d'Etudes Coloniales with mainly private funds.[281] The Société grouped Belgian scientific and other elites with an interest in Leopold's imperial endeavour and showed an early concern for tropical pathology.[282] Whereas the Free State and its medical staff were not specifically or exclusively Belgian in character, the Leopoldville laboratory was clearly conceived to strengthen and showcase Belgian medical science and colonialism, and was as such steeped in nationalistic discourse.[283] Its African location presented great scientific and professional opportunities to Belgian medical elites, especially (Louvain) bacteriologists, who would come to play a dominant role in Belgian tropical medicine.

In 1900, promising young doctor Alphonse Broden was sent to replace Van Campenhout as the laboratory's director. Broden had been working as an assistant of Louvain professor Joseph Denys, one of Belgium's most distinguished bacteriologists and member of the Société's medical subcommittee.[284] Ostensibly eager to refute the idea of Belgian backwardness in the inter-imperial competition to unlock the mystery of sleeping sickness, Broden soon turned to the laboratory study of African trypanosomiasis in Leopoldville.[285] Investigating the possibilities of (biological) sleeping sickness treatment as early as 1903, Broden began to focus more clearly on (chemo)therapy research from 1907 onwards, when Jérôme Rodhain, another former pupil of Denys who had completed a first term as a Free State doctor, joined the laboratory as his assistant.[286] As Rodhain was at the same time appointed director of the 'native' hospital and lazaret of Leopoldville, he could supply ample human 'material' for scientific drug experimentation.[287]

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[281] Général A. Donny, 'Introduction' dans E. Van Campenhout et G. Dryepondt, *Rapport sur les travaux du laboratoire médical de Léopoldville en 1899-1900* (Bruxelles, 1901), pp. vi-ix. However, the Free State and the Belgian government also contributed financially to the laboratory's operation. L. Pierquin, *Historique du laboratoire médical et de l'Institut de médecine tropicale Princesse Astrid à Léopoldville* (Léopoldville, 1958), p. 8.

[282] As evidenced by the establishment of a subcommittee for the study of Congolese diseases. Général A. Donny, 'Introduction', p. viii. See also M. Poncelet, *L'invention des sciences coloniales belges* (Paris, 2008), pp. 69, 76.

[283] An example of this discourse can be found in Général A. Donny, 'Préface' dans A. Broden et J. Rodhain, *Rapport sur les travaux faits au laboratoire de la Société Belge d'Etudes Coloniales, à l'Hôpital des Noirs et au Lazaret pour Trypanosomiés à Léopoldville 1907-1908* (Bruxelles, 1908), pp. vi-vii: 'L'annexion du Congo à la Belgique doit donner au Laboratoire de Léopoldville un renouveau d'activité. Successivement tous les pays qui possèdent des colonies africaines créent et dotent largement des établissements semblables. Notre patrie, où l'humanité comme la science furent toujours en honneur, se doit de continuer à soutenir le sien, de le mettre à même de marcher au premier rang dans la luttre contre les maladies tropicales.'

[284] Général A. Donny, 'Introduction', p. viii.

[285] A. Broden et J. Rodhain, 'La lutte contre la trypanosomiase humaine dans l'État Indépendant du Congo', *Bulletin de la Société Belge d'Etudes Coloniales*, 15 (1908), 393-405.

[286] A. Broden to Governor General, 4.4.1903, MAEAA, Hygiène, 846.275.

[287] Broden et Rodhain, *Rapport sur les travaux faits au laboratoire 1907-1908*, p. 1.

The laboratory's close association with the lazaret in fact allowed the Belgian researchers to promote Leopoldville as an ideal place for well-conducted clinical trials. As many African recruits for the Force Publique, members of the colonial state service and steamer personnel passed through Leopoldville, and measures were put in place to screen these groups for trypanosomiasis, Broden and Rodhain had access to a large pool of trypanosome carriers.[288] Their control over this research population was of course far from absolute, and many trypanosome-infected Africans 'refus(ed) to submit to treatment or hospitalisation' in Leopoldville's lazaret.[289] There were frequent 'desertions', and the close proximity of Bakongo patients' home grounds and of Brazzaville was thought to encourage and facilitate those who wanted to escape.[290] Such responses were hardly surprising in a setting where disease and patients were objectified and experimental drug therapy was meant to advance scientific knowledge rather than help individuals get better.[291] Many suffered severe side effects and intoxication, or even died at the hands of ineffective medicines.[292] Yet despite frequent escapes, sufficient numbers of trypanosome carriers at the Leopoldville lazaret could be kept under observation for long enough to allow the kind of systematic drug experimentation Todd had earlier aspired to in Boma.

The proximity of the laboratory stimulated trials that by contemporary standards could be presented as 'well-controlled' in another way as well.[293] As proponents of laboratory medicine, Broden and Rodhain aimed to raise the scientific standards of drug evaluation in the Congo by only considering treatments recommended by 'observateurs autorisés' (i.e. rational remedies with pre-clinically established effects) and by pursuing a 'methodical experimentation' that included the meticulous recording of developments

[288] J. Rodhain, 'Rapport sur le fonctionnement de l'hôpital des noirs pendant l'année 1908', ITG, FD26; J. Rodhain, 'Lazaret de Léopoldville. Rapport sur le fonctionnement du Lazaret pendant le troisième Trimestre 1908', MAEAA, Hygiène, 844.162; J. Rodhain, 'Station de Léopoldville. Rapport sur le fonctionnement du lazaret pendant le 1er semestre 1908', MAEAA, Hygiène, 844.162.

[289] A. Broden, 'Rapport sur le Fonctionnement du Lazaret pour Trypanosés de Léopoldville durant le 1er Semestre 1910', ITG, Onderzoek, 5.1.1.

[290] In 1909, for example, Alphonse Broden estimated that 10% of patients deserted the Leopoldville lazaret, despite the fact that they reportedly enjoyed 'great freedom' and an 'excellent alimentary regime' there. A. Broden, 'Rapport sur le fonctionnement du Lazaret des trypanosés à Léopoldville durant le 1er semestre 1909', 22.9.1909, MAEAA, Hygiène, 844.162; A. Broden, 'Rapport sur le Fonctionnement du Lazaret pour Trypanosés de Léopoldville durant le 1er Semestre 1910', ITG, Onderzoek, 5.1.1; A. Dubois et R. Mouchet, 'Rapport sur le fonctionnement du lazaret pour trypanosés de Léopoldville pendant l'année 1911', 19.1.1912, MAEAA, RA-CB, 80.3; District Commissioner Moulaert to Governor General, 2.11.1907, MAEAA, Hygiène, 844.162; E. Van Campenhout, 'Résumé du rapport du Docteur Broden', MAEAA, Hygiène, 844.162.

[291] Bonah, *L'expérimentation humaine*, p. 81.

[292] Broden signalled many deaths due to ineffective drugs. For example: A. Broden, 'Rapport sur le Fonctionnement du Lazaret pour Trypanosés de Léopoldville durant le 1er Semestre 1910', ITG, Onderzoek, 5.1.1.

[293] On the 'rhetoric of control' in the history of clinical trials in early twentieth-century Britain, see M. Edwards, *Control and the Therapeutic Trial: Rhetoric and Experimentation in Britain, 1918-1948, Clio Medica 82* (Amsterdam, 2007).

in all cases under scrutiny and the use of laboratory procedures (notably the microscopic analysis of blood, lymph juice and cerebrospinal fluid) to establish (the stage of) subjects' trypanosome infections and assess treatment outcomes. For those reasons the Leo lab's drug trials, Rodhain would later argue, 'constitute(d) models of observation of a rigorous scientific precision'.[294]

The Leopoldville laboratory doctors' 'rational' take on sleeping sickness therapy was behind much of their objections to the Free State's lazaret policy. For them, the issue was not that compulsory isolation and treatment were intrinsically problematic from a moral point of view. In fact, Broden argued that 'according to the Congolese code and recent decrees', one had the right to isolate African trypanosome carriers. Moreover, such measures, he felt, were comparable to those taken in Europe at times of pest or cholera epidemics.[295] However, he and Rodhain judged that the prescribed Atoxyl (and strychnine) regimen was misguided and created practical problems for lazaret doctors that undermined the whole isolation policy. Their research indicated that the administration's assumptions regarding the therapeutic efficacy of Van Campenhout's proposed scheme were unfounded. Strychnine and cold showers had no effect whatsoever on the course of sleeping sickness and constituted 'a useless complication'.[296] Atoxyl could not cure advanced cases interned in lazarets, which consequently continued to suffer high rates of mortality.[297] Furthermore, relapses among victims in the early stages of the disease proved that even they were not as easily susceptible to a (definitive) cure as anticipated, and certainly not after the short course of treatment advocated by the Free State's administrators.[298]

As a result, Brussels' policy of quarantining all infected individuals in lazarets 'in the hope of (curing them) after a treatment of a few weeks or a few months' was 'premature', costly and of little benefit, according to Broden and Rodhain.[299] With cures being difficult and protracted to obtain, patients were only reluctantly confined, and lazarets such as the one in Leopoldville quickly became too small to accommodate all cases from a specified catchment area.[300] Overcrowding worsened conditions that were already poor and increased the state's costs of providing for patients separated from their families, especially since those interned who were previously in state employment

[294] Rodhain quoted in 'In memoriam Prof. Dr A. Broden', *Revue de Thérapeutique 'Meurice'* 10 (1937), ix.

[295] A. Broden to Governor General, 29.10.1907, MAEAA, Hygiène, 847.283.

[296] A. Broden to Governor General, 1907, MAEAA, Hygiène, 847.283.

[297] A. Broden to Governor General, 29.10.1907, MAEAA, Hygiène, 847.283; A. Broden, 'Rapport sur le fonctionnement du lazaret pour trypanosés de Léopoldville durant le 2e semestre 1910', 7.1.1911, MAEAA, Hygiène, 844.162.

[298] A. Broden to Governor General, 1907, MAEAA, Hygiène, 847.283; A. Broden et J. Rodhain, 'La luttre contre la trypanose humaine (maladie du sommeil)', 1909, MAEAA, Hygiène, 4419.602.

[299] A. Broden to Governor General, 1907, MAEAA, Hygiène, 847.283.

[300] A. Broden et J. Rodhain, 'La luttre contre la trypanose humaine (maladie du sommeil)', 1909, MAEAA, Hygiène, 4419.602; J. Rodhain, 'Station de Léopoldville. Rapport sur le fonctionnement du lazaret pendant le 1er Semestre 1908', s.d., MAEAA, Hygiène, 844.162; J. Rodhain to District Commissioner Moulaert, 17.3.1908, MAEAA, Hygiène, 844.162.

did not want to perform lazaret works without receiving a salary.[301] By 1908, Rodhain had come to consider systematic isolation as an impractical measure imposed by administrators in Brussels who failed to appreciate the obstacles encountered by those who had to implement it in Africa.[302]

Moreover, it bothered Broden that the EIC authorities had been led astray by stories of 'so-called recoveries', and ended up decreeing a 'therapeutic method that ha(d) proven incapable of effecting a cure'.[303] The Leopoldville laboratory's relationship with the administration in fact became rather strained, as Broden felt increasingly overlooked in the formulation of colonial medical policy, and especially in the evaluation of drug therapy. The Free State authorities, although they consulted him from time to time on sleeping sickness matters, relied more on the advice of Liverpool and Van Campenhout, and in ordering therapeutic research did not necessarily distinguish between laboratory doctors and clinicians, of whose treatment proposals Broden was typically quite critical.[304] After the Congo became a Belgian colony in 1908, the laboratory fell under the authority of the colonial government and its director was incorporated in the colonial medical staff, but his position did not improve. On the contrary, Broden had to give up some of his scientific autonomy and the absence of a colonial medical hierarchy put him on a par with the rest of medical practitioners in the Belgian Congo.

When Broden and Rodhain criticised the Congo administration's therapeutic decision-making, they therefore did so on scientific grounds (as they aspired to rationalise therapeutic practice in the colony), but also because of their perceived inferior social position and lack of power in the Congo. Broden condemned the Free State's premature and unfounded therapeutic choices, and soon after Belgian annexation complained that Brussels systematically ignored the observations made by the Leopoldville laboratory.[305] He particularly disliked receiving government instructions to test therapeutic agents or treatment schemes that his and Rodhain's research had already discarded.[306] By 1909, Rodhain openly disapproved of the dearth of African medical experience among those making colonial medical policy in Brussels.[307]

[301] This was the case in Leopoldville. District Commissioner Moulaert to Governor General, 18.3.1908, MAEAA, Hygiène, 844.162. See also Neill, *Networks in Tropical Medicine*, p. 140.

[302] J. Rodhain to District Commissioner Moulaert, 17.3.1908, MAEAA, Hygiène, 844.162.

[303] A. Broden to Governor General, 1907, MAEAA, Hygiène, 847.283.

[304] For example: A. Broden to Governor General, 29.10.1907, MAEAA, Hygiène, 847.283; A. Broden to Governor General, 1907, MAEAA, Hygiène, 847.283; A. Broden, 'Le Satoxyl du Docteur Cammermeyer', 23.3.1910, ITG, FD26.

[305] A. Broden to Governor General, 1907, MAEAA, Hygiène, 847.283; A. Broden to Governor General, 7.4.1909, MAEAA, Hygiène, 848.284.

[306] A. Broden, 'Le Satoxyl du Docteur Cammermeyer', 23.3.1910, ITG, FD26.

[307] J. Rodhain, 'Note sur l'organisation du service medical au Congo Belge', 1909, MAEAA, Hygiène, 4419.602.

4.2 The inter-imperial construction of local tropical medicine expertise

The Belgian laboratory doctors' efforts to conduct 'scientific' experiments in Leopoldville, however, helped them forge bonds with sleeping sickness researchers in other colonies and metropoles that inserted the Congo in important cross-border networks of trypanocide development. Crucially, Broden and Rodhain managed to capitalise on these inter-imperial scientific connections to assert themselves as local tropical medicine and sleeping sickness drug therapy experts who were increasingly hard for the Belgian colonial administration to ignore.

The cooperation between medical laboratory and lazaret in Leopoldville prompted admiring gazes from AEF. Immediately across the Congo river, in Brazzaville, a Pasteur Institute had been erected in 1908 as part of a sleeping sickness expedition to the French colony. Doctor Leboeuf, one of the mission members, complained in 1908 that it was hard to follow up Africans undergoing experimental treatment in Brazzaville as long as there was no lazaret attached to the Institute where, like in the Congo Free State, sleeping sickness patients could be forced to reside.[308] The Leopoldville medical scientists nevertheless came to benefit significantly from the close proximity to their French colleagues (who eventually also came to manage a sleeping sickness camp). Soon multiple exchanges started to take place between the adjacent laboratories, through short mutual research visits and the reading of each other's publications. Belgian and French researchers thus compared treatment schemes, trial results and techniques, consulted each other on medical infrastructure and equipment, and stimulated each other's (competing) chemotherapeutic investigations.[309]

A number of factors facilitated these border-crossing medico-scientific interactions. While Broden and Rodhain were committed to strengthening Belgian science, as bacteriologists they were also part of a much wider community of elite laboratory doctors. Moreover, as Deborah Neill has argued, European tropical medicine specialists shared a 'transnational professional identity', largely because the common overseas

[308] Dr Leboeuf to F. Mesnil, 30.9.1908, AIP, Fonds F. Mesnil, MES.3, Leboeuf. Leopoldville's district commissioner Moulaert commented in 1908 that Brazzaville's existing lazaret, which was part of the local medical service, 'only (held) 40 to 50 ill people', was rather basic and 'comprise(d) but a very small part of the natives affected by trypanosomiasis and residing in Brazzaville'. District Commissioner Moulaert to Governor General, 28.10.1908, MAEAA, Hygiène, 848.285.

[309] For example: Dr Leboeuf to F. Mesnil, 11.11.1908, AIP, Fonds F. Mesnil, MES.3, Leboeuf; Dr Leboeuf to F. Mesnil, 2.2.1909, AIP, Fonds Mesnil, MES.3, Leboeuf; G. Martin to F. Mesnil, 19.5.1909, AIP, Fonds F. Mesnil, MES.4, Martin; G. Martin to F. Mesnil, 11.8.1909, AIP, Fonds F. Mesnil, MES.4, Martin; Dr Blanchard to F. Mesnil, 17.6.1913, AIP, Fonds F. Mesnil, MES.6, Blanchard; Dr Heckenroth to F. Mesnil, 25.1.1913, AIP, Fonds F. Mesnil, MES.6, Heckenroth; District Commissioner Moulaert to Governor General, 28.10.1908, MAEAA, Hygiène, 848.285.

experience led them to define identity on the basis of biological rather than national categories and to conceive of their roles in similar ways.[310] Broden and Rodhain's membership of French-speaking socio-cultural elites in Flanders probably increased their cultural affinities with the French doctors in Brazzaville even more. In addition, both laboratories were extremely close to each other and were confronted with the same epidemic in similar ecological conditions.[311] The movements of local populations across the Congo river – sometimes to benefit from or to avoid medical campaigns – also were a clear sign of the need for coordination.

The 'horizontal' connections, moreover, were complemented by 'vertical' Franco-Belgian connections. Paris Pasteurian and trypanosome expert Félix Mesnil, a driving force behind the erection of the Brazzaville Institute, played a significant mediating role. As colonial laboratories, both Brazzaville and Leopoldville depended on the 'intellectual and practical support of colleagues at home', who in turn needed colonial researchers to study the tropics.[312] In the absence of a comprehensive tropical medicine expertise in Belgium, it was Mesnil who acted as a critical scientific soundboard for Broden and Rodhain. They provided him with trypanosome samples and regularly presented their findings on sleeping sickness (therapy).[313] Much of these found their way to the bulletin of the 'Société de Pathologie Exotique', the tropical medicine society founded by Laveran in 1907 for which Mesnil acted as the secretary-general. The latter often sent journal articles by Broden and Rodhain to the researchers in Brazzaville.[314] He controlled much of the medical knowledge production pertaining to both Congos and contributed greatly to the circulation of therapeutic information between France, Leopoldville and Brazzaville. The logic of scientific patronage thus gave an inter-imperial shape to Belgian doctors' connections.

Besides the crucial visits to and from Brazzaville and the correspondence with Mesnil, the Leopoldville laboratory was connected to the international medical community in other ways as well. Broden and Rodhain's furloughs in Europe, for example, were instrumental in building and maintaining scientific contacts across imperial borders. It enabled them to attend international conferences and visit famous medical institutions such as the Paris Pasteur Institute or the 'Institut für Schiffs-und

[310] Neill, 'Transnationalism in the colonies'.

[311] Especially along the Congo river in the 'Chenal' area.

[312] M. A. Osborne, 'A Collaborative dimension of the European empires: Australian and French acclimatization societies and intercolonial scientific co-operation' in R. W. Home and S. G. Kohlstedt (eds.), *International Science and National Scientific Identity: Australia between Britain and America* (Dordrecht, 1991), p. 2.

[313] For example: A. Broden to F. Mesnil, 24.11.1906, AIP, Fonds F. Mesnil, MES.9, Correspondants étrangers. Belgique; A. Broden to F. Mesnil, 7.12.1906, AIP, Fonds F. Mesnil, MES.9, Correspondants étrangers. Belgique; Dr I. Heiberg to F. Mesnil, 9.10.1915, AIP, Fonds F. Mesnil, MES.9, Correspondants étrangers. Belgique.

[314] Dr Leboeuf to F. Mesnil, 2.10.1908, AIP, Fonds F. Mesnil, MES.3, Leboeuf; G. Martin to F. Mesnil, 7.6.1909, AIP, Fonds Mesnil, MES.4, Martin.

Tropenhygiene' in Hamburg.[315] In Congo they were kept informed of scientific developments in metropoles and colonies through specialised medical journals to which they contributed themselves. The Leopoldville laboratory from time to time also welcomed foreign researchers, such as Claus Schilling, a German colonial doctor from Togo who in 1907 undertook chemotherapeutic experiments with Paul Ehrlich's dyestuffs in the Congo Free State.[316]

Importantly, the Leopoldville laboratory was eventually included in what Neill has unearthed as the colonial medical network of Paul Ehrlich, the father of specific chemotherapy.[317] Broden and Rodhain were 'graciously and abundantly' provided with drug samples from Germany, systematically experimented them on Congolese patients and in return reported back to the director of the Frankfurt Institute for Experimental Therapy for publication.[318] Together with their Pasteurian connections, the association with the world-renowned German scientist certainly advanced the laboratory's profile and reputation as a centre for chemotherapeutic sleeping sickness research within the international medical community.[319] In addition, these cross-border exchanges contributed to Broden and Rodhain's recognition as specific chemotherapy experts, and as tropical medicine authorities more generally, by the Congo's colonial administration.

In fact, the laboratory's inter-imperial chemotherapeutic exchanges eventually made it very hard for the colonial government to by-pass Broden and Rodhain's work. Through their interaction with Ehrlich, for example, the Belgian researchers had privileged access to promising new trypanocidal drugs that were not commercially available yet but only handed out to a selection of skilful clinical investigators.[320] Other colonial physicians wanted to experiment with these substances as well, but apparently

[315] A. Broden to F. Mesnil, 7.12.1906, AIP, Fonds F. Mesnil, MES.9, Correspondants étrangers. Belgique; A. Broden to F. Mesnil, 10.3.1913, AIP, Fonds F. Mesnil, MES.9, Correspondants étrangers. Belgique.

[316] C. Schilling to Secrétaire Général, 18.1.1907, MAEAA, Hygiène, 857.367; G. Martin to F. Mesnil, 17.9.1907, AIP, Fonds F. Mesnil, Maladie du sommeil: Correspondance privée. Other examples are the Liverpool School's Congo expedition, which made use of the laboratory facilities in Leopoldville and consulted with Broden, or the head of the Cameroon medical services, Philalethes Kuhn, who toured the French Congo and visited the Brazzaville and Leopoldville installations in 1912 with the aim of organising a similar research centre in the German territory. See 'Expedition Diary – Congo, 4 september 1903- 1 July 1904', Wellcome Library, Archives and Manuscripts, Dutton, Joseph Everett and Todd, John Lancelot papers, Ms. 2262; Brussels, Secrétaire Général to Governor General, 19.8.1903, MAEAA, GG, 15221 (GG); J. L. Dutton to Governor General, 10.4.1904, MAEAA, GG, 15221 (GG); P. Kuhn, 'Die Schlafkrankheit in Kamerun', *Medizinische Klinik* 27 (1914), 1131-1135.

[317] Neill, 'Ehrlich's colonial connections'.

[318] A. Broden, 'Rapport sur le Fonctionnement du Lazaret pour Trypanosés de Léopoldville Durant le 1er Semestre 1910', s.d., ITG, Onderzoek, 5.1.1.

[319] Researchers at the Brazzaville medical laboratory in the French Congo also hoped to advance the reputation of their institute by collaborating with Ehrlich. See Neill, 'Ehrlich's colonial connections', 69.

[320] Such as arsenophenylglycin and arsphenamine.

lacked the scientific credentials and connections to obtain them.[321] The Colonial Ministry was not able to acquire the drugs either, however eager it was to learn of Ehrlich's new chemotherapeutic discoveries.[322] In 1910, the Leopoldville scientists' strategic advantage was more conspicuous than ever when Van Campenhout heard Ehrlich appreciate Broden's results with arsenophenylglycin in Berlin.[323]

Broden and Rodhain thus distinguished themselves from other members of the colonial medical staff through specific chemotherapy and their embeddedness in international medical science. They claimed the leadership of sleeping sickness research in the Congo for their laboratory, and wanted to concentrate the evaluation of new trypanocidal drugs in Leopoldville. After all, Rodhain argued, there was no better place than Leopoldville for the 'systematic experimentation' of sleeping sickness treatments via 'new procedures that one could find in Europe's laboratories'. Other lazaret doctors, he continued, had to focus on sleeping sickness prophylaxis, and asking them all to conduct therapy research would only detract from this goal, bring unnecessary costs and require pointless efforts to try out useless remedies.[324] The Leo lab's drug assessments could generate guidelines for 'routine (sleeping sickness) treatment', in other words, serve to rationalise and standardise therapeutic practice in the colony.[325]

4.3 The Leopoldville laboratory as therapeutic 'arbiter'

Under Broden and Rodhain, the Leopoldville medical laboratory started to position itself as the 'proper arbiter(...) of therapeutic efficacy' in the Belgian Congo.[326] This initiated a

[321] Like doctor Cammermeyer from Boma or doctor Polidori from Katanga. Dr Cammermeyer to Governor General, 10.10.1910, MAEAA, Hygiène, R146.591; Dr Polidori to Governor General, 9.10.1910, MAEAA, Hygiène, R146.591.

[322] Minister of Colonies to Governor General, 18.11.1910, MAEAA, Hygiène, R146.591; Note concerning arsenophenylglycin, 27.2.1909, MAEAA, Hygiène, 848.285.

[323] Van Campenhout was sent to Berlin in 1910 to attend a medical conference and talk to Ehrlich. Minister to Dr Van Campenhout, 30.9.1910, MAEAA, Hygiène, 849.291; Note concerning P. Ehrlich, 19.9.1910, MAEAA, Hygiène, 849.291; E. Van Campenhout, 'Conversation avec le docteur Ehrlich', 1910, MAEAA, Hygiène, 849.291; E. Van Campenhout, '4e Congrès International de l'assistance des aliénés', 1910, MAEAA, Hygiène, 849.291.

[324] J. Rodhain, 'Le service medical à Leopoldville (suite à la note du Dr Broden)', 1909, MAEAA, Hygiène, 4419.602; A. Broden to Minister of Colonies, 25.6.1909, MAEAA, Hygiène, 4419.602.

[325] Broden et Rodhain, *Rapport sur les travaux faits aux laboratoire 1907-1908*, p. 79; A. Broden to Minister of Colonies, 25.6.1909, MAEAA, Hygiène, 4419.602; Broden and Rodhain give an overview of 'les médicaments dont l'efficacité est actuellement reconnue' for sleeping sickness in A. Broden et J. Rodhain, 'La luttre contre la trypanose humaine (maladie du sommeil)', 1909, MAEAA, Hygiène, 4419.602.

[326] Martin Edwards traces the strategies of the Medical Research Council to 'establish itself and its methodologies as the proper arbiters of therapeutic efficacy' in Edwards, *Control and the Therapeutic Trial*, p. 18.

process of social hierarchisation within the colonial medical profession that privileged laboratory physicians as pharmaceutical gatekeepers controlling access to the Congolese market for sleeping sickness medicines. Their work evaluating the many trypanocidal compounds circulating to the colony thus not only contributed to cross-border pharmaceutical development and knowledge production, but was also crucial in shaping local trypanocide trajectories. Assessments of drug safety and efficacy through clinical trials in Leopoldville increasingly determined what sleeping sickness medicines were rejected from or added to the colony's therapeutic arsenal. Broden and Rodhain, in other words, started acting as what Harry Marks has called 'therapeutic reformers', seeking to firmly ground therapeutics in experimental science.[327] They shared an interest in 'rational' therapeutics with metropolitan specific chemotherapy researchers and science-based pharmaceutical companies. Critical of panacea businesses and less scientifically sophisticated practitioners, they wanted to keep sleeping sickness remedies out of general therapeutic practice that had not had their pharmacological effects established in prior laboratory investigations and well-controlled clinical experiments.[328] Moreover, Broden and Rodhain's research helped 'ground' circulating pharmaceuticals and locally adapt and appropriate them as useful tools of disease prevention rather than curative means, which would have a significant impact on sleeping sickness control in the Congo.[329]

Whilst criticising the Free State's lazaret policy, the Leopoldville laboratory doctors were considering alternative strategies of sleeping sickness control. Like the Liverpool scientists, Broden and Rodhain's laboratory perspective on human African trypanosomiasis led them to largely neglect the broader social and natural environment in which the Congo's sleeping sickness epidemic took shape, and focus exclusively on the chain of infection (trypanosome, insect vector and human host) instead. One of the options they suggested was eliminating tsetse flies as a way to curb the progress of sleeping sickness, notably via habitat destruction, because more 'immediate' means of vector control were not deemed available.[330] Their involvement in specific chemotherapy research, however, brought them to particularly emphasise the targeting

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By 1910, the findings of the Leopoldville laboratory were being distributed to other state doctors at the instigation of the administration in Brussels, and Broden was increasingly consulted on trypanocide therapy by the colonial authorities. See for example, Minister of Colonies to Governor General, 7.4.1910, MAEAA, Hygiène, 848.289; vice-Governor General Fuchs to Minister of Colonies, 24.6.1910, MAEAA, Hygiène, 849.290.

[327] Marks, *Progress of Experiment*, p. 2.

[328] For example: A. Broden, 'Note concernant "Anti-hématurie tea"', 10.9.1913, MAEAA, Hygiène, R147.597; A. Broden to Governor General, 29.4.1909, MAEAA, Hygiène, 830.39.

[329] On the local 'grounding' of globally circulating 'objects, skills, ideas, and practices' of knowledge, see K. Raj, *Relocating Modern Science. Circulation and the Construction of Knowledge in South Asia and Europe, 1650-1900* (Basingstoke, 2007), p. 21. Similarly, Lisa Roberts discusses 'local settings' as 'contexts of local appropriation and adaptation' in a 'circulatory process of knowledge production'. L. Roberts, 'Situating Science in Global History. Local Exchanges and Networks of Circulation', *Itinerario* 33 (2009), 24.

[330] A. Broden et J. Rodhain, 'La luttre contre la trypanose humaine (maladie du sommeil)', 1909, MAEAA, Hygiène, 4419.602.

of the trypanosome factor, and this in a way that promoted an explicitly pharmaceutical approach to infectious disease control.

Broden and Rodhain's assessment of Atoxyl was key in this respect. As stated previously, they played a key role in dampening the authorities' initial enthusiasm regarding the drug. Broden had initiated experimental treatment with Atoxyl in 1905, when he administered it to a missionary with encouraging results.[331] The arrival of Rodhain in 1907 enabled him to proceed with larger-scale trials on African trypanosome carriers and establish the safety and efficacy of Atoxyl by monitoring their clinical symptoms, and especially by microscopically examining their bodily fluids, notably the cerebrospinal fluid. Although the Leo lab doctors had no fixed protocol for their therapeutic trials in terms of e.g. sample sizes, duration, or the selection of experimental subjects, they carefully observed and compared the untoward effects and trypanocidal action (i.c. the speed and duration of trypanosome elimination) of varying doses of the drug, administered either hypodermically, intravenously or orally to early and advanced trypanosomiasis cases at the Leopoldville lazaret. They concluded that hypodermic injections of 0,5g doses of Atoxyl worked best to clear the peripheral blood flow of trypanosomes, but that the compound was not a miracle cure or 'heroic remedy'. A 'long-haul treatment' of repeated doses was a requirement for, but no absolute guarantee of a 'definitive sterilisation'. Moreover, Atoxyl frequently proved toxic, causing blindness and paralysis of the lower limbs, especially in patients in the advanced stages of the disease, and there was no hope whatsoever of curing the latter.[332]

Significantly, despite the compound's obvious shortcomings as a sleeping sickness cure, Broden and Rodhain did not discard it, but instead redefined Atoxyl treatment as a 'form of prophylactic action'.[333] Because of its trypanosome-killing properties, the drug could be part, they argued, of a practitioner's 'routine treatment, which, if it (did) not allow him to obtain the cure of the largest number of his patients, nevertheless (made) him succeed in the disinfection of all his trypanosome-carrying subjects'.[334] What they in fact proposed was targeting human trypanosome 'reservoirs' with an 'appropriate (drug) treatment' as a strategy of sleeping sickness control. Their aim was to 'disinfect' or 'sterilis(e)' victims, i.e. clear their peripheral blood flow of trypanosomes in as durable a way as possible, so as to eliminate them as sources of contamination for tsetse flies and thus 'contain(...) disease at the population level without concern for individual

[331] A. Broden, *Rapport sur les travaux du laboratoire médical de Léopoldville de 1900 à 1905* (Bruxelles, 1906), p. 139.

[332] Broden et Rodhain, *Rapport sur les travaux faits au laboratoire 1907-1908*, pp. 30, 46, 69, 80-81; A. Broden et J. Rodhain, 'La lutte contre la trypanosomiase humaine dans l'Etat Indépendant du Congo', *Bulletin de la Société d'Etudes Coloniales* 15 (1908), 403; A. Broden to Governor General, 29.10.1907, MAEAA, Hygiène, 847.283; A. Broden, 'La thérapeutique des trypanoses humaines et animales', *Bulletin de la Société Royale des Sciences Médicales et Naturelles de Bruxelles* 2-3 (1923), 34.

[333] Tousignant, 'Politics of mass therapy', 628.

[334] Broden et Rodhain, *Rapport sur les travaux faits au laboratoire 1907-1908*, p. 79.

prognosis'.[335] This was in line with the preventive use of Atoxyl advocated in the London sleeping sickness conference's policy recommendations drawn up under Laveran's direction.[336]

Broden and Rodhain's role in giving Atoxyl treatment a prophylactic or preventive rather than curative rationale reflected their 'participat(ion) in the racialisation of medical discourse', a flip side to their membership of the European tropical medicine community at the time.[337] The collectivisation and construction of Africans as 'virus reservoirs' and thus as sources of infection - whereas European cases were perceived as individual victims - gave rise to the 'ethical variability' that characterised much of the research and public health practices regarding sleeping sickness in the Congo as well as other African colonies.[338] As far as Africans were concerned, the collective goal of preventing further infection was more important than producing a cure in individual sufferers. (Experimental) drug treatments were also administered to infected Europeans, but the latter were approached as individuals in need of a cure rather than as public health hazards, and were asked to give their consent.[339]

Turning pharmaceuticals into tools of infectious disease control - at least as far as indigenous people were concerned - not only implied a shift in therapeutic rationale, but also entailed that trypanocide treatment could be taken outside of its traditional lazaret context. In line with the notion of prophylactic treatment, Broden and Rodhain advocated abandoning the 'systematic isolation' of all infected individuals in favour of a more open regime: rather than prisons, lazarets were to become open 'villages' where advanced, disabled sleeping sickness patients were hospitalised in the company of their kin. Early cases could undergo outpatient, 'sterilising' treatment; there was no reason to keep them confined against their will.[340]

In addition to Atoxyl, Broden and Rodhain also had the opportunity to experiment many other potential trypanocides at the request of the colonial administration and

[335] A. Broden et J. Rodhain, 'La luttre contre la trypanose humaine (maladie du sommeil)', 1909, MAEAA, Hygiène, 4419.602; Tousignant, 'Politics of mass therapy', 631.

[336] Neill, *Networks of Tropical Medicine*, p. 121.

[337] Ibid., pp. 4-5.

[338] On Africans as 'foyers d'infection' and 'réservoir de virus', see for example: A. Broden to Governor General, 1907, MAEAA, Hygiène, 847.283; R. Mouchet and A. Dubois, Annual Report of the Leopoldville lazaret, 10.1.1913, ITG, FD34. On 'ethical variability' in the context of clinical trials, see A. Petryna, 'Ethical variability: Drug development and globalizing clinical trials', *American Ethnologist* 32 (2005), 183-197. Also, M. Lock and V.-K. Nguyen, *An Anthropology of Biomedicine* (Chichester, 2010), pp. 188-192. On the 'distinctive calculus of therapeutic risk in collective as opposed to individual medicine' in sleeping sickness control efforts in French colonial Africa, see Tousignant, 'Politics of mass therapy', 633.

[339] For example: J. Rodhain, 'Rapport sur la maladie et les derniers moments du Révérend Père Meyers de la Mission de Lulonga', 9.9.1910, MAEAA, Hygiène, 857.368.

[340] J. Rodhain, 'Station de Léopoldville. Rapport sur le fonctionnement du lazaret pendant le 1er Semestre 1908', MAEAA, Hygiène, 844.162; A. Broden, 'Organisation des Lazarets pour Trypanosés', 25.6.1909, MAEAA, Hygiène, 4419.602; Lyons, *Colonial Disease*, pp. 125-126.

metropolitan scientists like Ehrlich, as well as of their own accord.[341] They conducted trials on smaller or larger numbers of African trypanosome carriers with, among other things, synthetic dyes, antimony compounds, familiar medicinal substances like mercury, strychnine and orpiment, other synthetic organic arsenic compounds such as acetylatoxyl, arsenophenylglycin and arsphenamine, and various combinations of the above (including some with Atoxyl).[342] The guiding principle in the laboratory doctors' endeavour was the search for 'the best treatment suitable for African practice'.[343] It meant that new remedies were consistently compared with Atoxyl therapy not only as far as toxicity and trypanocidal action were concerned, but also in terms of their practicality in the local context of prophylactic sleeping sickness treatment, where trypanocides might have to be administered by injectors with varying degrees of medical training. In 1907, for example, Broden declared that his and Rodhain's research focused on finding a 'gentle treatment that could be applied by any agent not initiated in the art of medicine'.[344] Their therapeutic comparisons, which were made post hoc rather than incorporated into the actual trial designs, generally found that Atoxyl was the best option available to 'every intelligent and prudent man' to at least disinfect as many trypanosome carriers for as long as possible, even if it was a far cry from Ehrlich's ideal of a '*therapia sterilisans magna*' producing a 'definitive sterilisation' with a single dose.[345]

Many potential remedies tested by Broden and Rodhain, such as orpiment, arsenophenylglycin and most synthetic dyes, were eventually rejected on the basis of inferior safety or efficacy results, a fact that highlighted the difficulties of translating experimental results in laboratory animals to human therapy.[346] Others, including arsphenamine, proved to have a trypanocidal and toxic action not worse or dissimilar to that of Atoxyl, but presented disadvantages or at least no clear practical benefits for routine sleeping sickness treatment, for example because they were not cheaper, not easier to administer, or needlessly complicated treatment.[347] Yet the Leopoldville trials

[341] Broden et Rodhain, *Rapport sur les travaux faits au laboratoire 1907-1908*, pp. 71, 77; A. Broden et J. Rodhain, 'L'arsénophénylglycine et son succédané dans les trypanoses humaine et animales', *Annales de la Société Belge de Médecine Tropicale* 1 (1920), 71-124.

[342] Broden et Rodhain, *Rapport sur les travaux faits au laboratoire 1907-1908*; Broden et Rodhain, 'L'arsénophénylglycine et son succédané'; Broden, 'La thérapeutique des trypanoses humaines'; A. Broden, 'Rapport sur le Fonctionnement du Lazaret pour Trypanosés de Léopoldville durant le 1er Semestre 1910', ITG, Onderzoek, 5.1.1; J. Rodhain, 'Rapport sur le fonctionnement du Lazaret de Léopoldville pendant le 4me Trimestre 1908', 1909, MAEAA, Hygiène, 844.162.

[343] Broden et Rodhain, *Rapport sur les travaux faits au laboratoire 1907-1908*, p. 79.

[344] A. Broden to Governor General, 1907, MAEAA, Hygiène, 847.283.

[345] Broden et Rodhain, *Rapport sur les travaux faits au laboratoire 1907-1908*, pp. 79-80; Broden, 'La thérapeutique des trypanoses humaines', 36.

[346] Broden, 'La thérapeutique des trypanoses humaines', 33-34, 38; Broden et Rodhain, 'L'arsénophénylglycine et son succédané', 121-122.

[347] Broden et Rodhain, *Rapport sur les travaux faits au laboratoire 1907-1908*, pp. 79-80; Van Hoof, 'Thérapeutique de la maladie du sommeil, 106; Broden, 'La thérapeutique des trypanoses humaines', 34, 39; A. Broden, 'Rapport

also yielded some additions to the Congo's trypanocidal arsenal. Soamin, the British firm Burroughs Wellcome & Co.'s closely related version of Atoxyl, was accepted as a cheaper substitution for the German-manufactured drug, and acetylatoxyl (marketed by Hoechst as Arsacetin) was initially also seen as a possible, more economical alternative for Atoxyl.[348] In addition, Broden and Rodhain introduced the antimony compound tartar emetic to human sleeping sickness therapy: they found the trypanocide a useful complement of Atoxyl, with the combination proving to be the 'most energetic routine treatment of human trypanosomiasis'. Or, used alone, tartar emetic was considered a cheap prophylactic for advanced cases of human trypanosomiasis who could not be cured anyway.[349]

4.4 Policy reforms and the pharmaceuticalisation of sleeping sickness control

By 1910, Broden and Rodhain's views regarding the prophylactic potential of trypanocides contributed significantly to sleeping sickness policy reforms introduced in the wake of continued problems with the Congo's lazarets, in particular African resistance to the system. Lyons has described how serious riots at the Ibembo lazaret in Uele between 1909 and 1910 notably helped trigger reform.[350] In 1910 the closed lazaret

sur le fonctionnement du lazaret pour trypanosés de Léopoldville durant le 2e Semestre 1910', 7.1.1911, MAEAA, Hygiène, 844.162; A. Broden to Governor General, 7.4.1909, MAEAA, Hygiène, 848.284; A. Broden, 'Rapport sur le Fonctionnement du Lazaret pour Trypanosés de Léopoldville durant le 1er Semestre 1910', ITG, Onderzoek, 5.1.1. In 1923, Rodhain explained that (neo)arsphenamine was too expensive for generalised use in the treatment of sleeping sickness. See J. Rodhain, 'Lettre-circulaire Considérations pratiques sur la prophylaxie de la maladie du sommeil', 20.11.1923, ITG, Onderzoek, 5.2.7.

[348] A. Broden, 'Rapport sur le Fonctionnement du Lazaret pour trypanosés de Léopoldville durant le 2me Semestre 1909', 6.1.1910, MAEAA, Hygiène, 844.162; A. Broden, 'Rapport sur le fonctionnement du Lazaret des trypanosés à Léopoldville durant le 1er Semestre 1909', 22.9.1909, MAEAA, Hygiène, 844.162; vice-Governor General Fuchs, Circular to doctors of the colony, 7.5.1910, MAEAA, GG, 16834 (GG); A. Broden, 'Rapport sur le fonctionnement du lazaret pour trypanosés de Léopoldville durant le 2e Semestre 1910, 7.1.1911, MAEAA, Hygiène, 844.162. Broden later found Arsacetin to have 'greater inconveniences' than Atoxyl, however. See Broden, 'La thérapeutique des trypanoses humaines', 34.

[349] A. Broden, 'Rapport sur le Fonctionnement du Lazaret pour trypanosés de Léopoldville durant le 2me Semestre 1909', 6.1.1910, MAEAA, Hygiène, 844.162; J. Rodhain, 'Rapport sur le fonctionnement du Lazaret de Léopoldville pendant le 4me Trimestre 1908', 1909, MAEAA, Hygiène, 844.162; vice-Governor General Fuchs to Minister of Colonies, 24.6.1910.6.24, MAEAA, Hygiène, 849.290.

[350] Lyons, *Colonial Disease*, 120-122. Former Tanganyika lazaret doctor Jacques Schwetz remarked that it was the forcible confinement of African trypanosome carriers who were in a good clinical condition that provoked 'a veritable distrust among the blacks'. J. Schwetz, *L'évolution de la médecine au Congo Belge* (Bruxelles, 1946), p. 90.

system was finally turned into a more open regime to reduce overcrowding and maintenance costs, and accommodate persisting indigenous objections.[351] As a result, the total isolation of both early and advanced cases in prison-like institutions to reduce the risk of infection was replaced with a policy of inpatient treatment for secondary-stage cases, often disabled and incurable, in village-style lazarets where they lived with their kin, and outpatient treatment for victims in the early stages who were still physically capable of work.[352] In addition, mission societies and private companies were expected - in return for free medic(in)al supplies and on the condition of following a theoretical and practical tropical medicine course - to cooperate in the fight against sleeping sickness by providing treatment in such restyled lazarets, something Rodhain had advocated in 1909.[353]

These reforms fit within what Neill has described as a broader shift in sleeping sickness control strategies in African territories, roughly between 1908 and 1914, in response to local circumstances, 'intercolonial contacts' and the 'broader influence of the transnational (tropical medicine) community'. In British Uganda and German East Africa, for example, attention increasingly shifted away from segregation camps to alternative strategies of curbing sleeping sickness, notably vector control and the relocation of populations to less tsetse-infested areas.[354] The policy reforms in the Belgian Congo promoted similar measures as they took into account the suggestions of local doctors and other colonial powers. In 1910, for example, German colonial officials were urging Brussels to leave the Free State's isolation strategy behind and replicate German East Africa's more effective fly habitat destruction efforts on the Congolese side of the border.[355] It contributed to new sleeping sickness regulations and instructions that, while still emphasising the control of African mobility via the introduction of a medical passport system and the 'standardisation of observation posts', also increasingly

[351] Minister of Colonies to Governor General, 30.6.1911, MAEAA, Hygiène, 842.142; Minister of Colonies Renkin to Governor General, 17.1.1910, MAEAA, GG, 16862 (GG). Creating lazaret-villages and instituting outpatient and ambulatory treatment was expected to appease the indigenous population while reducing hospitalisation costs.

[352] 'Note. Mesures complémentaires prises en 1910, pour enrayer le développement de la maladie du sommeil', 10.6.1910, MAEAA, Hygiène, 850, 299-300; Lyons, *Colonial Disease*, pp. 125-126.

[353] Minister of Colonies Renkin to Governor General, s.d., MAEAA, Hygiène, 848.288; J. Rodhain, 'Rôle et organisation des lazarets pour trypanosés. Suite à la note du Docteur Broden', 1909, MAEAA, Hygiène, 4419.602; 'Ordonnance d'administration générale du 8 Septembre 1910, n° 47/5, mettant en vigueur le nouveau règlement coordonnant les mesures prises pour enrayer la maladie du sommeil et comminant (sic) des peines contre les contrevenants au dit règlements' dans Congo belge. Gouvernement local, *Recueil mensuel des ordonnances, circulaires, instructions et ordres de service* (Boma, 1910), pp. 304-305; Lyons, *Colonial Disease*, p. 129.

[354] Neill, *Networks in Tropical Medicine*, pp. 124-135, 163.

[355] Letter from Dr Steudel, 20.6.1910, MAEAA, Hygiène, 849.290; E. Van Campenhout, 'Congrès colonial allemand', 13.10.1910, MAEAA, Hygiène, 849.291.

introduced measures to separate humans from fly vectors such as ordering brush clearing and the regrouping and relocating of indigenous communities.[356]

As Lyons has suggested, the 1910 sleeping sickness policy reforms in the Belgian Congo were also 'linked to the wider changes occurring in the administration of the new colony'. On the one hand, the Belgian government sought to shake off the Leopoldian past by cultivating a 'more humane' reputation.[357] Abandoning the Free State's harsh lazaret regime was one way to achieve this goal, as were the concurrent initiatives taken to showcase a 'growing preoccupation with colonial health and medicine' as doctors were seen as 'represent(ing) a "friendlier" colonialism'.[358] In this context, colonial Minister Jules Renkin expressed commitment to fight sleeping sickness 'more energetically than in the past'.[359] Tellingly, in 1910 he sent Rodhain on an expedition to Katanga to study trypanosomiasis and possible control strategies as he saw fit.[360] Moreover, during Renkin's mandate the beginnings of a (highly centralised) colonial medical service took shape, with the establishment of a dedicated medical department in Brussels in 1910.[361] Van Campenhout, who in 1909 had been calling for the creation of a 'bureau' within the Colonial Ministry that would be competent for medicine and public health, and collect and process all relevant reports from Africa, became its first head.[362] Royal decrees in 1910 also officially established the Brussels School of Tropical Medicine, making its diploma a requirement for practicing medicine in the colony.[363]

On the other hand, the Belgians were at the same time trying to expand and consolidate state power in their colony. In 1910, they were in the process of re-ordering and re-organising the Congo's peoples in territorial-administrative units called 'chefferies' and 'sous-chefferies', to which they appointed official African leaders called 'chefs médaillés'.[364] Apart from the Belgian administration's desire to improve its image, the new sleeping sickness measures were therefore also adopted because they were convenient from a political-economic point of view. For example, the introduction of 'mandatory medical passports' helped control African mobility, whereas 'agglomerat(ing)'dispersed groups of Africans and relocating them to more favourable

[356] Lyons, *Colonial Disease*, pp. 126-128, 134; 'Ordonnance d'administration générale du 8 Septembre 1910', pp. 294-306.

[357] Lyons, *Colonial Disease*, pp. 125-126, 136.

[358] Neill, *Networks in Tropical Medicine*, pp. 18; 42.

[359] Minister of Colonies Renkin to Governor General, s.d., MAEAA, Hygiène, 848.288.

[360] 'Note concernant la mission scientifique confiée au Docteur Rodhain', 1910, MAEAA, Hygiène, 858.370.

[361] Lyons, *Colonial Disease*, p. 122.

[362] E. Van Campenhout, 'Note concernant les rapports médicaux annuels', 3.4.1909, MAEAA, Hygiène, 848.285; Notes concerning the printing of doctors' research results, 16.3.1909 and 18.3.1909, MAEAA, Hygiène, 848.285.; Lyons, *Colonial Disease*, p. 160.

[363] Trolli, Van Hove et Marquet, 'Exposé de la législation sanitaire', p. 570.

[364] Lyons, *Colonial Disease*, pp. 164-165.

sites in the name of epidemic disease control also facilitated administration and evangelisation.[365]

Within the range of new measures, however, it was Atoxyl-based sleeping sickness control in particular that would rise to ever-greater prominence by the First World War through a number of intertwined events and developments. These were related to the evolution of drug therapy research in Leopoldville, Broden's growing influence on metropolitan decision-making, and colonial doctors' struggles to implement many public health measures.

One of the consequences of Minister Renkin's initiatives to step up the fight against sleeping sickness was the termination of Rodhain's drug evaluation role in Leopoldville. By the end of 1910, his collaborative chemotherapy research with Broden was disrupted when the colonial government sent him on a scientific mission to Katanga to study tropical diseases, in particular human and animal trypanosomiasis.[366] By way of compensation, two young Belgian physicians were subsequently appointed to join the laboratory: Albert Dubois and René Mouchet.[367] Like Broden and Rodhain, Dubois had studied medicine in Louvain and trained in bacteriology at Joseph Denys' lab. Mouchet, on the other hand, was a Liège University alumnus and former assistant of the anatomical pathologist Charles Firket, who not only taught 'pathologie exotique' in Liège and at the EMT, but was one of the founders of the Brussels School and, like Denys, a member of the medical subcommittee of the 'Société Belge d'Etudes Coloniales'.[368] In the end, Broden himself did not benefit much from the assistance provided by these extra hands, as illness forced him to retire prematurely from the Congo in 1911.[369]

The name he had made for himself in Leopoldville, however, first secured him a faculty position at the Brussels School of Tropical Medicine, and soon afterwards the directorship of the educational institution.[370] In this capacity, Broden was able to pursue his efforts to rationalise sleeping sickness therapeutics and advocate the Leopoldville laboratory's clinical trial monopoly. His move to Belgium signalled an important shift in the locus of sleeping sickness expertise from colony to metropole. It helped root colonial

[365] Lyons, *Colonial Disease*, pp. 126-129, 134-135.

[366] 'Note concernant la mission scientifique confiée au Docteur Rodhain', 1910, MAEAA, Hygiène 858.370; Minister of Colonies to Governor General, 29.7.1910, MAEAA, Hygiène, 858.371; 'In memoriam Prof. Dr A. Broden', p. iv.

[367] 'In memoriam Prof. Dr A. Broden', p. iv; A. Broden, 'Note sur la situation actuelle au Laboratoire de Léopoldville', 18.8.1911, ITG, FD26.

[368] A. Broden, 'Note sur la situation actuelle au Laboratoire de Léopoldville', 18.8.1911, ITG, FD26; Biographic note on Dr Walraevens and Dr Mouchet, MAEAA, Hygiène, 4448.778; 'Commission chargée d'étudier l'organisation d'un Institut ou Ecole de médecine et hygiène exotiques. Rapport de la sous-commission.', 1909, MAEAA, Hygiène, 4450.796; 'Note au sujet de l'Ecole de Médecine Tropicale', 22.8.1933, MAEAA, Hygiène, 4441; J. B. Jadin, 'Albert Louis Marie DUBOIS' dans Académie Royale des Sciences d'Outre-Mer, *Biographie Belge d'Outre-Mer* (Bruxelles, 1989), t.VII-C, col. 120; Donny, 'Introduction', p. viii.

[369] 'In memoriam Prof. Dr A. Broden', p. v; 'Note biographique sur le Dr Broden', MAEAA, Hygiène, 4444.731.

[370] Director General (4e DG) to 2e DG, 6.2.1912, MAEAA, Hygiène, 4444.731 ; 'Note biographique sur le Dr Broden', MAEAA, Hygiène, 4444.731.

medical decision-making more firmly in laboratory medicine, as Broden could take advantage in Brussels of the School's close association with the Colonial Ministry and its medical department to exert greater influence over colonial medical research, policy and practice. This helped spread his and the Leopoldville laboratory's views on trypanocides. Moreover, the EMT director capitalised on his position to manage therapeutic access to the Congo by seeking to oversee what drugs and treatments were sent to the colony, and to whom, for testing.[371]

In fact, not long before Broden's arrival in Brussels, Van Campenhout had already taken some first steps towards pharmaceutical gatekeeping in Brussels by raising concerns about the advertising practices of the drug trade. In 1910, for example, he complained about 'inventors' who frequently sent him and the Ministry all sorts of supposedly 'heroic' medicines that were generally not effective and not worth sending to the colony for experimentation.[372] As the new head of the EMT, Broden would take over and further develop this role. He soon started advising the Ministry on colonial doctors' requests for medicinal substances, as well as drug developers' pharmaceutical promotions and appeals for therapeutic trials.[373] Moreover, he tried to restrict the circulation of new experimental drugs among colonial practitioners and secure the Leopoldville laboratory's position as the proper channel for clinical testing, by repeating Rodhain's earlier hints that only the Congo's laboratory doctors had the right qualifications and capacities to conduct 'serious trials'.[374]

Meanwhile, back in Leopoldville, chemotherapeutic investigations into human trypanosomiasis were continued by Mouchet and Dubois, who had been left in charge after Broden's departure.[375] They not only experimented in the well-controlled setting of the lab cum lazaret, however. In 1911, to ease the burden on the Leopoldville lazaret, they also started examining the prophylactic effects of Ehrlich's arsenicals arsenophenylglycin and Salvarsan administered to African workers on the spot during several 'sanitary tours' of riverine posts in the district.[376] This had the distinct

[371] A. Broden, 'Note concernant "Anti-hématurie tea"', 10.9.1913, MAEAA, Hygiène, R147.597; A. Broden to 2e DG, 29.10.1913, MAEAA, Hygiène, R147.598; Chef de division (2e DG),'Remarques concernant la note de M. le docteur Broden du 14 janvier, relative aux réquisitions médicales', 21.3.1914, MAEAA, Hygiène, R147.599.

[372] E. Van Campenhout, 'Note concernant l'envoi proposé d'Asporozoïne pour expérimentation au Congo', 26.10.1910, MAEAA, Hygiène, R146.591.

[373] For example: Note from Chef de Division délégué (5e DG) 27.7.1912, ITG, Onderzoek, 5.2.2; A. Broden to 2e DG, 1912.12.3, MAEAA, Hygiène, R147.596; Director General (2e DG) to Minister of Colonies' cabinet, 30.12.1913, MAEAA, Hygiène, 4403.297; A. Broden, 'Note concernant "Anti-hématurie tea"', 10.9.1913, MAEAA, Hygiène, R147.597; A. Broden to 2e DG, 29.10.1913, MAEAA, Hygiène, R147.598.

[374] A. Broden to 2e DG, 3.12.1912, ITG, FD11.

[375] A. Broden, 'Note sur la situation actuelle au Laboratoire de Léopoldville', 18.8.1911, ITG, FD26; Dr Mouchet et Dr Dubois, 'Rapport sur le fonctionnement du lazaret pour trypanosés de Léopoldville pendant l'année 1912', 1.1913, MAEAA, RA-CB, 80.4; R. Mouchet et A. Dubois, 'Essais thérapeutiques dans la trypanosomiase humaine', *Beihefte zum Archiv für Schiffs und Tropenhygiene* 18 (1914), 83-116.

[376] Dr Mouchet et Dr Dubois, 'Rapport sur le fonctionnement du lazaret pour trypanosés de Léopoldville pendant l'année 1912', 1.1913, MAEAA, RA-CB, 80.4; A. Dubois to Chef du service médical de Léopoldville

advantage, Dubois argued, of allowing the individuals in question to continue labouring, so that they would not have to sit idly in a lazaret, where the state would have to provide for them.[377] Although Mouchet and Dubois tested fewer new trypanocides overall than their predecessors, their tours were highly significant in that they involved administering trypanocides in what can be viewed as a sort of field trials. They examined the drugs' effectiveness in preventing disease outside of controlled lazaret or hospital environments, and thus played a crucial role in shaping pharmaceuticals into prophylactic instruments for ambulatory use.[378]

Obstacles in reaching early sleeping sickness victims in the wake of the sleeping sickness policy reforms made other lazaret doctors resort to ambulatory treatment as well. This category of patients was expected to show up at set dates and times to undergo regular treatment, but directors soon found that this could be quite hard to enforce.[379] As doctor Errera from the Aba lazaret complained: 'one cannot trust the punctuality of external patients at doctors' appointments'.[380] In 1911, doctor Emile Lejeune of the Kiambi lazaret in Katanga instituted a system to reach as many 'natives' as possible. He introduced the systematic surveying of a given region's indigenous population to detect infected individuals, and their ambulatory treatment by Congolese nurses.[381] Some local authorities supported this practice, which was also adopted in other colonies.[382] For example, in the wake of Dubois and Mouchet's experiences, Leopoldville's General Commissioner Georges Moulaert invoked the example of 'indigenous medical assistance' in AEF to argue for the general adoption of ambulatory treatment in the Congo.[383]

As far as the sleeping sickness control measures besides prophylactic treatment were concerned, local doctors in the Congo faced even greater obstacles. Despite the inclusion of sanctions for those neglecting regulations and greater powers for physicians to enforce them, their implementation often proved problematic.[384] Doctors remarked that neither Africans nor territorial authorities were much inclined to observe prescribed

Houssiau, 18.12.1911, MAEAA, RA-CB, 80.3; A. Dubois et R. Mouchet, 'Rapport sur le fonctionnement du lazaret pour trypanosés de Léopoldville pendant l'année 1911', 19.1.1912, MAEAA, RA-CB, 80.3; 'Extrait de la lettre de M. le G.G. en date du 16 juillet 1912. N°242c', 16.7.1912, MAEAA, RA-CB, 80.3.

[377] A. Dubois to Chef du service médical de Léopoldville Houssiau, 18.12.1911, MAEAA, RA-CB, 80.3.

[378] Dubois explained that his and Mouchet's tours in 1911 sought to 'rechercher si les traitements employés avaient des résultats suffisants au point de vue prophylactique et également de rechercher le degré d'intensité de l'infection pendant les trois mois qui ont séparé ces deux visites.' A. Dubois to Chef du service médical de Léopoldville Houssiau, 18.12.1911, MAEAA, RA-CB, 80.3.

[379] For example: A. Dubois et R. Mouchet, 'Rapport sur le fonctionnement du lazaret pour trypanosés de Léopoldville pendant l'année 1911', 19.1.1912, MAEAA, RA-CB, 80.3.

[380] Dr Errera, 'Rapport du lazaret d'Aba pour le 2e semestre 1910', 31.12.1910, MAEAA, RA-CB, 80.2.

[381] *Royaume de Belgique. Colonie du Congo belge. Rapport sur l'Hygiène Publique pendant l'Année 1925* (Bruxelles, 1927), p. 10.

[382] Neill, *Networks in Tropical Medicine*, pp. 133, 141, 143.

[383] Commissaire Général Moulaert to Governor General, 21.12.1911, ITG, FD26.

[384] Lyons, *Colonial Disease*, pp. 128-129, 135-136, 237; Neill, *Networks in Tropical Medicine*, p. 130.

measures like brush clearing. Rodhain argued that persuasion alone was not enough to ensure indigenous compliance, and Broden complained that doctors lacked sufficient powers and that it was in fact the 'mentality of the official that one need(ed) to change'.[385] The result was a spate of circulars urging for more cooperation in the fight against the disease and a more rigorous execution of relevant instructions.[386] Medical practitioners also remarked that certain measures, such as brush clearing and controlling African mobility, perhaps made perfect sense from a theoretical point of view, but turned out to be rather unfeasible in practice.[387]

A large part of the problem appeared to be that there was not only a shortage of medical staff, but, as Broden suggested, that it lacked the means to locally implement public health measures in the absence of territorial administrators' cooperation.[388] This situation was not unique to the Belgian Congo, but also characterised sleeping sickness control in AEF, for instance, where conflicts between 'different European interests groups' seriously hampered the execution of preventive measures.[389] Unlike other professional groups including engineers and magistrates, state doctors in the Congo fell under the authority of district commissioners, i.e. the territorial service. Together with limited options for career progression (as there were but two grades in the official medical hierarchy) and the fact that physicians received no pension, it made for what Rodhain described as a 'deeply humiliating situation' that belied their status as medical professionals.[390] That the colonial administration encountered many difficulties to recruit Belgian doctors was often taken as proof by practitioners that a medical career in the Congo was far from an attractive option.[391]

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[385] F. Vandenbranden, 'Notes de voyage d'études dans les chefferies Nkolo et Banzamakuta (Bas-Congo)', 18.10.1913, MAEAA, Hygiène, 850.309; J. Rodhain, 'Rapport préliminaire sur les travaux de la mission (période Février-Juin 1912)', 29.11.1912, MAEAA, Hygiène, 858.373; A. Broden, 'Note concernant le règlement de la maladie du sommeil', 17.1.1913, MAEAA, Hygiène, 849.295.

[386] For example: 'Circulaire prescrivant l'exécution rigoureuse des mesures prises pour empêcher la propagation de la maladie du sommeil par la circulation des noirs dans la colonie' dans Congo Belge. Gouvernement local. *Recueil bi-mensuel des ordonnances, circulaires, instructions et ordres de service* (Boma, 1912), pp. 286-287. See also the list of circulars and ordinances between 1911 and 1914, urging for more African and European cooperation in the sleeping sickness campaign in Lyons, *Colonial Disease*, pp. 136, 236-238.

[387] J. Schwetz, *Evolution de la médecine*, pp. 22, 86-87, 96; Dr G. Daniel to Governor General, 9.9.1911, MAEAA, GG, 16796 (GG).

[388] According to Lyons, territorial administrators did not always agree with doctors on the regrouping and resiting of local populations, and 'many were loathe to involve themselves in this particular form of administration which was so unpopular with the people'. Lyons, *Colonial Disease*, p. 134.

[389] Neill, *Networks in Tropical Medicine*, pp. 130-131, 144, 149-150.

[390] J. Rodhain, 'Note sur l'organisation du service médical au Congo belge', 1909, MAEAA, Hygiène, 4419.602. The reason why doctors didn't get a state pension was that it was thought they could earn money by attending to private clients.

[391] In 1912, the Director General of the 2e DG proposed recruiting foreign nationals because of the difficulties to recruit Belgian doctors. According to Broden, a colonial career was not attractive to Belgian medical professionals because of the little enviable social position and status of state doctors in the Congo and the poor monetary rewards. Director General, 'Suite à la note du 24 juillet 1912', ITG, FD26; A. Broden, 'Note concernant

Minister Renkin was sympathetic to these concerns. After the Belgian annexation of the Congo, attempts were made to redress grievances through legislation introducing a medical service in the colony led by a chief medical officer residing in Boma, and made up of five grades of doctors.[392] Inge Heiberg, former director of the Ibembo lazaret, became the first 'médecin en chef' in 1911.[393] He was responsible for collating annual medical reports and advising the colonial government on health matters. However, to Heiberg's dismay, implementing the reforms proved difficult before 1914: staff shortages hampered the functioning of the new medical hierarchy, and the creation of a truly independent medical service in the colony failed to materialise, leaving district doctors subjected to the orders of territorial service staff, for whom public health measures might not be the highest priority.[394]

Under these circumstances, Mouchet and Dubois from the Leopoldville laboratory concluded by 1913 that ambulatory treatment was the most realistic and effective strategy to control sleeping sickness.[395] While they found arsenophenylglycin and Salvarsan to exert a long 'sterilising action' suitable for this purpose, they concluded that, as the former was not commercialised and the latter too expensive, an intensive combination treatment of Atoxyl and tartar emetic produced lengthy enough 'sterilisations' and therefore could be recommended for the treatment of as many victims as possible in their own villages.[396] Together with Broden and Rodhain's research, the result of their investigations was that by the First World War, Atoxyl and tartar emetic came to be seen in the Belgian Congo not just as effective trypanocides, but as appropriate tools for itinerant prophylactic treatment and thus for sleeping sickness control more generally.[397] In that sense, chemotherapeutic research in

le rapport annuel médecin en chef 1912', s.d., MAEAA, RA-CB, 80.3.

[392] Report concerning the medical corps from Minister of Colonies Renkin to the King of Belgium, 1909, MAEAA, Hygiène, 830.40; 'Arrêté du 1er Décembre 1909, n° 1/1, créant dans le corps médical de la Colonie, cinq classes de médecins' dans Congo belge. Gouvernement local, *Recueil mensuel des ordonnances, circulaires, instructions et ordres de service* (Boma, 1910), p. 3; 'Ordonnance du 23 Janvier 1911, n° 4/1, Réglementant l'organisation du service sanitaire au Congo belge' dans Congo Belge. Gouvernement local, *Recueil bi-mensuel des ordonnances, circulaires, instructions et ordres de service* (Boma, 1911), pp. 28-29.

[393] Lyons, *Colonial Disease*, p. 76.

[394] 'Circulaire fixant les règles d'application de l'Ordonnance du 23 janvier 1911, réglementant l'organisation du Service Sanitaire au Congo Belge', s.d., MAEAA, GG, 16862 (GG); Dr Cammermeyer, 'Rapport du Médecin en Chef sur la Situation sanitaire au Congo Belge durant l'année 1912', 24.6.1913, MAEAA, RA-CB, 80.4; Dr Heiberg, Annual report from the Chief Medical Officer, 6.8.1912, MAEAA, RA-CB, 80.3; Dr Heiberg, Rapport médical pour 1913, 1914.5.28, MAEAA, RA-CB, 81.1.

[395] R. Mouchet and A. Dubois, Annual Report of the Leopoldville lazaret, 10.1.1913, ITG, FD34.

[396] Dr Mouchet et Dr Dubois, 'Rapport sur le fonctionnement du lazaret pour trypanosés de Léopoldville pendant l'année 1912', 1.1913, MAEAA, RA-CB, 80.4; R. Mouchet and A. Dubois, Annual Report of the Leopoldville lazaret, 10.1.1913, ITG, FD34.

[397] Broden would write in 1923: 'Grâce à cette combinaison médicamenteuse, il nous est possible de lutter efficacement et d'assainir des régions étendues'. Broden, 'Thérapeutique des trypanoses humaines', 39.

Leopoldville was vital in expanding the Congolese market for these science-based sleeping sickness medicines.

The central colonial authorities as well proved keen to generalise the pharmaceutical strategy of prophylaxis.[398] Policy-makers in Brussels encouraged it, for example by planning to assign second doctors to lazarets, charged with touring the surrounding areas and treating victims on the spot.[399] It was expected that, like the creation of lazaret villages and the institution of outpatient treatment, ambulatory treatment would appease the 'natives' while reducing hospitalisation costs.[400] Such an undertaking required much more doctors than were available in the Congo, however. Chief medical officer Heiberg therefore proposed to 'vulgarise' ambulatory treatment, i.e. involve African staff and European agents in administering prophylactic Atoxyl injections to individuals with swollen cervical lymph nodes. He reasoned that with a short training 'these injections (were) within everyone's reach', and that, while they would sterilise rather than cure, they could not cause much 'harm' as long as injectors refrained from 'experimentation' and followed simple instructions.[401]

In 1914, Heiberg reported that 18000 people had been screened for sleeping sickness and 1100 had received ambulatory treatment during the previous year. He found the numbers 'insignificant' compared to what he had expected, and blamed a shortage of staff.[402] On the eve of the First World War, therefore, pharmaceutical disease control had undoubtedly gained a prominent position within the Belgian Congo's sleeping sickness policy, but failed to really take off on the ground on a significant scale. Combined with inaction as far as other trypanosomiasis measures were concerned, this led some contemporaries to label the colony's prewar sleeping sickness campaign as a 'paper war'.[403]

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[398] Vice-Governor General Ghislain, Circular to district commissioners, chefs de zone and doctors, 12.1.1912, MAEAA, GG, 16796 (GG); 'Circulaire rappelant les instructions relatives à l'hospitalisation et au traitement ambulatoire des noirs atteints de la maladie du sommeil' dans Congo Belge. Gouvernement local, *Recueil bi-mensuel des ordonnances, circulaires, instructions et ordres de service* (Boma, 1912), pp. 288-289.

[399] Minister of Colonies Renkin to Governor General, MAEAA, Hygiène, 848.288; E. Van Campenhout, 'Maladie du Sommeil', s.d., MAEAA, Hygiène, 4461.912; 'Circulaire rappelant les instructions relatives à l'hospitalisation et au traitement ambulatoire', pp. 288-289.

[400] Minister of Colonies to Governor General, 30.6.1911, MAEAA, Hygiène, 842.142; Commissaire Général Moulaert to Governor General, 21.12.1911, ITG, FD26.

[401] I. Heiberg, Annual report from the Chief Medical Officer, 6.8.1912, MAEAA, RA-CB, 80.3.

[402] I. Heiberg, 'Rapport médical pour 1913', 28.5.1914, MAEAA, RA-CB, 81.1.

[403] Schwetz, *Evolution de la médecine,* p. 21. Lyons acknowledges limits to policy implementation, but also insists that there were 'considerable efforts' by colonial agents to enforce sleeping sickness measures. Lyons, *Colonial Disease*, pp. 129, 136.

4.5 In summary

As it disappeared from view as a true cure for sleeping sickness, laboratory doctors in Leopoldville gave Atoxyl a new lease of life, thus initiating a second cycle in the drug's colonial career. Seeking to both regulate the Congolese sleeping sickness remedy market and ground human trypanosomiasis control in modern epidemiology via well-controlled clinical trials, they were crucial in strengthening the alliance between laboratory science, ethical pharmaceutical industry and collective medicine, a process initiated but not entirely seen through by the Congo's administration. The laboratory doctors' efforts were fed by inter-imperial chemotherapeutic exchanges, a perpetuation of colonial domination via the collectivising and pathologising of Africans as trypanosome reservoirs, as well as a concern to overcome the practical difficulties of African resistance to the lazaret regime. In the process, they refashioned trypanocides into preventive agents that could be administered to African trypanosome carriers outside of prison-style camps, and identified Atoxyl as the best pharmaceutical for curbing the spread of sleeping sickness. The Leopoldville laboratory's views on pharmaceutical disease control gained prominence and met with increasing enthusiasm after the Belgian take-over of the Congo Free State, as the influence of Belgian tropical medicine specialists on the metropolitan administration grew and state doctors struggled to implement alternative preventive measures on the ground. Staff shortages prevented that prophylactic Atoxyl treatment was applied on a large scale before the First World War, however. How this changed after 1918 will be covered in the next chapter.

PART II.

MASS TRYPANOCIDE TREATMENT IN THE 1920s

Chapter 5
Itinerant medicinal prophylaxis and the postwar mass market for Atoxyl

This chapter charts Atoxyl's career in the Belgian Congo after the First World War. It examines how in a continued first phase, expectations about its potential and suitability as a tool of sleeping sickness control, which had been building since before 1914, grew even stronger. In the early 1920s, this translated into a large-scale use of in particular the French- and Belgian-manufactured versions of the drug. The chapter also explores how Atoxyl's postwar spread became intertwined with a second phase of more 'negative appraisals' in a context of considerable opposition to the powers of itinerant doctors involved in prophylactic trypanocide treatment.[404] This eventually amounted to a decline in consumption of the French and Belgian brands, although not immediately of the original German product.

Atoxyl's postwar career in the Congo reflected and contributed to an ever-closer alliance between laboratory science, ethical drug industry and collective medicine, as the active promotion of pharmaceutical strategies of sleeping sickness control combined with the adoption of 'rational' drug policies and practices to 'ensure the regular supply and rational use' of 'essential' trypanocides.[405] This configuration evolved through an interplay between different actors in metropole and colony, as well as between nationalism and inter-imperial exchanges. It crucially entailed a consolidation of the (Belgian) tropical medicine profession's growing influence on the administration of the Congo, evident for example in the postwar organisation of an independent medical service in the colony. More specifically, it indicated a further advance of scientific medicine, as (bacteriology-trained) laboratory doctors occupied powerful positions in the colonial medical hierarchy as well as in the metropole, and their views on epidemiology and therapeutics became increasingly prominent.

Atoxyl use in the Congo received a major boost after the war when colonial field doctors, medical and political authorities converged on the expediency of mass treatment to control sleeping sickness - and thus halt population decline - under the influence of local circumstances and inter-imperial interactions. As a result, the focus of

[404] Snelders, Kaplan and Pieters, 'On cannabis', 95. In French colonial Africa, where similar pharmaceutical strategies of disease control were deployed, there was a long 'history of contests over the powers, ethics and value of the French model of sleeping sickness medicine', Noémi Tousignant points out. Tousignant, 'Politics of mass therapy', 635.

[405] Najmi Kanji, 'Action at country level: the international and national influences' in Kanji, Hardon, Harnmeijer, Mamdani and Walt, *Drugs Policy in Developing Countries*, p. 65.

indigenous health policy and practice shifted towards a mobile, pharmaceuticalised and specialised form of social medicine that enlisted state doctors, but also European and African medical auxiliaries as well as private sector medical providers in a medicinal fight against sleeping sickness. The associated increase in trypanocide needs spurred actions to rationalise the colonial administration's drug supply efforts, and created opportunities for European ethical manufacturers keen on exploiting the disruption in German medicine imports and accompanying patriotic sentiments since the war. The French synthetic pharmaceuticals industry thus obtained an important share of the Congolese Atoxyl market, as did, and increasingly so, its nascent Belgian counterpart with the help of the EMT. State doctors in the Congo, however, were confronted with considerable African and European opposition to mass sleeping sickness treatment, which posed a threat to their newly acquired independence. As instances of (abnormal) drug toxicity and limited curative power made it hard to instil more favourable views of the campaign, they grew increasingly disappointed with Atoxyl's effectiveness as a preventive tool. Nevertheless, rather than abandoning pharmaceutical sleeping sickness control, the Congo's medical leaders resorted to a tightening of pharmaceutical regulation to prevent intoxication, while sustaining the large-scale use of the trypanocide. More stringent quality control procedures unfolding between metropole and colony eventually led to the market exclusion of French- and Belgian-manufactured Atoxyl, while treatment guidelines and increased hierarchical oversight within the colonial medical service were deployed to keep the clinical use (of the German product) under control.[406]

This chapter starts with a brief sketch of the Congo administration's growing focus on curbing sleeping sickness to redress postwar depopulation in a context of inter-imperial interactions in the field of African health. It then charts how medical authorities in colony and metropole came to prioritise a pharmaceutical control strategy labelled 'itinerant medicinal prophylaxis'. This was largely the result of an interplay between local circumstances perceived to make alternative preventive measures unfeasible - as highlighted by a veteran sleeping sickness doctor advocating systematic and comprehensive Atoxyl treatment by mobile medical teams in the Congo's Kwilu area - , a desire to advance the interests of the colonial medical profession and the associated creation of an independent medical service headed by a former Leopoldville laboratory doctor, as well as cross-border exchanges, notably with French Pastorians proposing similar solutions to tackle human trypanosomiasis in colonial Africa. The chapter proceeds with a discussion of how central political authorities, convinced of its political-economic benefits, backed an expansion of itinerant medicinal prophylaxis in the Congo. As this entailed an involvement of growing numbers of state and private sector

[406] Tousignant describes how directors of the French West African autonomous sleeping sickness service between 1939 and 1944 also resorted to 'self-regulation' via therapeutic standardisation to prevent drug toxicity and its political recuperation by opponents of the service. Tousignant, 'Politics of mass therapy', 630, 636-639.

doctors and medical auxiliaries in the pharmaceutical sleeping sickness campaign, it substantially widened the Congolese Atoxyl market. The next section examines the colonial administration's efforts to ensure a regular and sufficient supply of approved trypanocides while trying to limit both drug expenditure and dependence on German manufacturers. This not only augmented the role of pharmacists in the Congo's public health efforts, but also boosted the synthetic pharmaceuticals industry in France and especially also in Belgium, where a young company had embarked on Atoxyl production with the help of the EMT. Finally, this chapter discusses the growing disappointment with (certain brands of) the drug and the pharmaceutical regulation efforts underlying the sustained use of (German) Atoxyl in a context of opposition to mass treatment.

5.1 Postwar demographic anxieties and the primacy of sleeping sickness control

Before the First World War, public health policies aimed at Africans in the Congo mostly affected soldiers and those who were part of the colonial state service. As previously mentioned, there was only limited progress in extending ambulatory treatment to the wider population to keep sleeping sickness in check, for example. The war itself further disrupted efforts at disease control. Many doctors from the already limited cadre of medical staff were called away to join the troops.[407] The colony's annual medical report for 1917 warned that personnel shortages prevented an 'energetic' sleeping sickness campaign, with several regions, including the Kwango district, reported as 'particularly afflicted by trypanosomiasis'.[408] The conflict also severely hampered the supply of German-manufactured medicines, including trypanocides, and more generally had a detrimental impact on Congolese health, notably because of intensified demands for African labour to sustain the war effort.[409]

Reports about an upsurge of sleeping sickness in the wake of the war specifically contributed to a broader climate of demographic anxieties in the interwar period. Colonial administrators believed that the poor health situation in the Belgian Congo was

[407] Including, for example Jérôme Rodhain and Giovanni Trolli, a veteran state doctor with much sleeping sickness experience. Biographical note on J. Rodhain, MAEAA, Hygiène, 4444.736; Giovanni Trolli: P. Gérard, 'Giovanni Battista TROLLI' dans Institut Royal Colonial Belge, *Biographie Coloniale Belge* (Bruxelles, 1955), t. IV, col. 885.

[408] 'Rapport annuel 1917. Service de l'Hygiène', s.d., MAEAA, RA-CB, 81.6.

[409] Lyons, *Colonial Disease*, pp. 137-139. In addition to the effects of the military campaign, notably on members of the 'Force Publique', David Van Reybrouck also points, for example, to the institution of 'cultures obligatoires' to sustain the war effort and the general 'pause' in the embryonic efforts to 'improve the native's fate'. Van Reybrouck, *Congo: een geschiedenis* (Amsterdam, 2010) pp. 151, 153.

causing a population decline, resulting in a labour force crisis that threatened the colony's economic exploitation or 'mise en valeur', and Belgium's 'civilising mission'.[410] As a result, attention turned more decidedly to African health by the 1920s, and significant steps were taken to increase medical provision in the Congo's rural areas.[411]

The Belgian colonial administration was not alone in doing so, and operated in what Samuel Coghe has described as an interwar context of cross-border interactions in the field of African health.[412] In fact, far from signalling a complete end to medical internationalism, the interwar years saw plenty of occasions for inter-imperial exchanges pertaining to health and medicine in colonial Africa. 'Informal relationships among medical scientists, notably between Belgian doctors and French Pasteurians (sic)', for example, continued throughout the period.[413] Other significant initiatives were the new attempts at more formal collaboration, evident, for example, in the organisation of a West African tropical medicine conference in Luanda in July 1923 at the instigation of the Angolan health services, but with the cooperation of medical directors in the Belgian Congo and AEF.[414] In Luanda, over seventy Portuguese, Belgian, French, and British colonial and metropolitan experts gathered to discuss health care for indigenous peoples.[415]

In the case of Angola, Coghe argues, such exchanges between colonial health services were part of a 'processes of inter-imperial borrowing' that shaped the creation of a more comprehensive public health scheme in the Portuguese colony.[416] In the Belgian Congo as well, attention turned to the development of what was labelled 'Assistance Médicale aux Indigènes' (AMI) as part of the postwar extension of colonial medical provision. The aim was to strengthen the 'medical grip on the natives at home', notably in the colony's rural interior. A key component was the creation of a network of medical providers associated with 'fixed' health centres such as hospitals, dispensaries, rural clinics etc. African auxiliaries and private sector providers were to play a major role in this endeavour.[417] In 1920, for example, colonial authorities decided to establish six state schools for 'indigenous medical assistants'. These were to receive a higher-level medical education than the Congolese nurses at the existing school for 'infirmiers' in Boma, so

[410] Vice-Governor General Moulaert, 'Problème (sic) coloniaux. Le Service d'Hygiène', 23.11.1918, MAEAA, GG, 16862 (GG); Lyons 1992, *Colonial Disease*, p. 25.

[411] Hunt, *Colonial Lexicon*, p. 176.

[412] S. Coghe, 'Inter-imperial learning and the establishment of Assistência Médica aos Indigenas in Angola in the interwar period', paper presented at the workshop Colonial Careers: Transnational Scholarship Overseas in the 19th and 20th Centuries, European University Institute (2012).

[413] Mertens and Lachenal, 'History of "Belgian" tropical medicine', 1263.

[414] Coghe, 'Inter-imperial learning', p. 3.

[415] Ibid., pp. 3-4; Mertens and Lachenal, 'History of "Belgian" tropical medicine', 1268.

[416] Coghe, 'Inter-imperial learning', pp. 1-2.

[417] J. Rodhain, 'Les grands problèmes de l'hygiène et l'organisation du service médicale au Congo belge', Congo. Revue générale de la Colonie belge 2 (1926), 1, 20; A. Dubois et A. Duren, 'Soixante ans d'organisation médicale au Congo belge', Annales de la Société Belge de Médecine Tropicale, 27 (1947), 8, 10; A. Cornet, *Politiques de santé et contrôle social au Rwanda, 1920-1940* (Paris, 2011), p. 26.

that they could provide basic health care in remote villages and in the process counteract the influence of indigenous healers.[418] 1920 also saw the establishment of an 'auxiliary' AMI service, called 'Assistance Médicale aux Indigènes Bénévole' (AMIB), to stimulate and expand the medical provision of mission societies, with their lazarets and dispensaries, under the state's guidance.[419] Finally, assistance was also increasingly sought from private companies with medical services to look after the wider indigenous population within their concessions, and from philanthropic medical organisations such as the Red Cross and the 'Fondation Médical de l'Université de Louvain au Congo'.[420]

Amid the renewed concerns for indigenous health, however, the Belgian Congo's medical authorities - just like the Pastorians in French Africa - in particular 'sold sleeping sickness control as a remedy to depopulation and as a means of exercising responsible colonial rule'.[421] In his annual report for 1920, chief medical officer Rodhain declared it 'the most widespread and most serious of general affections from which the indigenous population suffers'.[422] His successor Giovanni Trolli confirmed in his 1925 report that 'trypanosomiasis certainly (was) the gravest of all diseases decimating the Congo's populations'.[423]

This view was further reinforced through inter-imperial interactions, notably those under League of Nations Health Organisation (LNHO) auspices, which constructed sleeping sickness as a major African health issue and even a particularly 'Congolese' problem. Reflecting a new form of medical internationalism after the First World war, the LNHO started taking significant steps to improve coordination between colonial powers in the fight against African trypanosomiasis. In 1922, it set up a tropical diseases expert committee to collect information about tuberculosis and sleeping sickness in Equatorial Africa and the measures adopted to control them. In addition to the French and British sleeping sickness specialists Gustave Martin and Andrew Balfour (later joined by Arthur Bagshawe, director of the London Tropical Diseases Bureau), the expert committee counted Emile Van Campenhout, head of the colonial medical department in Brussels, among its members.[424] The committee's meetings resulted in two major League

[418] 'Congo Belge. Rapport Annuel 1920', 1922, MAEAA, RA-CB, 81.9; E. Van Campenhout, 'Programme Hygiénique et Sanitaire dans la Colonie du Congo Belge', 22.11.1921, MAEAA, Hygiène, 4419.604; *Rapport sur l'Hygiène Publique pendant l'Année 1925*, p. 20.

[419] 'Congo Belge. Rapport Annuel 1920', 1922, MAEAA, RA-CB, 81.9; G. Trolli, 'Rapport Annuel 1920. Service d'Hygiène', s.d., MAEAA, RA-CB, 81.9.

[420] 'Congo Belge. Rapport Annuel 1920', 1922, MAEAA, RA-CB, 81.9; Lyons, M. 'Public health in colonial Africa', p. 367, 371. At the least, a 1921 labour law 'made employers responsible for their workers' health'. Hunt, *Colonial Lexicon*, p. 162.

[421] Tousignant, 'Politics of mass therapy', 627.

[422] 'Congo Belge. Rapport Annuel 1920', 1922, MAEAA, RA-CB, 81.9.

[423] *Rapport sur l'Hygiène Publique pendant l'Année 1925*, p. 10.

[424] I. Borowy, *Coming to Terms with World Health. The League of Nations Health Organisation 1921-1946* (Frankfurt, 2009), pp. 109-110; 'League of Nations. Tropical Diseases. Committee of Experts. Meeting Friday, November 10, 1922, at 11am', 1922, MAEAA, Hygiène, 4461.912; 'Société des Nations. Section d'Information. Maladies tropicales en Afrique', 1922.11, MAEAA, Hygiène, 4461.912; E. Van Campenhout, 'Résumé des travaux de la

of Nations (LN) conferences on sleeping sickness, one in London in 1925 and the other in Paris in 1928, attended by French, British, Portuguese, Italian, Spanish and Belgian delegates (the latter including Van Campenhout and Rodhain). They also gave rise to an international, LN-backed sleeping sickness expedition in 1926-1927, based at Entebbe in Uganda and comprised of British, French, Belgian, Portuguese and German scientists.[425] These initiatives contributed significantly to a comparing of sleeping sickness situations in different African territories. Tellingly, during the opening address of the 1925 London conference, the British Under-Secretary of State for the Colonies argued that 'there (was) probably no part of Africa where the problem (was) more serious than in the Belgian and French Congo', and further cross-border comparisons in the context of the LNHO's trypanosomiasis initiatives strengthened this view.[426] As a result, 'indigenous medical assistance' in the Belgian Congo was largely reduced to sleeping sickness control in the 1920s.

5.2 Prioritising 'itinerant medicinal prophylaxis'

As the Congolese authorities once again turned their attention to sleeping sickness after the First World War, the issue of how best to tackle it soon resurfaced. The campaign as it had been conducted before the war was hardly deemed a success. The colony's vice-Governor General Moulaert complained in 1918 that the administration had focused on fighting the disease with 'texts instead of personnel and a budget'.[427] Among the most outspoken critics was the Russian-born state doctor Jacques Schwetz, who had started his career in the Congo in 1909, after medical and malariology studies in Lausanne and

commission de médecins spécialistes convoqués à Londres par la Société des Nations, du 10 au 13 novembre 1922', 15.11.1922, MAEAA, Hygiène, 4461.912.

[425] 'Société des Nations. Organisation d'Hygiène. L'Etude de la maladie du sommeil et de la tuberculose dans l'Afrique Equatoriale', 4.5.1925, MAEAA, Hygiène, 4461.914; Lyndhurst Duke, 'League of Nations. Paper No I. General Review of the activities of the commission. Interim report of the League of Nations International Commission on Human Trypanosomiasis', 12.1926, ITG, Onderzoek, 5.2.11; 'Société des Nations. Organisation d'Hygiène. Rapport de la séance du Comité d'Experts de la Maladie du Sommeil en Afrique Equatoriale, tenu à Londres, le 15 décembre 1927', 26.3.1928, MAEAA, Affaires Etrangères, 2934.525; 'Société des Nations. Section d'Information. 12 novembre. Deuxième Conférence de la Maladie du Sommeil', ITG, Onderzoek 5.2.11.

[426] 'Opening Address to the League of Nations Conference on Sleeping Sickness in Africa. By the Chairman, the Honourable W.G. Ormsby-Gore, M.P., F.R.G.S., Under-Secretary of State for the Colonies', 19.5.1925, MAEAA, Hygiène, 4461.914. See also, for example: 'Société des Nations. Seconde conférence internationale sur la maladie du sommeil. Sous-commission d'administration. Première séance tenue à Paris, le mardi 6 novembre 1928 à 10 heures', MAEAA, Affaires Etrangères, 2934.525.

[427] Vice-Governor General Moulaert, 'Problème (sic) coloniaux. Le Service d'Hygiène', 23.11.1918, MAEAA, GG, 16862 (GG).

Paris.[428] After a stint as director of the Tanganyika lazaret, a system he found no more than a 'palliative', with 'no influence whatsoever on the course of the disease', he had spent much time studying trypanosomiasis and in particular tsetse flies in Katanga's Lomami district since late 1912.[429] By 1918, he concluded that sleeping sickness control in the Congo was a 'fiasco'. The prescribed measures were difficult to apply in practice, he argued, and did not take varying local circumstances into account.[430] In fact, Schwetz found that sleeping sickness epidemiology was still so poorly understood that attempts at prophylaxis remained unsuccessful. Now that the war was over, he reasoned, the first course of action required was to revive the study of aetiology and epidemiology.[431]

The plan to devote himself to further scientific enquiries in the field was quickly thwarted, however. In 1918, Schwetz was called to the Kwango district in the southwest of the Belgian Congo to gauge the reportedly alarming sleeping sickness situation in the Kwilu area, and draw up an immediate plan of action.[432] After an exploratory tour, he proposed establishing a special medical mission, dedicated entirely to systematically screening Kwilu's population for sleeping sickness and treating all trypanosome-carrying individuals with trypanocides. According to Schwetz, such a mission, autonomous from the territorial service and also independent from the chief medical officer, and composed of mobile teams of doctors and auxiliaries, was 'the last remedy to try', and the 'least impossible option' in a range of sleeping sickness control measures that had in his view all failed miserably so far.[433]

Schwetz's medical mission program entailed a prioritisation of pharmaceutical sleeping sickness control, and thus continued the approach favoured by the Leopoldville laboratory doctors before the war. He would later refer to this 'prophylaxie médicamenteuse' as an 'offensive' form of sleeping sickness control because it sought to 'active(ly)' destroy trypanosomes, in contrast to the more 'defensive' and 'passive'

[428] Schwetz, *Evolution de la médecine*, p. 5.

[429] Ibid., pp. 16, 93; J. Schwetz, 'La maladie du sommeil dans le Nord-Katanga (Congo belge) en 1913-1918', 10.1919.10, MAEAA, GG, 15712 (GG).

[430] J. Schwetz, 'La maladie du sommeil dans le Nord-Katanga (Congo belge) en 1913-1918', 10.1919, MAEAA, GG, 15712 (GG); J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[431] J. Schwetz, 'Un voyage entomologique de Kabinda dans la région de Kisenga (7 mai - 12 juillet 1918). Douzième rapport (suite au dixième) sur la répartition des glossines dans le Nord-Katanga', 25.7.1918, MAEAA, GG, 15712 (GG); J. Schwetz, 'La maladie du sommeil dans le Nord-Katanga (Congo belge) en 1913-1918', 10.1919, MAEAA, GG, 15712 (GG).

[432] J. Schwetz to Chief Medical Officer, 27.7.1918, MAEAA, GG, 15712 (GG); J. Schwetz to District Commissioner, 6.9.1918, MAEAA, Hygiène, 4406.332.

[433] J. Schwetz, Report on the sleeping sickness situation in Kwilu, 25.5.1919, MAEAA, GG, 16795 (Congo-Kasai); J. Schwetz, 'La maladie du sommeil dans le Moyen Kwilu (District du Kwango, Congo belge), en 1918', 11.1919, MAEAA, GG, 15712 (GG); J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

measures focused on avoiding infection through monitoring population movement.[434] His proposal for Kwilu soon met with approval from the authorities in Brussels. Emile Van Campenhout from the colonial medical department concurred with the strategy, as he considered it to be in line with his department's vision of a campaign based on 'prophylactic and curative treatment'.[435] Towards the end of 1919, Minister Louis Franck appointed Schwetz as director of the autonomous medical mission to be set up in Kwilu.[436] Although somewhat reluctant to take on this task, the Russian doctor subsequently embarked upon a sleeping sickness mission in Kikwit territory in 1920, together with a team of doctors, 'agents sanitaires', and African nurses.[437] As will be described in more detail in chapter 9, the mission's target zone was divided among the team members, and activities focused on 'curative work and (...) medicinal prophylaxis on the spot' with Atoxyl.[438]

Soon enough, central medical authorities in both colony and metropole endorsed Schwetz's approach to sleeping sickness control, predicated on the mass drug treatment of trypanosome carriers by special medical missions composed of itinerant staff. They were impressed with the sheer number of people Schwetz and his small team - backed by new sleeping sickness regulations introduced in 1920 and prescribing compulsory screening and treatment of all infected individuals - managed to examine and treat.[439] The Congo's annual medical report for 1920 found that the special sleeping sickness mission delivered an 'energetic' effort in the face of chronic medical staff shortages.[440] In an overview of the colony's public health program in 1921, Van Campenhout promoted the 'methodical sterilisation' of all cases of sleeping sickness by itinerant 'prophylactic missions' composed of doctors and European and African auxiliaries as the favoured, 'most practical' strategy of human trypanosomiasis control.[441]

Rodhain, appointed chief medical officer in 1920, initially did not want to go as far as Schwetz in condemning other prophylactic measures and appeared keen to adjust the sleeping sickness doctor's independent stance on therapeutic and diagnostic

[434] Schwetz, *Evolution de la médecine*, p. 86.

[435] E. Van Campenhout, 'Prophylaxie de la maladie du sommeil au Kwilu. Rapport du Dr Schwetz', 10.6.1919, MAEAA, Hygiène, 4406.332.

[436] Minister of Colonies Louis Franck to Governor General, 9.12.1919, MAEAA, GG, 16795 (Congo-Kasai).

[437] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

[438] J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[439] G. Trolli, 'Rapport Annuel 1920. Service d'Hygiène', s.d., MAEAA, RA-CB, 81.9; 'Ordonnance du 8 Juillet 1920, n °57/7, déterminant les mesures à prendre pour combattre la maladie du sommeil' dans *Bulletin administratif et commercial du Congo belge* (Boma, 1920), pp. 690-697. Africans found infected were prohibited from traveling before completing an adequate course of treatment.

[440] 'Congo Belge. Rapport Annuel 1920', 1922, MAEAA, RA-CB, 81.9.

[441] E. Van Campenhout, 'Programme Hygiénique et Sanitaire dans la Colonie du Congo Belge', 22.11.1921, MAEAA, Hygiène, 4419.604.

procedures.[442] Nevertheless, a few years into the Kwango medical mission, he confirmed and advocated 'itinerant medicinal prophylaxis', as the most 'active' method of sleeping sickness control, relegating other strategies to the rank of 'adjuvants précieux'.[443] In a number of circulars issued in 1923, Rodhain highlighted the many practical obstacles associated with 'mechanical' or 'biological' prophylaxis, aimed primarily at separating human hosts from fly vectors.[444] While this was at least a theoretical option in the Belgian Congo, in practice it was unfeasible, he argued. The long-distance relocation of indigenous communities to tsetse-free areas made little sense given the scarcity of such zones in the Congo. Moreover, just like the lazaret hospitalisation of all infected individuals, it was too disruptive to indigenous life. 'Radical' controls on African mobility, especially the restriction of traffic between infected and non-infected regions, hampered the colonial economy, and the destruction of tsetse habitat through brush clearing had to be done on too large a scale to be both effective and practical.[445]

The solution, Rodhain continued, was 'medicinal' or 'chemical' prophylaxis, i.e. the 'therapeutic suppression of virus reservoirs'. It required a systematic detection and periodic treatment of trypanosome carriers to at least obtain a 'durable sterilisation of the blood circulation', and Atoxyl and tartar emetic constituted the basis of therapy.[446] The goal of mass treatment in the Belgian Congo was in his view primarily, although not exclusively, prophylactic. According to Rodhain, the more intensive and regular the treatment, the more chances of obtaining a 'durable cure', at least in early cases, so wherever possible, prophylaxis had to be organised in such a way as to give the largest number of patients the best chances of a cure.[447]

Rodhain's support for pharmaceutical sleeping sickness control after the First World War perhaps hardly came as a surprise given his history of drug therapy research at the Leopoldville laboratory. In addition, medicinal prophylaxis presented an opportunity in his longstanding quest to improve the number and social position of physicians in colonial state service. In the aftermath of the First World War, calls from the Congo to address this issue had resumed and grew ever louder. Rodhain, for example, advocated more medical autonomy from territorial authorities, an improved hierarchical

[442] J. Rodhain to J. Schwetz, 21.4.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[443] Maladie du Sommeil au Congo - Missions médicales, MAEAA, Hygiène, 4406.333.

[444] 'Biological' in the sense that it required substantial knowledge of tsetse fly biology.

[445] J. Rodhain, 'Lettre-circulaire "Considérations pratiques sur la prophylaxie de la maladie du sommeil"', 20.11.1923, ITG, Onderzoek, 5.2.7, pp. 3-4.

[446] Rodhain found that Bayer 205 constituted 'important progress' in sleeping sickness therapy, but that its use was premature given the delay in its commercial release. See J. Rodhain, 'Lettre-circulaire "Considérations pratiques sur la prophylaxie de la maladie du sommeil"', 20.11.1923, ITG, Onderzoek, 5.2.7; J. Rodhain, 'Lettre-circulaire "Suite aux considérations sur la prophylaxie de la maladie du sommeil"', 30.3.1923, ITG, Onderzoek, 5.2.7, pp. 5-7.

[447] J. Rodhain, 'Lettre-circulaire "Considérations pratiques sur la prophylaxie de la maladie du sommeil"', 20.11.1923, ITG, Onderzoek, 5.2.7, p. 7.

organisation, and better financial rewards.[448] Others joined in the pleas for an overhaul of the colony's medical organisation, which was explicitly linked to (solving) its medical recruitment problems.[449] The sense of urgency to act on these matters increased substantially when itinerant medicinal prophylaxis was promoted as the most viable option of sleeping sickness control, and more broadly, as the solution to Congo's depopulation and labour force crisis. Schwetz himself was highly critical of the miserable 'material' and 'moral' situation colonial doctors found themselves in. He especially loathed their subjection to the authority of district commissioners, a state of affairs he blamed on the absence of an autonomous medical service in the colony. He had therefore proposed a medical mission operating independently from local administrators to institute mass treatment in Kwilu in 1919.[450] Medicinal prophylaxis reinforced the message that the sleeping sickness campaign and in fact the colony as a whole above all else required coordinated medical action by a sufficient and sufficiently powerful cadre of qualified health providers. Sleeping sickness control, in other words, could not simply be left to and was increasingly beyond the remit of the territorial service.

In this way, and although the Schwetz mission itself did initially not fall under the chief medical officer's orders, pharmaceutical sleeping sickness control helped make the case for an autonomous medical service in the colony, with a proper hierarchical structure that allowed for satisfactory career progression. In December 1922, the reorganisation finally took off with a royal decree and subsequent legislation establishing an independent medical service, headed by the chief medical officer and directly placed under the Governor General's authority rather than conceived as a mere branch of the territorial service.[451] A new administrative level was also created, with provincial health services directed by 'médecins provinciaux' (assisted by a few 'médecins inspecteurs') making up the colony's official medical organisation.[452] Provincial doctors answered to the 'médecin en chef' and his team, and supervised staff

[448] J. Rodhain to Chief Medical Officer Heiberg, 23.7.1917, MAEAA, GG, 16862 (GG); J. Rodhain to Minister of Colonies, 11.9.1918, MAEAA, GG, 16862 (GG).

[449] Vice-Governor General Moulaert, 'Problème (sic) coloniaux. Le Service d'Hygiène', 23.11.1918, MAEAA, GG, 16862 (GG); A. Broden and vice-Governor General Moulaert, Note concerning colonial medical service, 30.11.1919, ITG, FD26; 'Rapport annuel 1921', s.d., MAEAA, RA-CB, 81.10; Professor Malvoz to Minister of Colonies, 21.3.1921, MAEAA, Hygiène, 4442.723.

[450] J. Schwetz, 'Note sur la situation des médecins au Congo', 26.7.1919, ITG, FD7.

[451] J. Rodhain, 'Service de l'hygiène. Rapport annuel 1922', 31.8.1923, MAEAA, Hygiène, 4419.604; Trolli, Vanhove et Marquet, 'Exposé de la legislation sanitaire', p. 578; Dubois et Duren, 'Soixante ans d'organisation médicale', 6; 'Ordonnance du 15 Décembre 1922, n°8/7, réglant l'organisation générale et le fonctionnement du service de l'Hygiène' dans *Bulletin administratif et commercial du Congo belge* (Boma, 1923), p. 63; 'Arrêté Royal du 4 Décembre 1922, réorganisant le service de l'Hygiène de la Colonie et déterminant ses attributions' dans *Bulletin administratif et commercial du Congo belge* (Boma, 1923), pp. 55-61.

[452] 'Ordonnance du 15 Décembre 1922', p. 64; J. Rodhain, 'Rapport général sur le fonctionnement du service de l'Hygiène durant l'exercice 1924', 2.9.1925, MAEAA, RA-CB, 81.12; Trolli, Vanhove et Marquet, 'Exposé de la legislation sanitaire', p. 578.

working for one of the three divisions within their provincial health service: hygiene, territorial medical practice, and research. Depending on their function and place within the medical organisation, state doctors in the interwar period were classified into three major categories, each of which comprised several hierarchical grades: 'médecins dirigeants' (responsible for the administration and inspection of the medical service), 'médecins hygiénistes et de laboratoire' (dealing with sanitation and hygiene, laboratory analysis and research), and 'médecins territoriaux' ('itinerant' and 'resident' doctors delivering ambulatory services and practicing in fixed health centres respectively).[453] Hygienists, laboratory and territorial doctors were assisted by and supervised different categories of European and African medical auxiliaries, such as 'agents sanitaires', and Congolese medical assistants and nurses.[454]

For the colony's medical authorities, the notion that pharmaceutical treatment constituted an appropriate means of sleeping sickness control was further reinforced through cross-border interactions, notably with French Pastorians. Formal and informal exchanges led to inter-imperial comparisons of prophylactic strategies that informed and confirmed the approach adopted in the Belgian Congo as pioneered by the Schwetz special mission. In 1920, for example, Van Campenhout saw many similarities between the course of action followed in the Congo and the control method based on prophylactic treatment described by French doctor Eugène Jamot in an article in the 'Bulletin de la Société de Pathologie Exotique'. As director of the Brazzaville Pasteur Institute, Jamot had initiated a new method of sleeping sickness control in AEF in 1916, entailing a comprehensive screening and treatment of all trypanosome carriers in defined 'target sectors' by mobile teams of doctors as well as European and African nurses.[455] In 'la Jamotique', Belgian colonial authorities clearly found confirmation to pursue itinerant medicinal prophylaxis in their own colony.[456] The Luanda conference provided further validation of pharmaceutical control strategies. It included a session on sleeping sickness, which was chaired by Rodhain and dominated by representatives from French, Portuguese and Belgian colonies presenting on trypanocide therapy and medicinal prophylaxis.[457] Among the speakers were French pioneer Jamot and his counterparts in the Belgian Congo: Emile Lejeune, who had advocated ambulatory treatment before the war and now headed the medical service of Congo-Kasai Province, and Jacques Schwetz, director of the special sleeping sickness mission in the same province. Although he did not acknowledge any French sources of inspiration, Schwetz conceded that his Kwilu mission resembled the 'prophylactic sectors' toured by mobile

[453] 'Ordonnance du 15 Décembre 1922', 65-66; 'Arrêté Royal du 4 Décembre 1922', pp. 55-56; 'Trolli, Vanhove et Marquet, 'Exposé de la legislation sanitaire', p. 579; Dubois et Duren, 'Soixante ans d'organisation médicale', 6.

[454] Trolli, Vanhove et Marquet, 'Exposé de la legislation sanitaire', p. 579.

[455] Headrick, *Colonialism, Health and Illness*, p. 346-351; Tousignant, 'Politics of mass therapy', 627-628.

[456] E. Van Campenhout to Secrétaire Général, 13.7.1920, MAEAA, Hygiène, 4403.301; Minister of Colonies to Governor Général, 17.7.1920, MAEAA, Hygiène, 4403.301. Tousignant, 'Politics of mass therapy', 627.

[457] P. Walravens, 'Compte-rendu du Congrès de médecine tropicale en Afrique occidentale (St-Paul de Luanda)', *Annales de la Société Belge de Médecine Tropicale* 3 (1923), 193-196.

teams screening and treating trypanosome carriers in the French Congo.[458] Lejeune as well referred to both AEF and the Belgian Congo in a contribution endorsing 'la prophylaxie médicamenteuse' as the most viable option.[459]

Cross-border comparisons pointed to obvious similarities in French and Belgian Africa, but at the same time also highlighted local specificities. For example, AEF doctors in 1924 reported diverging organisational principles as well as therapeutic and diagnostic procedures in their prophylactic sectors and Schwetz's prophylactic mission, leading them to designate the latter as the 'Belgian method'.[460] In contrast to their own approach, it entailed the use of clinical rather than microscopic diagnostic procedures, prolonged courses of treatment that reflected a more ambitious combination of prophylactic and curative goals, and an intensive focus on a small sphere of action from which activity could be gradually expanded to avoid overstretching.[461]

5.3 Scaling up the campaign: official special missions and private sector assistance

In the wake of Schwetz's results in Kwilu, the Belgian colony's medical leaders were very eager to expand the number of prophylactic sleeping sickness missions in the Congo. In an effort to mobilise further political support and resources, Van Campenhout, for example, tried to convince the Colonial Minister that special missions like the one headed by Schwetz not only produced 'purely medical and humanitarian results', but also provided great 'political and fiscal benefits'.[462] It appears that central political authorities were not deaf to such pleas. In the course of the (early) 1920s, the sleeping sickness campaign was scaled up, and several new special missions, directed by state

[458] J. Schwetz, 'Compte-rendu succinct des travaux de la mission médicale du Kwango Kasai en 1920-1923', *Revista Médica dé Angola* 4 (1923), 152. Later historical overviews traced the origins of the Schwetz mission to the prewar ambulatory treatment initiatives of Belgian colonial doctors such as Lejeune, Mouchet and Dubois. See Dubois et Duren, 'Soixante ans d'organisation médicale', 8.

[459] E. Lejeune, 'La prophylaxie de la maladie du sommeil; son organisation au Congo belge', *Revista Médica dé Angola* 4 (1923), 179, 186, 188; P. G. Janssens, 'Eugène Jamot et Emile Lejeune. Pages d'histoire', *Annales de la Société Belge de médecine Tropicale* 75 (1995), 4-5.

[460] 'La maladie du sommeil en Afrique Equatoriale Française par le Dr Brau - médecin principal de 1ère classe', MAEAA, Hygiène, 4461.915.

[461] M. Blanchard et J. Laigret, 'Sur la prophylaxie de la maladie du sommeil; à propos de la Mission Schwetz au Congo belge', *Bulletin de la Société de Pathologie Exotique et de sa Filiale de l'Ouest Africain* 17 (1924), 485-496.

[462] E. Van Campenhout to Minister of Colonies, 18.12.1922, MAEAA, RA-CB, 81.10.

doctors and incorporated into the colonial medical service, were established throughout the Congo, including in Uele, Bangala, Mayumbe and Dibaya.[463]

For central political authorities, relying on prophylactic sleeping sickness missions and thus on pharmaceuticals to tackle the Congo's principal disease presented a few immediate benefits from a political-economic perspective. It allowed a 'magic-bullet approach' to public health, whereby the latter was defined as a medical, and more specifically a medicinal, problem. Dealing with the broader ecology of sleeping sickness and the social roots of ill health could thus be avoided.[464] Moreover, entrusting medicinal prophylaxis to itinerant teams enabled the colonial state to protect public health in the colony's rural interior through a simple 'delivery of technology', without (first) having to attend to the nonexistent or at best embryonic medical infrastructure in remote areas.[465] Preventing disease via the distribution of medical drugs seemed cheaper in the short term than promoting more comprehensive health measures. In that sense, one could argue that pharmaceuticalisation was an important condition for the 'ruralisation' of medical provision in the Congo after the First World War.[466]

Furthermore, as Rodhain had argued, prioritising medicinal over mechanical prophylaxis greatly reduced the need for isolation, large-scale relocations and cordons sanitaires that hampered tax collection and labour recruitment at a time of accelerating economic development (which was geared to the production of export commodities), and provoked hostility.[467] In fact, the itinerant medicinal prophylaxis program was deemed to better suit the 'indigenous mentality'.[468] At the same time, as Van Campenhout had pointed out, the medicinal campaign could help the Belgians to tighten their grip on rural African communities. The sleeping sickness missions performed administratively and fiscally useful work in surveying and documenting colonial subjects in areas where state control had so far been rather limited.[469] Schwetz

[463] 'Congo Belge. Service de l'hygiène. Rapport Annuel 1923', s.d., MAEAA, RA-CB, 81.11; J. Rodhain, 'Rapport général sur le fonctionnement du service de l'Hygiène durant l'exercice 1924', 2.9.1925, MAEAA, RA-CB, 81.12; Médecin en Chef adjoint, 'Congo Belge. Rapport du service médical 1926', 24.8.1927, MAEAA, RA-CB, 82.2; G. Trolli, 'Colonie du Congo Belge. Rapport sur l'Hygiène Publique pendant l'année 1929', 1931, MAEAA, RA-CB, 83.2; Lyons, *Colonial Disease*, 141-142.

[464] Biehl, 'Pharmaceutical governance', p. 222; Lyons, *Colonial Disease*, 102, 223, 228-229.

[465] Biehl, 'Pharmaceutical governance', p. 222; Monnais, 'Colonial medicines to global pharmaceuticals', 261; Médecin en Chef adjoint, 'Congo Belge. Rapport du service médical 1926', 24.8.1927, MAEAA, RA-CB, 82.2.

[466] Monnais, 'Colonial medicines to global pharmaceuticals', 261.

[467] On the contradiction between cordons sanitaires and rubber tax collection, see Lyons, *Colonial Disease*, p. 35.

[468] Médecin en Chef adjoint, 'Congo Belge. Rapport du service médical 1926', 24.8.1927, MAEAA, RA-CB, 82.2.

[469] Through the preparatory work of population surveys and regrouping, they facilitated political administration and taxation in rural areas. E. Van Campenhout to Minister of Colonies, 18.12.1922, MAEAA, RA-CB, 81.10. Jamot's model of sleeping sickness control also 'counted, numbered, tracked and documented' the inhabitants of the prophylactic sectors. Tousignant, 'Politics of mass therapy', 628.

himself had labelled his endeavour in Kwilu a 'medical-administrative mission', thus revealing that it was in fact far from politically neutral.[470]

Finally, distributing trypanocides via dedicated mobile teams helped the colonial administration to be seen to the outside world as doing something about the revived sleeping sickness epidemic and thus providing indigenous health.[471] This was not unimportant in an interwar context of increased inter-imperial scrutiny of colonies' African trypanosomiasis record, especially in the context of the LNHO initiatives. That the disease quickly became the subject of comparisons among colonial powers after the war is illustrated, for example, by the response of the Congo's vice-Governor General in Boma to Jamot's article on sleeping sickness control in 1920. He claimed that his doctors had nothing to learn from Jamot, as they had been thinking about 'systematic atoxylisation' just as much as the French.[472] It seems that by 1925, the Belgians - together with the French - had largely established an international reputation for pharmaceutical disease control. What became clear in the cross-border comparisons made during the LN conferences, for example, was that different (epidemiological) circumstances prevailed in different African territories, so that it was unfeasible to apply the same prophylactic measures everywhere. In the 1920s, sleeping sickness was increasingly constructed as a problem of French and Belgian colonies tackled with pharmaceuticals, whereas British delegates highlighted the importance of animal trypanosomiasis and tsetse fly control.[473]

However, despite notable support from central political authorities for medicinal prophylaxis via special medical missions, official staff and monetary resources were not even remotely sufficient to at once extend it to all infected areas within the Belgian colony's vast territory.[474] To deal with the colonial medical service's perennial shortage of European doctors, the administration was already to a large extent counting on auxiliaries in state service.[475] Of particular significance were the European 'agents

[470] J. Schwetz, *Rapport sur les travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923* (Bruxelles, 1924), pp. 1-2.

[471] Reynolds Whyte, van der Geest and Hardon, *Social Lives of Medicines*, pp. 88-89.

[472] Vice-Governor General to Minister of Colonies, 29.9.1920.9.29, MAEAA, Hygiène, 4403.301.

[473] 'Opening Address to the League of Nations Conference on Sleeping Sickness in Africa. By the Chairman, the Honourable W.G. Ormsby-Gore, M.P., F.R.G.S., Under-Secretary of State for the Colonies', 19.5.1925, MAEAA, Hygiène, 4461.914; 'Société des Nations. Organisation d'Hygiène. Deuxième conférence internationale de la maladie du sommeil. Première séance, tenue à Paris, le lundi 5 novembre 1928, à 10h', 12.1928, MAEAA, Affaires Etrangères, 2934.525; 'Société des Nations. Seconde conférence internationale sur la maladie du sommeil. Sous-commission d'administration. Première séance tenue à Paris, le mardi 6 novembre 1928 à 10 heures', MAEAA, Affaires Etrangères, 2934.525; 'Société des Nations. Seconde conférence internationale sur la maladie du sommeil. Sous-commission d'Administration. 2e séance, tenue à Paris le mardi 6 novembre 1928 à 15 heures', MAEAA, Affaires Etrangères, 2934.525; 'Société des Nations. Section d'Information. 12 novembre. Deuxième Conférence de la Maladie du Sommeil', ITG, Onderzoek, 5.2.11.

[474] Note on the Schwetz mission and the Rockefeller Institute's collaboration in the sleeping sickness campaign, 1923, MAEAA, Hygiène, 4403.301; 'League of Nations. Health Organisation', MAEAA, Hygiène, 4410.378.

[475] 'Chambre des Représentants. Session de 1920-1921. Rapport sur l'Administration du Congo belge pendant

sanitaires'. This category of medical staff had been created in 1919, and several participated in the Schwetz mission.[476] In addition, medical authorities planned to extend the mass treatment campaign by recruiting rudimentarily trained African injectors.[477] Dissatisfied with the quantity and quality of certified Congolese nurses, Schwetz had started training indigenous helpers on the spot to perform routine tasks in the framework of his special mission.[478] The practice was endorsed by for instance Rodhain, as medical authorities recognised that due to infrastructural problems and difficulties with student recruitment at the schools for 'indigenous medical assistants', progress with the development of a cadre of formally trained African medical staff was rather slow.[479]

To reach even more trypanosome carriers, the colonial administration also increasingly appealed to the private sector, especially missionary AMI providers, to cooperate in the pharmaceutical fight against sleeping sickness.[480] Several Catholic and Protestant mission societies had of course been involved in providing sleeping sickness treatment since at least 1910. The creation of the AMIB after the war provided a useful channel to more efficiently harness their participation in medicinal prophylaxis. In return for free trypanocides and subsidies, AMIB members were expected to assist with the systematic detection and treatment of trypanosome-infected individuals under the guidance of the special medical missions.[481] In addition, the government called on private companies, whose labour recruitment was thought to contribute to the spread of human trypanosomiasis because it increased African mobility, to tackle the disease within their concessions.[482] One of the most active enterprises in this respect was the Forminière mining company: in 1923 it set up an autonomous sleeping sickness mission in Kasai, modelled on the one Schwetz had established in Kwango. Like other companies whose medical staff provided trypanocide treatment, Forminière was supplied with free

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l'année 1919', 1920, MAEAA, RA-CB, 81.8; 'Congo Belge. Rapport Annuel 1920', 1922, MAEAA, RA-CB, 81.9; G. Trolli, 'Rapport Annuel 1920. Service d'Hygiène', s.d., MAEAA, RA-CB, 81.9; 'Congo Belge. Service de l'hygiène. Rapport Annuel 1923', s.d., MAEAA, RA-CB, 81.11; E. Van Campenhout, 'Programme Hygiénique et Sanitaire dans la Colonie du Congo Belge', 22.11.1921, MAEAA, Hygiène, 4419.604.

[476] A. Cornet, *Politiques de santé*, p. 60. The annual medical report for 1925 claimed it was 1917, however. R*apport sur l'Hygiène Publique pendant l'Année 1925*, p. 77.

[477] 'Rapport annuel 1921', s.d., MAEAA, RA-CB, 81.10.

[478] Governor General Lippens to Minister of Colonies, 10.2.1922, MAEAA, Hygiène, 4406.333.

[479] J. Rodhain, 'Lettre-circulaire "Suite aux considérations sur la prophylaxie de la maladie du sommeil"', 30.3.1923, ITG, Onderzoek, 5.2.7; 'Rapport annuel 1921', s.d., MAEAA, RA-CB, 81.10; 'Congo Belge. Service de l'hygiène. Rapport Annuel 1923', s.d., MAEAA, RA-CB, 81.11; J. Rodhain, 'Rapport général sur le fonctionnement du service de l'Hygiène durant l'exercice 1924', 1925.9.2, MAEAA, RA-CB, 81.12; *Rapport sur l'Hygiène Publique pendant l'Année 1925*, p. 20.

[480] 'Rapport annuel 1921', s.d., MAEAA, RA-CB, 81.10.

[481] *Rapport sur l'Hygiène Publique pendant l'Année 1925,* pp. 3, 21; Médecin en Chef adjoint, 'Congo Belge. Rapport du service médical 1926', 24.8.1927, MAEAA, RA-CB, 82.2.

[482] *Rapport sur l'Hygiène Publique pendant l'Année 1925*, pp. 3, 11.

drugs by the administration.[483] In that way, much of the AMI resources were centred on sleeping sickness control in the 1920s.

5.4 Drug supply challenges: 'rationalisation' and the emergence of a Belgian synthetic pharmaceuticals industry

The postwar widening of the trypanocide market as a result of the expansion of mass treatment by official and private AMI providers posed its own challenges to Brussels. Central authorities had to ensure a regular and adequate supply of effective trypanocides to be administered to Congolese trypanosome carriers free of cost. These pharmaceuticals were not produced locally but had to be imported, something that had hardly proved possible during the First World War. In the 1920s, efforts were made to 'rationalise' drug procurement and distribution, in order to ensure and optimise the provision of trypanocides to medical staff in the colony while keeping the costs down.[484] The interwar period, in other words, saw the Belgian colonial administration adopt measures aimed at balancing the needs of pharmaceutical sleeping sickness control with a desire to limit drug expenditure and dependence on German trypanocide manufacturers.

By the 1920s, trypanocides for the colonial market were procured centrally by the Colonial Ministry in Brussels, which charged the pharmaceutical service of the Belgian Army in Antwerp with purchasing prescription drugs in bulk.[485] Assessing local drug needs was of course key to this undertaking. Before the First World War, a standard selection of medicines was automatically sent to all state doctors in the Congo at regular intervals. However, the shortcomings of these automatic dispatches (i.e. the fact that

[483] *Rapport sur l'Hygiène Publique pendant l'Année 1925*, pp. 11-12; G. Trolli, *Royaume de Belgique. Colonie du Congo belge. Rapport sur l'Hygiène Publique pendant l'année 1927* (Gand, 1928), pp. 9, 11; Governor General to Director of Forminière Mr. Cayen, 7.7.1926, MAEAA, GG, 16835 (Congo-Kasai); Director of Forminière Mr. Cayen to Governor of Congo-Kasai, 5.6.1926, MAEAA, GG, 16835 (Congo-Kasai).

[484] On drug procurement and distribution as 'components of a rational drugs policy', cf. Najmi Kanji, 'Action at country level', p. 65.

[485] See for example: Minister of Colonies to A. Broden, 31.10.1924, ITG, Onderzoek, 5.2.9; Director of the Pharmacie Centrale de l'Armée, 'Ministère de la Défence Nationale. Expédition des Marchandises de la Pharmacie Centrale de l'Armée pour la Colonie du Congo Belge', 1927, MAEAA, GG, 16802 (Congo-Kasai, Léopoldville); Minister of Colonies to Governor General, 8.10.1936, MAEAA, GG, 16754 (GG). On 'bulk purchasing' and 'centralized (sic) procurement system(s)' as elements of the rational drug policies adopted in developing countries since the 1970s, see: M. Mamdani, 'Early initiatives in essential drugs policy' in Kanji, Hardon, Harnmeijer, Mamdani and Walt, *Drugs Policy in Developing Countries*, pp. 8-9.

they were not attuned to local needs) led to their replacement with a system that required medical practitioners to periodically submit formal drug 'requisitions' in 1911.[486] This, in turn, led to complaints in Brussels about the exaggerated quantities and the nature of the medicines (i.e. too many commercial specialties) requested.[487] Subsequently, in a sign that Broden's therapeutic reform agenda was increasingly taking hold, official formularies containing a more limited list of approved drugs that could be prescribed at the state's expense were introduced in the 1920s to curb costly demands for innumerable branded specialties.[488] The forms indicating the requested drug quantities were centralised per province, examined by the head of the medical service to weed out excessive or unauthorised demands, and subsequently transmitted to Brussels, where the Colonial Ministry's medical department purchased and dispatched the drugs with the assistance of the 'Pharmacie Centrale de l'Armée' (PCA).[489]

As far as trypanocides were concerned, the postwar lists included Atoxyl, tartar emetic, and Soamin.[490] This choice of approved sleeping sickness drugs naturally reflected the findings of the Leopoldville laboratory researchers. By 1911, they had already identified these chemicals as the most effective agents for ambulatory prophylactic treatment. Continued drug therapy research by Dubois and in particular Jan Frans Van den Branden shortly before and during the war had not altered this view. Van den Branden was another Louvain medical graduate and bacteriologist from the lab of Denys who had accompanied Rodhain on his scientific mission to Katanga in 1910. After a furlough in Europe, he arrived at the Leopoldville laboratory in 1913, the same year Mouchet left.[491] He soon began to publish the results of clinical trials with Ehrlich's Salvarsan and derivatives such as Neosalvarsan in the 'Archiv für Schiffs- und Tropenhygiene' and the 'Bulletin de la Société de Pathologique Exotique', first with

[486] R. Piton, 'Le ravitaillement de la colonie en produits pharmaceutiques et matériel médical', *Congo. Revue générale de la Colonie belge* 10 (1929), 494; E. Van Campenhout, 'Note concernant l'envoi proposé d'Asporozoïne pour expérimentation au Congo', 26.10.1910, MAEAA, Hygiène, R146.591; Minister to Governor General, 1.6.1910, MAEAA, Hygiène, R146.592; 'Circulaire relative aux réquisitions de médicaments' dans Congo belge. Gouvernement local*, Recueil mensuel des ordonnances, circulaires, instructions et ordres de service* (Boma, 1910), pp. 221-222.

[487] Minister of Colonies Renkin to Governor General, 30.6.1911, MAEAA, GG, 16819 (GG); Minister of Colonies Renkin to Governor General, 9.4.1913, MAEAA, GG, 16789 (Congo-Kasai, Boma).

[488] L. Piton, 'Circulaire concernant les réquisitions de médicaments, pansements, accessoires et matériel divers nécessaires au Service médical', 23.6.1922, MAEAA, GG, 16847 (GG); 'Projet de circulaire sur l'établissement des états de besoins, réquisitions et du budget du Service de l'Hygiène', 14.11.1924, MAEAA, GG, 16847 (GG); 'Réquisitions de médicaments', MAEAA, GG, 16847 (GG).

[489] Piton, 'Ravitaillement de la colonie', 496; *Rapport sur l'Hygiène Publique pendant l'Année 1925*, p. 23.

[490] 'Congo Belge. Service Sanitaire. Province du Congo-Kasai. District de Lazarets Tuberculeux et de Trypanosés Léopoldville. Réquisition de médicaments, pansements et divers', 1926, MAEAA, GG, 15146 (Congo-Kasai, Léopoldville).

[491] A. Dubois, 'Nécrologie. J.-F.-F. Van den Branden', *Annales de la Société Belge de Médecine Tropicale* 22 (1942), 87-88; Biographic note on Dr Walraevens and Dr Mouchet, MAEAA, Hygiène, 4448.778; Biographical note on J. F. F. Van den Branden, MAEAA, Hygiène, 4444.740.

Dubois, and from 1915 onwards as the lab's single director.[492] But these research efforts did not result in new additions to the Congo's therapeutic arsenal for routine sleeping sickness treatment.[493]

Although at the start of the postwar period no useful new trypanocides had emerged, the Congo's central authorities did have a wider choice of suppliers for existing sleeping sickness drugs than before, which gave them opportunities to shop around. The reason was that pharmaceutical companies outside of Germany became much more involved in the manufacture of synthetic chemicals, especially arsenicals, copied from German drug firms. The First World War accelerated this evolution.

Before 1914, German chemical manufacturers clearly controlled the international market for new arsenic-based drugs, which found their main application in the treatment of syphilis and human African trypanosomiasis. This is not to say that research into analogues and derivatives of Ehrlich's arsenicals was not slowly taking off in other countries as well. A most notable example, besides Wellcome Burroughs & Co.'s work on arsenicals, were the efforts of the French company 'Poulenc Frères'. Having started out as a 'purely commercial' Parisian pharmacy business, the firm was steadily growing into a research-based 'industrial enterprise' at the beginning of the twentieth century. Ernest Fourneau, one of Poulenc's research chemists, had set up an organic chemistry laboratory there, modelled on those he had encountered during a stay in Germany between 1898 and 1901. The lab took advantage of the non-patentability of pharmaceuticals in France to carefully study published German patents and copy their drugs. In 1911, Fourneau's activities earned him the directorship of the newly established Therapeutic Chemistry Laboratory at the Paris Pasteur Institute, from where he continued close collaborations with Poulenc. Meanwhile, Fourneau's colleague at Poulenc's lab, François Billon, succeeded in developing French versions of Salvarsan and Neosalvarsan. Named Arsenobenzol and Novarsenobenzol respectively, these new drugs further underscored that the French pharmaceutical company was building up expertise in the specific chemotherapy of infectious disease.[494]

The interruption of pharmaceutical supplies from Germany because of World War I significantly boosted the development and production of synthetic drugs elsewhere,

[492] Dubois, 'Nécrologie. J.-F.-F. Van den Branden', 87. Dubois left for Uele after his position at the Leopoldville lab: Jadin, 'Albert Louis Marie DUBOIS', col. 120. For example: F. Van den Branden et A. Dubois, 'Notes préliminaires sur l'emploi du Néosalvarsan dans diverses affections tropicales', *Archiv für Schiffs- und Tropenhygiene* 18 (1914), 375-385; F. Van den Branden, 'Seconde note préliminaire sur le traitement de la trypanose humaine par Salvarsankupfer', *Archiv für Schiffs- und Tropenhygiene* 18 (1914), 743-758; F. Van den Branden, 'Le sel sodique du Salvarsan cuprique dans le traitement de la trypanose humaine, du pian et de la syphilis', *Bulletin de la Société de Pathologie Exotique* 8 (1915), 582-586; F. Van den Branden, 'Valeur moyenne de la durée de stérilisation sanguine chez les trypanosés par une dose de salvarsan, néosalvarsan, salvarsan cuprique et sel sodique du salvarsan cuprique', *Bulletin de la Société de Pathologie Exotique* 9 (1916), 13-15.

[493] Broden, 'Thérapeutique des trypanoses humaines', 34; Van Hoof, 'Thérapeutique de la maladie du sommeil', 104.

[494] Administrateur Etablissements Poulenc Frères to E. Van Campenhout, 18.2.1914, MAEAA, Hygiène, R147.598; Quirke, 'Foreign influences', 135-136; Baverey-Massat-Bourrat, 'De la copie au nouveau médicament', 50-54.

notably in enemy countries.[495] Wellcome Burroughs & Co., for example, started manufacturing its own (Neo)salvarsan analogues (Kharsivan and Neokharsivan) alongside substitutes for other former German imports like Aspirin.[496] Poulenc as well took full advantage of the 'new market opportunities' created by the armed conflict. It not only 'supplie(d) drugs and other chemicals for the French war effort', but also gained access to British markets for its anti-syphilitic arsenicals via a license from the British Board of Trade. To sell its (Nov)arsenobenzol there, Poulenc liaised with the manufacturing chemists May & Baker, which by 1916 also took on manufacture.[497] In addition, in a further sign of Poulenc's increasingly 'international outlook', the firm produced a French version of Atoxyl under the tradename 'Trypoxyl', with which it also started targeting the Congolese market for trypanocides during the war.[498]

After the Armistice, the Congo became even more interesting for manufacturers of synthetic pharmaceuticals. With the postwar designation of human trypanosomiasis as the Belgian colony's foremost public health problem and the inter-imperial validation of mass treatment as a viable and specifically Franco-Belgian strategy of sleeping sickness control, a vast overseas market for trypanocides took shape.[499] It was not a 'consumer-driven market', but one propelled by the colonial state as a source of demand given its role as a health 'provider' through the medicinal prophylaxis of sleeping sickness in the Congo.[500] While Belgian administrators had turned to Soamin and French imitator drugs to find an alternative for German-manufactured Atoxyl since the war, the immediate postwar period saw yet another competitor emerge on the horizon.

Largely overlooked in the historiography of sleeping sickness (drugs) so far, a Belgian company in Forest also started competing for a share of the Congolese Atoxyl market. The firm 'Société Anonyme des Produits Chimiques et Pharmaceutiques "Meurice"' was established in 1920 by Albert Meurice, an agricultural engineer who had directed his father's artificial fertiliser company in Charleroi and founded the 'Institut Meurice', an educational institution devoted to applied chemistry that also had a research laboratory for the analysis of agricultural and food products.[501] In 1915, the Institute's lab had taken on the production of synthetic chemical drugs that were typically supplied by German

[495] Quirke and Slinn, 'Perspectives on twentieth-century pharmaceuticals', p. 10.

[496] Quirke, 'Foreign influences', 141.

[497] Ibid., 137.

[498] Quirke, 'Foreign influences', 137; Dr Cammermeyer to Governor General, 26.2.1917, MAEAA, GG, 16793 (Congo-Kasai, Kikwit); A. Broden to 9e Direction, 24.8.1920, ITG, Onderzoek, 5.2.5; 'Les Etablissements Poulenc Frères, La maladie du sommeil' (Paris, 1927).

[499] Biehl describes how, in the case of contemporary Brazil, 'once a government designates a disease like AIDS "the country's disease", a market takes shape - a captive market.' Biehl, 'Pharmaceutical governance', p. 222.

[500] Applbaum describes the current Japanese healthcare system as a 'provider- rather than consumer-driven system', with the provider effectively being the 'government'. K. Applbaum, 'Educating for global mental health: the adoption of SSRIs in Japan' in Petryna, Lakoff and Kleinman, *Global Pharmaceuticals*, p. 93.

[501] 'In memoriam Albert Meurice', *Revue de Thérapeutique "Meurice"* (1939), 1811-1812; H. Deelstra 'Albert MEURICE', p. 2, Koninklijke Vlaamse Chemische Maatschappij, Galerij van Belgische Scheikundigen, http://www.kvcv.be/images/documenten/historiek/galerij/Meurice_Albert_FR.pdf (Last accessed 22 April 2014).

manufacturers, including acetylsalicylic acid. The absence of a Belgian dyestuff industry and the wartime conditions made it a particularly challenging task: there was no industrial tradition of chemical drug synthesis to build on, raw materials were hard to come by, equipment and knowhow were limited, and Meurice himself was imprisoned by the Germans in 1917. Nevertheless, released again in 1918, the engineer pursued his plans to end Belgium's dependence on German drug imports, and after the war transformed the modest beginnings of the 'Institut Meurice' into a synthetic pharmaceuticals company, in all probability the first of its kind in the country.[502]

To compete with the increasingly science-based industries of Belgium's neighbours, Meurice's focus soon turned to specific chemotherapy and tropical diseases, notably sleeping sickness. As in the case of Poulenc, the Belgian company's first efforts rested on manufacturing existing trypanocides, and thus on imitation rather than innovation. It quickly managed to synthesise sodium arsanilate (Atoxyl).[503] Significantly, to get its drugs tested, the young firm developed close ties with the Brussels School of Tropical Medicine and Alphonse Broden. At the EMT, Broden experimented Meurice's Atoxyl on experimentally infected lab animals, found it therapeutically equivalent to foreign brands of the trypanocide, and suggested dispatching it to the Leopoldville medical laboratory for clinical trials.[504]

The collaboration between Meurice and Belgian tropical medicine was somewhat remarkable. To become a viable enterprise, the Belgian drug company needed to overcome the opposition of a medical profession traditionally suspicious of commercial influences in therapeutics. Meurice recounted how initially, Belgian practitioners collaborating with drug manufacturers through clinical research were 'suspect' in the eyes of their colleagues.[505] Tellingly, in the first issue of the 'Revue de Thérapeutique Meurice', set up by the firm in 1922 as an outlet for the publication of clinical drug studies and a marketing medium aimed at prescribing practitioners, the editorial focused on appeasing fears that an endorsement of pharmaceutical specialities through clinical research violated the profession's ethical code. To morally justify industry-clinician collaborations, Meurice focused on distinguishing itself from 'unethical' drug manufacturers selling secret remedies, and tried to align itself with the medical profession by downplaying commercial interests and placing itself firmly behind the movement for scientific medicine. Experiments were the only way to assess the therapeutic value of new scientific medicines, it was argued, and the 'Revue' was simply a medium to publish such evaluations, so that they could inform rational medical

[502] 'In memoriam Albert Meurice', 1812; M. Pottier, 'L'industrie belge des produits pharmaceutiques utilisés dans la thérapeutique coloniale', *Congo. Revue générale de la Colonie belge* 1 (1930), 345-346; C. Darmstadter, 'La contribution de l'industrie belge à l'exercice et au progrès de la médecine tropicale ', *La Revue Coloniale Belge* 20 (1946), 72.

[503] Darmstadter, 'La contribution de l'industrie belge', 72-73; Pottier, 'L'industrie belge', 347.

[504] A. Broden to Minister of Colonies, 11.1.1919, ITG, Onderzoek, 5.2.5.

[505] Union Chimique Belge. Division Produits Pharmaceutiques "Meurice", 'A nos lecteurs - Aan onze lezers', *Revue de Thérapeutique "Meurice". Therapeutisch tijdschrift* (1935), 4.

practice. Publishing trial results of pharmaceutical specialties also served the company's commercial interests of course, but this was no reason for concern since clinical studies were impartial, Meurice claimed, and targeted at audiences of medical professionals only. Finally, the editorial also appealed to postwar patriotic feelings and anti-German sentiments: it equated support for Meurice with support for the Belgian pharmaceutical industry, which was crucial to end the prewar dependency on Germany, who owed its pharmaceutical dominance precisely to industry-clinician collaborations.[506]

As a therapeutic reformer, Broden naturally wanted to raise the standards of clinical research and must have welcomed the drug firm reaching out to tropical medicine experts for the experimentation of its chemical compounds.[507] It also seems that the EMT director was not insensitive to the 'ethical' manufacturer's nationalistic rhetoric: he claimed testing Meurice's Atoxyl at the EMT, for example, with the aim of having Belgian-manufactured drugs replace 'foreign products'.[508] In addition, the Brussels School lacked adequate funds and infrastructure for research in general, let alone had the capacity to set up its own laboratory for the synthesis of chemical compounds, as for example Fourneau had done at the Paris Pasteur Institute.[509] Collaborating with the pharmaceutical industry, which provided him with compounds to test, at least enabled Broden to continue to some extent the sleeping sickness drug therapy research he had devoted himself to in Leopoldville.

For Meurice, the collaboration with the EMT also provided clear benefits. On a practical level, it gave the firm vital access to trypanosome-infected laboratory animals and scientific expertise for preclinical tests. Moreover, seeking tropical medicine specialists' assistance in the development of trypanocidal drugs strengthened the company's profile as a Belgian manufacturer of scientific medicines, which enhanced the cultural status of its products more generally. Via Broden, who largely determined what experimental drugs were sent to Leopoldville, Meurice was also able to reach clinical investigators in the Congo, crucial for establishing drug safety and efficacy and creating a market. The young pharmaceutical company's tactics soon paid off: by 1920, its brand of Atoxyl - 'Atoxyl Meurice' - was purchased by the Congo administration for Schwetz's sleeping sickness mission, for example.[510] It seems, therefore, that aside from

[506] 'Notre but. Une question de déontologie', *Revue de Thérapeutique "Meurice"* (1922), 3-6.

[507] With respect to the American interwar context, Nicolas Rasmussen notes how therapeutic reformers welcomed drug firms' collaborations with academic clinicians 'in a context where careful trials were still essentially voluntary'. N. Rasmussen, 'The drug industry and clinical research in interwar America: Three types of physician collaborator', *Bulletin of the History of Medicine* 79 (2005), 79-80.

[508] A. Broden to Minister of Colonies, 11.1.1919, ITG, Onderzoek, 5.2.5.

[509] A. Broden to Minister of Colonies, 19.12.1911, ITG, FD10; A. Duren, 'Note sur l'Ecole de Médecine Tropicale', 12.1.1931, ITG, FD11; Director General a.i. (7e DG) Duren to Minister, 10.3.1931, MAEAA, Hygiène, 4441.712; Director General a.i. (7e DG) Duren, 'Note pour Monsieur le Ministre sur l'Institut de Médecine Tropicale Prince Léopold', 27.12.1931, MAEAA, Hygiène, 4447.777; 'Note au sujet de l'Ecole de Médecine Tropicale', 22.8.1933, MAEAA, Hygiène, 4441.

[510] Minister of Colonies to Governeur General, 17.1.1920, MAEAA, GG, 16795 (Congo-Kasai).

considerations of price and therapeutic value, postwar pharmaceutical nationalism and anti-German sentiments were a major factor behind the emergence of Belgium's nascent synthetic drug industry as a key trypanocide supplier for the colony, alongside Poulenc and Wellcome Burroughs & Co.

Once procured, sleeping sickness drugs of course still needed to be supplied to and distributed among the variety of medical prescribers in the Congo in a timely fashion and in sufficient quantities. In that way, the expansion of medicinal prophylaxis in the 1920s contributed significantly to the development of a pharmaceutical service as part of the colony's official medical service. Before the First World War, a state pharmacy existed in Boma, but it was set up to handle the medicinal requests of local colonial staff rather than as a pharmaceutical depot from which the rest of the colony was served.[511] State doctors and AMI providers outside of Boma normally received prescription drugs directly from the authorities in Brussels, but this system was far from ideal, as it often resulted in seriously delayed or inadequate drug supplies and forced physicians to address urgent requests to the Boma pharmacy.[512] As the latter could not meet the many demands, by 1912 complaints about drug shortages soared and chief medical officers in the Congo began to call for the organisation of a state pharmaceutical service.[513]

The colonial government's difficulties to procure sufficient quantities of prescription drugs during the war exacerbated the problem, delaying the supply of trypanocides to missionary AMI providers, for example, and increasing pressures on the Boma pharmacy.[514] By 1918, drug reserves in the Congo were depleted and the Armistice did not bring immediate relief.[515] When more abundant drug supplies from Europe came into view again by 1920, the local administration decided to establish medicinal depots in the colony's provinces, and proposals for the organisation of a pharmaceutical service gradually took shape.[516] Crucially, the legislation transforming the colonial health

[511] 'Circulaire rappelant aux fonctionnaires et agents de la Colonie que la pharmacie de Boma n'est pas un dépôt réserve de médicaments' dans Congo Belge. Gouvernement local, *Recueil mensuel des ordonnances, circulaires, instructions et ordres de service* (Boma, 1914), p. 129.

[512] Ibid., p. 129; G. Trolli, 'Le service médical du Congo Belge depuis sa création jusqu'en 1925', *Congo. Revue générale de la Colonie belge*, 1 (1927), 199.

[513] Dr Cammermeyer, 'Rapport du Médecin en Chef sur la Situation sanitaire au Congo Belge durant l'année 1912', 24.6.1913, MAEAA, RA-CB, 80.4; U. Zerbini, 'Rapport annuel sur les conditions générales hygiéniques et sanitaires du Congo', 1913, MAEAA, RA-CB, 80.4; Boma pharmacist Del Piano to Chief Medical Officer, 10.5.1913, MAEAA, GG, 16789 (Congo-Kasai, Boma).

[514] 'Circulaire relative à l'établissement des réquisitions de médicaments, réactifs et accessoires de pharmacie et de laboratoire ainsi qu'à l'expédition par le personnel du service de santé de l'état modèle 10' dans Congo Belge. Gouvernement local, *Recueil mensuel des ordonnances, circulaires, instructions et ordres de service* (Boma, 1920), p. 64; 'Note pour Monsieur le Governor General', MAEAA, GG, 16793 (Congo-Kasai, Kikwit).

[515] 'Circulaire relative à l'établissement des réquisitions de médicaments, réactifs', pp. 64-65; Piton, 'Ravitaillement de la colonie, 495.

[516] 'Circulaire relative à l'établissement des réquisitions de médicaments, réactifs', pp. 64-65; Médecin en Chef, 'A Messieurs les Médecins de l'Etat et Agréé', 28.2.1920, MAEAA, GG, 16847 (GG); Pharmacien en Chef L. Piton, 'Note pour Monsieur le Médecin Directeur de l'Inspection Générale de l'Hygiène. Organisation du Service

service in 1922 stipulated the creation of provincial pharmacies, charged with managing pharmaceutical stocks, distributing medicines to state doctors, and drafting annual drug requisitions (based on physicians' requests) for their respective provinces. Provincial pharmacists were supervised by the colony's head pharmacist, who reviewed the requisitions, oversaw drug distribution, and inspected their pharmacies at the chief medical officer's request.[517]

By 1925, a state pharmacy existed in every province, in addition to a central depot of pharmaceutical reserves set up in 1924 to prevent shortages in the provincial pharmacies and managed by the head pharmacist in Boma.[518] Although the most commonly used drugs, including trypanocides, were sometimes directly sent from Europe to medical posts in the Congo to speed up the supply process and reduce transport costs, provincial pharmacies also stocked sleeping sickness medicines, which they supplied to state doctors as well as private (missionary) AMI providers.[519]

5.5 Opposition to sleeping sickness missions and pharmaceutical regulation

Political support from central colonial authorities for the special sleeping sickness missions was predicated on the assumption that it better suited Congolese people's 'mentality', interfered less with economic development and allowed promoting indigenous health through a simple delivery of technology via public and private sector medical providers. In practice, however, things were not quite that straightforward. The implementation of Atoxyl-based itinerant medicinal prophylaxis in rural areas in the colony's periphery encountered numerous obstacles and generated significant tensions with local agents. In fact, there were important similarities with the conflicts over the 'powers' and 'ethics' of mass trypanocide treatment that took place in French Africa.[520]

pharmaceutique', 17.8.1920, MAEAA, GG, 16847 (GG); Pharmacien en Chef L. Piton, 'Projet d'organisation du Service Pharmaceutique', 9.11.1921, MAEAA, GG, 16847 (GG); 'Congo Belge. Rapport Annuel 1920', 1922, MAEAA, RA-CB, 81.9; Piton, 'Ravitaillement de la colonie', 496-497.

[517] 'Ordonnance du 15 Décembre 1922', pp. 64-65.

[518] *Rapport sur l'Hygiène Publique pendant l'Année 1925*, pp. 22-23; J. Rodhain, 'Rapport général sur le fonctionnement du service de l'Hygiène durant l'exercice 1924', 2.9.1925, MAEAA, RA-CB, 81.12. Provincial pharmacies were established in Leopoldville, Coquilhatville, Stanleyville and Elisabethville. Piton, 'Ravitaillement de la colonie', 496.

[519] *Rapport sur l'Hygiène Publique pendant l'Année 1925*, p. 23; Trolli, 'Le service médical du Congo Belge', 199-200; Piton, 'Ravitaillement de la colonie', 496-497; Chief Pharmacist Piton to all provincial pharmacists, 19.12.1927, MAEAA, GG, 16752 (GG).

[520] As highlighted by Noémi Tousignant in Tousignant, 'Politics of mass therapy', 635.

In Kwango, as will be described in more detail in chapter 9, Schwetz's attempts at pharmaceutical sleeping sickness control met with considerable African resistance, but also with opposition from the private sector, especially Jesuit missionaries, who felt that the official medical mission unduly encroached upon their sphere of influence. Schwetz's efforts to coerce the local population into complying with the requirements of mass screening and treatment soon led to formal complaints and judicial enquiries, and broader questions about the organisation of prophylactic sleeping sickness missions. In Catholic circles, his reliance on clinical diagnostic criteria - without microscopic confirmation - was taken as a symbol of excessive powers and questionable ethics, as it forced Africans merely suspected of carrying trypanosomes to undergo treatment with dangerous medicines on a massive scale. By 1924, their objections to the aggressive methods adopted in Kwango amounted to a discussion about the lawfulness of the Schwetz mission in the Belgian parliament, and Schwetz himself at one point started fearing for his colonial career.

What exacerbated negative local perceptions of the official sleeping sickness missions was the accumulation of less favourable experiences with Atoxyl, in particular grave instances of drug toxicity. In 1920, for example, soon after the Schwetz mission members had started the large-scale treatment of trypanosome carriers in Kwango, reports began to emerge about serious adverse reactions to injections of Meurice-supplied Atoxyl, including even a number of fatalities.[521] The same thing happened again in 1923.[522] In Equateur Province, around fifty cases of drug-induced blindness were reported in the Bangala sleeping sickness mission's Balobo region in 1924.[523] Such accidents naturally did little to improve the popularity of the prophylactic sleeping sickness missions among the African communities they visited and threatened to seriously undermine indigenous compliance with infectious disease control.[524] Moreover, drug toxicity could provide ammunition to those European agents critical of the special missions because they provoked indigenous hostility or because the regular screening and treatment demands interfered with local tax collection, commercial activities, evangelisation etc.[525] It also amounted to administrative investigations of medical affairs. Tellingly, in

[521] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

[522] Agent sanitaire Demaret, 'Rapport sur le troisième examen des deux rives du Kwengo (Sud-Ouest du territoire de Kikwit). Décembre 1922 - Mai 1923', 10.6.1923, MAEAA, Hygiène, 4407.334 (II); A. Broden to 9e Direction, 20.9.1923, ITG, Onderzoek, 5.2.10; Governor General to Secrétaire Général, 25.1.1924, ITG, Onderzoek, 5.2.10.

[523] Dr Simonini, 'Rapport Annuel 1924. Mission maladie du sommeil Bangala', MAEAA, GG, 8824 (Equateur).

[524] Dr Vangoidtsnoven, for example, stated in response to the blindness cases in the Bangala medical mission: 'Des faits de l'espèce sont profondément regrettables, car loin de nous attirer la confiance de ces populations, encore et malgré une longue occupation fort arriérées, ils ne font que nous les aliéner et discréditer auprès d'elles l'action médicale dont elles ont tant besoin.' Dr Vangoidtsnoven to Chef de la M.M.S.B. Médecin Principal, 26.1.1925, MAEAA, GG, 8824 (Equateur).

[525] For example: Dr Simonini, 'Rapport Annuel 1924. Mission maladie du sommeil Bangala', MAEAA, GG, 8824 (Equateur). Tousignant, 'Politics of mass therapy', 628.

response to the Bangala toxicity incidents, which prompted Nouvelle Anvers's territorial administrator to open an official enquiry, the Congo's Governor General Martin Rutten warned that 'accidents that cannot but render our action on the indigenous populations more and more difficult should be avoided at all cost', and ordered an inspection of the medical mission.[526]

As incidents of drug toxicity threatened to fuel (political) opposition to the special sleeping sickness missions and place doctors under increased administrative scrutiny, they were highly annoying for the architects of the Congo's medicinal prophylaxis campaign and the newly independent colonial medical service more generally. Yet rather than questioning and revising mass trypanocide treatment by special medical missions as a strategy of infectious disease control, the Belgian Congo's medical authorities focused on countering and neutralising claims of excessive powers and unethical or dangerous procedures, just like the proponents of mass sleeping sickness therapy would do in French Africa.[527] Reports of coercion mostly met with an insistence on the difficult working conditions for itinerant sleeping sickness staff in regions where state authority was limited. They were typically attributed to a lack of territorial organisation, resulting in 'vaste(s) zone(s) insoumis', and a dearth of administrative or private sector support.[528] Tellingly, the head of Equateur's medical service argued that 'it would be more logical (...) to pursue those who showed indifference, who did not help, and especially those who obstructed the (Bangala medical) mission, than to hold (the latter) responsible and blame (it) for minor incidents and accidents that are always possible, even anticipated, when administering a drug like atoxyl to advanced patients'.[529] Yet even if a certain degree of toxicity did not trouble the Congo's doctors, most did in fact consider the gravity and levels encountered in Kwango and Bangala as 'abnormal', and this contributed to disappointment with (certain brands of) the drug.[530] To prevent further accidents as well as mitigate (potential) criticisms of prophylactic sleeping sickness missions stemming from such incidents, the Congo's medical leaders above all sought to step up pharmaceutical regulation, and thus defined Atoxyl toxicity as an issue of 'control', not only of their own health staff, but also of the pharmaceutical industry.[531]

Schwetz himself blamed Atoxyl-induced deaths in Kwango on the poor quality of the product supplied by the inexperienced Meurice firm rather than on his mission's

[526] Governor General, 'Note pour Monsieur le Secrétaire Général', 14.1.1925, MAEAA, GG, 8824 (Equateur); Governor General, 'Note pour Monsieur le Secrétaire Général', 17.1.1925, MAEAA, GG, 8824 (Equateur).

[527] Tousignant, 'Politics of mass therapy', 635-636.

[528] For example: Dr Simonini, 'Rapport Annuel 1924. Mission maladie du sommeil Bangala', MAEAA, GG, 8824 (Equateur); Médecin Provincial, 'Note pour Monsieur le Gouverneur à propos des cas de cécité constatés parmi les indigènes qui auraient été traités pour la maladie du sommeil', s.d., MAEAA, GG, 8824 (Equateur).

[529] Provincial Doctor in Coquilhatville to Governor, 25.4.1925, MAEAA, GG, 8824 (Equateur).

[530] For example: Provincial Doctor of Equateur Province to Chief Medical Officer, 26.1.1925, MAEAA, GG, 8824 (Equateur).

[531] Tousignant, 'Politics of mass therapy', 630.

aggressive methods. The colony's laboratory elite followed this cue and contributed to new efforts to ensure that only trypanocides of assured safety circulated in the Congo. In this way, sleeping sickness doctors' accounts of unintended Atoxyl effects put the regulation of industrially-manufactured pharmaceuticals firmly on the Belgian colonial agenda and helped expand the criteria of trypanocidal drug quality in the interwar period.

In nineteenth-century Europe, guaranteeing the quality of medicines had traditionally been the responsibility of the pharmaceutical profession. The latter held a state-sanctioned monopoly over the sale and preparation of therapeutic agents listed in national pharmacopoeia drafted by elite pharmacists and physicians. Thus it was up to individual pharmacists to make sure that their preparations complied with national protocols and standards for drug compounding.[532] This approach to quality control, however, became increasingly inadequate when the emergence of industrial pharmaceutical specialties abolished pharmacists' traditional drug preparing role, turning them into dispensers responsible for the quality of medicines they had not put together themselves.[533] Therefore, since the late nineteenth century new and complementary 'ways of regulating' emerged that saw the 'ethical' industry and the state gradually take on a much greater role in drug regulation, amounting, for example, to industrial standardisation and quality control practices, and legislation introducing formal drug approval procedures in the twentieth century.[534]

Although the history of drug regulation in Belgium remains largely unexplored, it seems that as in France, the administrative regulation of drugs was rather weak in the interwar period.[535] With the exception of biological drugs, marketing authorisations for pharmaceutical specialties were not required until the 1950s. Moreover, it was only in 1964 that legislation included safety and efficacy, alongside chemical composition and purity, as criteria for assessing applications for market approval.[536] However, the absence of formal drug approval procedures in interwar Belgium did not mean that the trypanocides procured by the colonial administration in Brussels were not subjected to any form of pre-marketing evaluation. As previously discussed, the 'ethical' firms manufacturing trypanocidal compounds took their own steps to establish proof of safety and efficacy via pre-clinical testing and clinical trials in order to market their products. Clinical investigators in the Congo and especially at the Leopoldville laboratory played a

[532] C. Gradmann and J. Simon, 'Introduction: evaluating and standardizing therapeutic agents, 1890-1950' in C. Gradmann and J. Simon (eds.), *Evaluating and Standardizing Therapeutic Agents, 1890-1950* (Basingstoke, 2010), p. 1-2; J.-P. Gaudillière and V. Hess, 'Introduction "Ways of Regulating"' in J.-P. Gaudillière and V. Hess (eds.), *Ways of Regulating: Therapeutic Agents between Plants, Shops and Consulting Rooms* (Berlin, 2008), pp. 9-11

[533] J. Oslet, 'Le contrôle des médicaments en Belgique. Les grands étapes de la réglementation des médicaments à usage humain', *Journal de Pharmacie de Belgique* 62 (2007), 124.

[534] Gaudillière and Hess, 'Introduction "Ways of Regulating"', pp. 11-12.

[535] J.-P. Gaudillière, 'Professional and industrial drug regulation in France and Germany: the trajectories of Plant and Gland Extracts before 1945' in Gaudillière and Hess (eds.), *Ways of Regulating*, pp. 57-59, 62.

[536] Oslet, 'Contrôle des médicaments en Belgique', 124-125.

major role in these evaluations, and their assessments helped determine what compounds were accepted and selected by colonial medical authorities for mass treatment, which in turn shaped procurement in the metropole. In that sense, the colonial administration - through its medical service - guarded access to the Congolese trypanocide market on the basis of (local standards of) safety and efficacy.

Limiting trypanocide imports to those pharmaceutical specialties that had proven safe and effective in clinical trials was not deemed enough to safeguard public health, however. Additional checks were performed to ensure that the trypanocides supplied and circulating in the Congo were of a consistently acceptable quality. After the war, the PCA, charged with procuring and dispatching trypanocides to the Congo, screened pharmaceuticals intended for the colonial prescription drug market. As pharmacists in Belgium remained responsible for the quality of the medicines they delivered, the PCA tested drug samples before their shipment overseas to ensure chemical composition and purity. This sometimes resulted in batches being rejected and returned to their manufacturers. The official pharmaceutical service in the colony itself was not involved much in trypanocide quality control, despite the first head pharmacist's suggestion to create a local pharmacology laboratory to examine medicines and weed out 'd'affreuses saletés'.[537] When he raised the issue in 1924, Rodhain argued that such quality control should take place in Europe, i.e. before drugs were dispatched, and notably by the Belgian Army's pharmaceutical service.[538]

In the Belgian Congo, medical practitioners taking part in the sleeping sickness campaign helped identify potentially sub-standard products by reporting issues with drug stability - heat and humidity could sometimes visibly alter formulations - and adverse drug reactions to their superiors.[539] In that way, the hierarchical organisation of the colony's medical service contributed to the making of a sort of informal pharmacovigilance system. In the early 1920s, local doctors' claims about trypanocides not preserving well in the tropical climate and causing abnormal toxicity alerted authorities to apparent problems with Belgian- and French-manufactured Atoxyl.[540]

[537] Pharmacien en Chef L. Piton, 'Note pour Monsieur le Médecin Directeur de l'Inspection Générale de l'Hygiène. Organisation du Service pharmaceutique', 17.8.1920, MAEAA, GG, 16847 (GG); Pharmacien en Chef L. Piton, 'Projet d'organisation du Service Pharmaceutique', 9.11.1921, MAEAA, GG, 16847 (GG). The ordinance instituting the colony's pharmaceutical service in 1922 did not explicitly list quality control of drug supplies for the colonial health service among its tasks. See 'Ordonnance du 15 Décembre 1922', pp. 64-65.

[538] J. Rodhain, 'Avis et considérations du Médecin en chef au sujet de la note de Monsieur le Pharmacien en Chef relative à la création d'un laboratoire de pharmacologie',1.10.1924, MAEAA, GG, 16847 (GG).

[539] A circular issued in 1914 by Chief Medical Officer Heiberg warned that chemically altered Atoxyl could cause dangerous 'accidents', and that the 'slightest yellow coloration' of Atoxyl solutions should lead one to reject them. See 'Circulaire relative à la stérilisation des solutions d'atoxyl destinées à l'usage hypodermique', Congo Belge. Gouvernement local, *Recueil mensuel des ordonnances, circulaires, instructions et ordres de service* (Boma, 1914), p. 230.

[540] A. Broden to 9e Direction, 24.8.1920, ITG, Onderzoek, 5.2.5; Director (9e DG, 2e section) to A. Broden, 13.8.1923, ITG, Onderzoek, 5.2.10; Governor General to Secrétaire Général, 25.1.1924, ITG, Onderzoek, 5.2.10; Governor General to S.E.B., 25.4.1925, MAEAA, GG, 16769 (GG).

More specifically, such accounts pointed to the possibility that preliminary checks of chemical composition and purity did not guarantee entirely safe drug supplies, and eventually contributed to the adoption of biological as well as chemical standards of trypanocide quality.

In the wake of drug-related accidents that local sleeping sickness doctors like Schwetz attributed to poor product quality, Broden at the EMT, the PCA and even the Leopoldville laboratory became involved in 'biological' or 'physiological' tests to prevent faulty Atoxyl batches from being dispatched overseas or recall those already circulating in the Congo.[541] These tests entailed administering drug doses to guinea pigs to check for abnormal toxicity, and led to rejections, for example, of the French-manufactured product delivered by a Belgian pharmaceutical wholesaler, as well as Meurice's Atoxyl.[542] However, as Broden himself admitted, the problem was that biological test results could differ from lab to lab depending on variations in the sensitivity of experimental animals. This situation often led trypanocide suppliers to dispute unfavourable reports by Broden or the 'Pharmacie Centrale'.[543] The EMT director found it difficult to draw definitive conclusions as to trypanocide quality because of the variability of lab animals and because good biological results in Europe were apparently not necessarily maintained in the Congo. Nevertheless, he felt that it was the responsibility of manufacturers to guarantee a sufficiently stable product for tropical climates, and by 1923 advised to recall the remaining Atoxyl supplied by Meurice to prevent further accidents.[544]

While Broden somewhat struggled to assess drug quality, by 1925 the PCA's director Vigneron initiated a different, comparative approach to the biological testing of Atoxyl supplies. It seems that he was inspired by the LNHO's program of international biological standardisation. The latter continued Paul Ehrlich's work on serum standardisation by establishing international reference preparations (mostly for biological drugs, but also for the arsenicals (neo)arsphenamine) that could be used in bioassays, i.e. assessments of therapeutic substances' activity by comparing their effects on living organisms with those of standard substances. The LNHO pursued this agenda in a series of international conferences, as well as via a Permanent Commission on

[541] For example: EMT to 9e Direction, 3.8.1922, ITG, Onderzoek, 5.2.10; Governor General to Secrétaire Général, 25.1.1924, ITG, Onderzoek, 5.2.10; Secrétaire Général to A. Broden, 12.3.1924, ITG, Onderzoek, 5.2.10; Director of the Pharmacie Centrale Vigneron to Secrétaire Général, 24.10.1924, ITG, Onderzoek, 5.2.9; Minister of Colonies to A. Broden, 31.10.1924, ITG, Onderzoek, 5.2.9.

[542] For example: EMT to 9e Direction, 3.8.1922, ITG, Onderzoek, 5.2.10; A. Broden to 9e Direction, 20.9.1923, ITG, Onderzoek, 5.2.10.

[543] Pharmacie Centrale de Belgique to Ministry of Colonies (9e DG), 5.12.1922, ITG, Onderzoek, 5.2.10; A. Broden to 9e Direction, 21.2.1923, ITG, Onderzoek, 5.2.10; Secrétaire Général to Minister of the Interior and Hygiene, 7.4.1923, ITG, Onderzoek, 5.2.10; A. Broden to to 9e Direction, 20.9.1923, ITG, Onderzoek, 5.2.10; Director of the Pharmacie Centrale (1e section) François to A. Broden, 7.11.1924, ITG, Onderzoek 5.2.9; Minister of Colonies to A. Broden, 31.10.1924, ITG, Onderzoek, 5.2.9; A. Broden to Director of the Pharmacie Centrale (1e section), 2.12.1924, ITG, Onderzoek, 5.2.9.

[544] Director 9e DG (2e section) to A. Broden, 13.8.1923, ITG, Onderzoek, 5.2.10; A. Broden to 9e Direction, 20.9.1923, ITG, Onderzoek, 5.2.10.

Biological Standardisation, set up in 1924.[545] Presumably referring to the latter event, Vigneron insisted that 'the Geneva Conference' had acknowledged the value of biological tests. He argued that they were necessary for potentially toxic medicines such as Atoxyl, even if chemical analysis yielded satisfactory results. Crucially, the pharmacist obtained a sample of German-manufactured Atoxyl, which he found in compliance with the chemical standards of the German pharmacopoeia, and sent it to Broden so that the EMT director could establish 'the precise conditions that an atoxyl, irreproachable from a biological point of view, must fulfil'.[546] It appears that Broden subsequently took up the suggestion of using the German drug as a point of comparison for biological tests, and found that samples of Meurice's product performed badly.[547]

Despite the Meurice company's comfortable relationship with Belgian tropical medicine and the colonial administration's support for Belgian-manufactured drugs, doubts about the firm's capacity to produce an Atoxyl that fulfilled the evolving quality standards of the time dealt a serious blow to its position on the Congolese trypanocide market.[548] Concerns regarding the abnormal toxicity and instability of both the French and Belgian brands presented the administration with significant Atoxyl supply problems, and led it to revert to the 'Vereinigte Chemische Werke Charlottenburg's' superior original.[549] An added bonus, Brussels explained, was that the latter turned out to be cheaper than the other possible alternative, i.e. Soamin, because the Belgian government could recuperate the sums spent on German drugs via war reparation payments.[550]

Poor product quality was not the only reason proffered for toxicity incidents and local resistance to medicinal prophylaxis, however. In Bangala, for example, problems with Atoxyl supplies were ruled out as the cause of adverse drug reactions, and a failure to follow therapeutic guidelines was blamed instead.[551] Colonial medical authorities thus linked the downsides of pharmaceutical sleeping sickness control to clinicians' own

[545] 'Biological standardization' in World Health Organization, *The First Ten Years of the World Health Organization* (Geneva, 1958), pp. 409, 415; I. Borowy, 'Serological and biological standardisation at the League of Nations Health Organisation, 1921-1939' in C. Bonah, C. Masutti, A. Rasmussen and J. Simon (eds.), *Harmonizing Drugs. Standards in 20th-Century Pharmaceutical History* (Paris, 2009), pp. 211-212; C.-R. Prüll, 'Paul Ehrlich's standardization of serum: *Wertbestimmung* and its meaning for twentieth-century biomedicine', in Gradmann and Simon (eds.), *Evaluating and Standardizing*, p. 19.

[546] Majeur Pharmacien Vigneron to Secrétaire Général, 30.4.1925, ITG, Onderzoek, 5.2.9.

[547] A. Broden to Director of the Pharmacie Centrale de l'Armée, 18.5.1925, ITG, Onderzoek, 5.2.9.

[548] For example: Governor General Tilkens to Secrétaire Général, 25.5.1928, MAEAA, GG, 15718 (GG).

[549] Governor General to Minister of Colonies, 25.4.1925, MAEAA, GG, 16769 (GG); Majeur Pharmacien Vigneron to A. Broden, 30.4.1925, ITG, Onderzoek, 5.2.9; Secrétaire Général to A. Broden, 11.5.1925, ITG, Onderzoek, 5.2.9; Majeur Pharmacien Vigneron to A. Broden, 16.5.1925, ITG, Onderzoek, 5.2.9; A. Broden to Secrétaire Général, 17.5.1925, ITG, Onderzoek, 5.2.9; Secrétaire Général to Governor General, 30.5.1925, MAEAA, Hygiène, 4405.306.

[550] Note to Minister of Colonies, 24.9.1925, ITG, Onderzoek, 5.2.10; Secrétaire Général to A. Broden, 19.10.1925, ITG, Onderzoek, 5.2.10.

[551] Dr Simonini, 'Rapport Annuel 1924. Mission maladie du sommeil Bangala', MAEAA, GG, 8824 (Equateur); J. Rodhain to Provincial Doctor in Coquilhatville, 7.7.1925, MAEAA, GG, 8824 (Equateur).

'irrational' therapeutic behaviour. As was the case in French West Africa, issues surrounding the large-scale use of dangerous medicines came to be defined as a matter of 'self-regulation' in the Congo: they required a 'tightening (of) the chain of command within the (medical) service' rather than an 'external' monitoring of the risks of mass treatment.[552] Medical leaders therefore sought to prevent these problems by another form of pharmaceutical regulation, i.e. the controlling of trypanocides' clinical use.[553] They did so by issuing and enforcing therapeutic and diagnostic guidelines and directives, typically based on the Leopoldville laboratory's research, and calling for lower-ranking medical staff to be more closely supervised by their superiors.[554]

After the First World War, the Congo's laboratory-trained medical elite thus used the health service's hierarchical organisation to shape, oversee and in fact standardise local treatment practices, reducing the extent to which physicians and auxiliaries could base sleeping sickness therapy on their own clinical judgement and experience rather than on the findings of laboratory science. Whereas in 1909 Broden and Rodhain had accepted that lazaret doctors were granted 'a certain latitude' to institute therapeutic strategies (as long as they produced a durable 'disinfection'), by the early 1920s sleeping sickness staff was expected to adhere to centrally devised procedures.[555] In 1923, for example, Rodhain issued a circular detailing appropriate diagnostic and treatment protocols. In response to criticisms of Schwetz's procedures, he insisted that case detection could not be based on palpation of the cervical lymph nodes alone, but required microscopic analysis of lymph juice or blood samples. Moreover, an examination of cerebrospinal fluid was vital to establish the stage of disease, determine the right course of treatment and evaluate therapeutic outcomes. Routine drug treatment was to be based on Atoxyl, administered in ten to eighteen weekly doses of 1g for early, and doses of 0,5 to 0,6g for advanced cases, as well as tartar emetic, injected once a week in 0,10g doses and ideally in combination with Atoxyl therapy.[556] In addition, after Schwetz's departure from Kwango in 1923, his autonomous sleeping sickness mission was placed under the direct authority of the chief medical officer of Congo-Kasai Province. In other words, it was fully incorporated into the colonial medical

[552] Tousignant, 'Politics of mass therapy', 638, 641.

[553] On standardisation and 'control(ling) the clinical uses of (...) drugs', see Gaudillière, 'Introduction: Drug Trajectories', 606-607; C. Bonah, C. Masutti, A. Rasmussen and J. Simon, 'Introduction' in Bonah, Masutti, Rasmussen and Simon (eds.), *Harmonizing Drugs*, pp. 23, 38, 41.

[554] Rodhain and Equateur's provincial doctor Paul Vangoidtsnoven insisted that African auxiliaries had to be constantly supervised and monitored by sleeping sickness doctors. See J. Rodhain, 'Lettre-circulaire "Suite aux considérations sur la prophylaxie de la maladie du sommeil"', 30.3.1923, ITG, Onderzoek, 5.2.7, p. 4; Dr Vangoidtsnoven to Chef de la M.M.S.B. Médecin Principal, 26.1.1925, MAEAA, GG, 8824 (Equateur). Rodhain's successor Giovanni Trolli called for 'agents sanitaires' to be placed under the direct supervision of doctors because of their tendency to 'play doctor'. G. Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 5.

[555] A. Broden et J. Rodhain, 'La luttre contre la trypanose humaine (maladie du sommeil)', s.d., MAEAA, Hygiène, 4419.602.

[556] J. Rodhain, 'Lettre-circulaire "Considérations pratiques sur la prophylaxie de la maladie du sommeil"', 20.11.1923, ITG, Onderzoek, 5.2.7, pp. 1, 5-7, 9-10.

hierarchy so as to increase compliance with therapeutic and diagnostic guidelines (cf. also chapter 10). In Bangala, Rodhain reprimanded an 'agent sanitaire' and his supervisor for ignoring his 1923 directives and thus provoking many cases of blindness.[557]

Despite the efforts to curb 'abnormal' Atoxyl toxicity via pharmaceutical regulation so as to reduce the risk of accidents and minimise local resistance, doctors in the Congo in the end realised that the inherent limits of the trypanocide, especially as far as its healing power was concerned, would always make the special sleeping sickness missions broadly unpopular. In other words, even when poor-quality products were eliminated from the market, they became increasingly disillusioned with Atoxyl's effectiveness in the real world of itinerant medicinal prophylaxis. Bangala mission director Simonini, for example, felt that the significance of his work remained poorly understood among both Africans and Europeans, because he did not have a 'remedy that always amount(ed) to the definitive curing of recent victims' and was 'powerless to cure chronic trypanosome carriers' who made up the majority of cases in heavily infected areas.[558] Sleeping sickness missions were therefore likely to continue facing an arduous task. However, before Atoxyl's limitations could fundamentally discredit the principle of itinerant medicinal prophylaxis, new and more powerful trypanocides emerged that by the mid-1920s generated a renewed optimism and raised colonial (medical) authorities' hopes of a pharmaceutical eradication of sleeping sickness.

5.6 In summary

After the First World War, Atoxyl's career as a sleeping sickness control drug in the Belgian Congo really took off. An initial phase of high expectations saw a dramatically expanded use, especially of the French- and Belgian manufactured versions of the drug. The postwar application of a microbiological model of sleeping sickness control, predicated on the medicinal targeting of trypanosomes, reflected and contributed to a further strengthening of ties between laboratory science, ethical drug industry and collective medicine. It united different actors and interests in metropole and colony and across imperial borders, including local state physicians advocating mass treatment as the most feasible option for prophylaxis given conditions in the field, a newly independent medical service headed by internationally connected doctors favouring a laboratory view of epidemiology, a colonial administration engaged in inter-imperial exchanges on African health and convinced of the political-economic benefits of a large-

[557] J. Rodhain to Provincial Doctor in Coquilhatville, 7.7.1925, MAEAA, GG, 8824 (Equateur).

[558] Dr Simonini, 'Rapport Annuel 1924. Mission maladie du sommeil Bangala', MAEAA, GG, 8824 (Equateur).

scale pharmaceutical campaign - yet trying to keep the associated drug supply costs under control, a burgeoning European industry of synthetic prescription pharmaceuticals keen on breaking German domination of the arsenicals trade, an EMT director supporting a Belgian drug firm's trypanocide development, pharmacists taking on a public health role by participating in drug procurement, quality control and distribution, private sector health providers contributing to social medicine in return for free medicinal supplies, and African trypanosome carriers still primarily viewed as sources of infection.

The phase of Belgian- and French-manufactured Atoxyl's widespread dissemination in the Belgian Congo soon overlapped with a wave of diminishing enthusiasm, however. The implementation of mass treatment, especially by official mobile teams, entailed rather drastic interventions in rural areas and soon met with considerable local opposition, not just from the indigenous population but also from European colonial agents resenting the sleeping sickness missions' interference. Such tensions fuelled criticisms of itinerant medicinal prophylaxis and especially of the considerable powers of sleeping sickness doctors, not only in the colony but also in the (Catholic) press, political and medical circles in Belgium (cf. also chapter 9). State doctors in the Congo felt that incidents of abnormal Atoxyl toxicity and the drug's limited therapeutic efficacy rendered their task more arduous and threatened to undermine an already unpopular mass treatment campaign.

The large-scale use of the Atoxyl compound was not immediately suspended, however. In a bid to prevent further drug toxicity and external meddling with their autonomous medical service, the main architects of the colony's medicinal fight against sleeping sickness focused primarily on tightening pharmaceutical regulation, thus reinforcing the development of a laboratory-based and pharmaceuticalised collective medicine in the Congo. The adoption of more stringent quality control procedures through a collaboration between the EMT, the PCA and the colonial medical service, and medical authorities' efforts to bring therapeutic practice in line with central laboratory guidelines signalled that Atoxyl intoxication was to be viewed as a problem of poor product quality and biomedical irrationality, in other words of '(self-)regulation', rather than as evidence of an abusive public health campaign by a medical service with too much power.[559] While this pharmaceutical regulation eventually eroded the use of the French and Belgian brands of Atoxyl, it contributed to the continuation of mass trypanocide treatment and temporarily boosted consumption of the German original. It did not change Atoxyl's limited curative value, however. As the next chapter will show, by the mid-1920s a new, more powerful trypanocide would claim attention as a much better alternative and thus provide a new impetus to itinerant medicinal prophylaxis.

[559] Tousignant, 'Politics of mass therapy', 638.

Chapter 6
New players: Bayer 205, Tryparsamide and the promise of pharmaceutical sleeping sickness eradication

While Atoxyl's limitations as an instrument of mass trypanocide therapy became increasingly apparent, the Belgian Congo was deeply involved in the making of new sleeping sickness drugs. In this process, one chemical compound in particular eventually drew attention as a better alternative: Tryparsamide. This chapter examines the beginning of this new drug's career cycle in the Congo, exploring how, against a backdrop of other competing medicines, it came to raise the greatest hopes of a pharmaceutical eradication of sleeping sickness.

Tryparsamide rose to therapeutic prominence in the Congo through an interplay of different actors within and beyond its borders, reflecting in particular the colony's continued participation in inter-imperial networks of trypanocide (market) development. These networks were affected by the war, however: relations with German scientists and pharmaceutical companies continued, but became much more strained, whereas exchanges with European and American challengers of German chemotherapeutic dominance increased. Significantly, Tryparsamide was synthesised as part of a larger wave of new trypanocidal compounds emerging from German, American, French and British (industrial) laboratories looking for clinical testing sites and drug markets shortly after the war. Through the mediation of an EMT and administration in Brussels seeking to sustain the Leopoldville laboratory's scientific activities, be seen to support international sleeping sickness research or acquire privileged access to promising new trypanocides, many of these chemicals were introduced in the Belgian Congo as experimental drugs in the early 1920s. Clinical and field trials by foreign-led expeditions, laboratory doctors in Leopoldville and later (itinerant) sleeping sickness doctors eventually resulted in an enthusiastic local response to Tryparsamide in particular. The compound was hailed as a most promising tool of sleeping sickness eradication because of superior curative effects that were not lost on African sleeping sickness victims either.

This chapter first sketches how specific chemotherapy research in, but increasingly also outside of Germany resulted in the development of novel trypanocidal compounds during and shortly after the First World War. It then examines how these chemicals - in the case of Bayer 205 with some difficulty - ended up in the Belgian Congo for human

experimentation, and how clinical testing by foreign researchers and the Leopoldville laboratory eventually resulted in two new compounds - Bayer 205 and Tryparsamide - locally claiming attention as promising alternatives to Atoxyl because of superior prophylactic or curative effects. Soon enough this encouraged optimism regarding pharmaceutical strategies of sleeping sickness control in the colonial medical service. The final section discusses how larger-scale field trials in the Congo subsequently established in particular Tryparsamide's effectiveness in local medicinal prophylaxis, boosting confidence in the possibility of a pharmaceutical victory over sleeping sickness and resulting in calls from both medical and political authorities in the Congo to expand the drug's use.

6.1 Dyes, arsenicals and antimonials: synthesising new trypanocidal compounds

When Ehrlich died in 1915, he had not managed to find a perfect magic bullet, capable of producing a '*therapia sterilisans magna*'. Salvarsan and Neosalvarsan had of course brought commercial success as anti-syphilitic medicines and raised high hopes for further drug discoveries. But clinicians pointed out that arsphenamine had its shortcomings: it required long courses of treatment and was hard to handle.[560] Moreover, experimental research failed to yield quick results in other bacterial infections, which in the early twentieth century were still responsible for high levels of morbidity and mortality in the western world. Many historical accounts of drug discovery point out how this diminished specific chemotherapy's commercial appeal for drug firms and contributed to a certain disappointment with the antimicrobial potential of synthetic chemistry.[561] John Lesch, however, has argued that there was 'little evidence of genuine pessimism' regarding bacterial chemotherapy in the interwar period.[562] German chemical manufacturers in particular, and especially Bayer, continued their pursuit of systematic chemotherapy research after Ehrlich's death. In the 1930s, Bayer provided a major boost to the chemotherapy of infectious disease with the discovery of a synthetic antistreptococcal compound that would give rise to a new class of antibacterial 'miracle drugs' known as the sulfonamides.[563] The company achieved its first chemotherapeutic breakthroughs, however, with antiprotozoal agents targeting

[560] See for example, Marks, *Progress of Experiment*, p. 57; Greenwood, *Antimicrobial Drugs*, p. 59.

[561] Goodman, 'Pharmaceutical industry', p. 143; Parascandola, 'Theoretical basis', 41-42; M. Weatherall, *In Search of a Cure: A History of Pharmaceutical Discovery* (Oxford, 1990), p. 148.

[562] Lesch, *First Miracle Drugs*, p. 35.

[563] Goodman, 'Pharmaceutical industry', pp. 143-144; Lesch, *First Miracle Drugs*, pp. 51-70.

tropical diseases.[564] Before the First World War, the Bayer chemotherapy laboratory - directed by a former assistant of Ehrlich at the Georg Speyer Haus - had set up a program for the synthesis of new dye derivatives, which were tested in 'animal models of syphilis, trypanosomiasis and malaria'. In 1916, a compound was synthesised that showed great promise as a trypanocide: Bayer 205.[565]

Bayer 205 did not constitute Germany's only major involvement with trypanocidal chemotherapy after 1915. In Dresden, the chemist Hans Schmidt of the Chemische Fabrik von Heyden synthesised a series of new antimony compounds during the war and in the 1920s, some of which had therapeutic potential. His work was part of an industrial-academic collaboration set up in 1912 to find a less toxic substitute for tartar emetic, previously identified as a trypanocide and also recognised as a treatment for leishmaniasis and schistosomiasis, two other parasitic tropical diseases, in 1912 and 1918 respectively.[566] Schmidt's research partner was Paul Uhlenhuth, a Professor of Hygiene in Freiburg who had formerly been a bacteriologist at the German Imperial Health Office and contributed to the pioneering, extensive investigations of Atoxyl by Germany's foremost medical microbiologist Robert Koch in East Africa in 1906-1907.[567] In 1914, Uhlenhuth was joined by Philalethes Kuhn, former head of the Cameroon medical service who in 1912 had visited the Brazzaville and Leopoldville medical laboratories.[568] The team's efforts resulted, for example, in the compounds Heyden 471 and Heyden 661, which were later commercialised by von Heyden as 'Stibosan' and 'Antimosan'.[569]

By virtue of the traditionally close links between science and chemical industry, Germany clearly remained at the forefront of chemotherapeutic developments in the interwar period.[570] At the same time, efforts were made in other countries to 'develop synthetic organic chemicals manufacturing and industrial, or industry-linked, pharmaceutical research'.[571] On the one hand, this involved imitation of German originals. In 1921, for example, one of Schmidt's antimonials was marketed as 'Stibenyl' by the British pharmaceutical manufacturer Allen & Hanburys, which belonged to a group of 'reputable companies' that could take advantage of Britain's expanding

[564] Greenwood, *Antimicrobial Drugs*, p. 66; Weatherall, *In Search of a Cure*, pp. 64, 149-150; Goodman, 'Pharmaceutical industry', p. 144.

[565] Greenwood, *Antimicrobial Drugs*, p. 274

[566] Greenwood, *Antimicrobial Drugs*, p. 307; Foye, 'Origins of medical chemistry', p. 8.

[567] These were the first 'large-scale drug tests in Africa'. Neill, *Networks in Tropical Medicine*, p. 114.

[568] Greenwood, *Antimicrobial Drugs*, p. 307; Mertens and Lachenal, 'History of "Belgian" tropical medicine', pp. 1259-1260 (note 49).

[569] F. Van den Branden, 'Le Heyden "661" ou Antimosan dans le traitement de la trypanosomiase humaine', *Bulletin de la Société de Pathologie Exotique et de sa Filiale de l'Ouest Africain* 19 (1926), 688-691; F. Van den Branden, 'Le Stibosan "préparation Heyden no. 471" dans le traitement de la trypanosomiase humaine', *Bulletin de la Société de Pathologie Exotique et de sa Filiale de l'Ouest Africain* 19 (1926), 193-196. When Schmidt moved from von Heyden to the Bayer company by the end of 1926, the latter also 'acquired the von Heyden antimonial compounds for their product range'. Greenwood, *Antimicrobial Drugs*, pp. 307-308.

[570] Quirke and Slinn, 'Perspectives on twentieth-century pharmaceuticals', p. 10.

[571] Lesch, *First Miracle Drugs*, p. 5.

postwar 'network of academic and industrial laboratories' to launch science-based drugs.[572] However, scientists and drug companies outside of Germany also increasingly moved from the mere copying of German synthetic drugs to pharmaceutical innovation in its own right. Arsenicals, which had perhaps most of all symbolised German medicinal superiority at the outbreak of the First World War, constituted a major area of focus. In fact, according to William Foye, 'thousands of arsenicals were synthesized (sic) in Europe and America during the 1920s and 1930s'.[573] Given that before the war arsenic-based drugs had found their main application in African trypanosomiasis besides syphilis, this was not without potential significance for the field of interwar tropical chemotherapy.

One of the key players in this arsenic drug development was Ernest Fourneau, who continued his chemotherapeutic research at the Pasteur Institute's Therapeutic Chemistry Laboratory with financial and material backing from Poulenc Frères. While such industrial support conflicted with the Pasteur Institute's ideals of 'science as a non-profit activity', it also greatly contributed to the chemotherapy lab's visible success in the interwar period, which helped suppress possible objections.[574] In the early 1920s, the happy collaboration resulted in the compound Fourneau 190, a new organic arsenic derivative for oral administration, eventually branded 'Stovarsol' in a pun on its discoverer's last name (which translates as 'stove' in English).[575]

Another major effort came from the Rockefeller Institute for Medical Research (RIMR) in New York. Founded in 1901 by the philanthropist John D. Rockefeller Sr., this independent biomedical institution became - among other things - a prominent centre for the study of infectious disease. Its director Simon Flexner had set up a specific chemotherapy program there in 1912. By 1914, when German drug patents in the United States were temporarily abrogated, the lab turned to arsenicals in a bid to substitute and improve Salvarsan.[576] A research team comprising chemical experts Walter Jacobs and Michael Heidelberger, as well as medical scientists Wade Brown and Louise Pearce, proceeded with synthesising and investigating hundreds of new compounds. In 1915, one of these was found efficacious in trypanosome-infected laboratory animals - especially rabbits - , while also showing promise as a treatment for neurosyphilis: A63, or the 'sodium salt of phenylglycine amide-*p*-arsonic acid'.[577] The four scientists

[572] Quirke, 'Foreign influences', 141.

[573] Foye, 'Origins of medical chemistry', p. 8.

[574] V. Quirke, *Collaboration in the Pharmaceutical Industry. Changing Relationships in Britain and France, 1935-1965* (New York, 2007), p. 28.

[575] Lesch, *First Miracle Drugs*, p. 124; Baverey-Massat-Bourrat, 'De la copie au nouveau médicament', p. 54. On the Pasteur Institute's Therapeutic Chemistry Laboratory, see also Quirke, *Collaboration in the Pharmaceutical Industry*, pp. 27-28;Greenwood, *Antimicrobial Drugs*, p. 280.

[576] Liebenau, *Medical Science and Medical Industry*, p. 109; Greenwood, *Antimicrobial Drugs*, p. 278.

[577] Greenwood, *Antimicrobial Drugs*, p. 278. On the use of rabbits as experimental animals, Pearce writes: 'If the therapeutic value of tryparsamide had been gauged on the basis of its therapeutic index as obtained in the smaller laboratory animals, it would not have been given serious consideration. It so happens, however, that

successfully applied for a US patent, which was granted in 1918, and named the pentavalent arsenical 'Tryparsamide'.[578] The patent application was a remarkable step in an American context where patent medicines had traditionally been associated with the questionable practices of 'unethical' pharmaceutical businesses.[579] As Nicolas Rasmussen has argued, however, the interwar period saw US life scientists increasingly engage with the pharmaceutical industry via patenting. Licensing collaborating firms to produce patented pharmaceuticals gave the latter market control for new scientific drugs, while allowing researchers to restrict the distribution of their discoveries to manufacturers complying with high quality standards.[580] In this way, public health protection could justify drug patents, and this was certainly on the mind of Rockefeller researchers, whose 'ideals (...) were in keeping with the policies of therapeutic reformers' in the United States.[581]

6.2 The Belgian Congo in cross-border networks of trypanocide development

The researchers who had synthesised new trypanocidal compounds during and after the war of course needed to conduct clinical trials to establish therapeutic value in human cases of trypanosomiasis. For those scientists active in countries without African possessions, access to sufficient numbers of such patients was more complicated, and required the cooperation of European powers present on the continent. While the RIMR sent most of its experimental Tryparsamide to carefully selected clinics studying neurosyphilis in North America and Europe, to investigate its action in sleeping sickness

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while therapeutic tests on mice and rats may give a fairly accurate indication of what may be termed *potential* trypanocidal activity, they convey little idea of *actual curative value*, since the disease in these animals differs significantly from that in man or in the larger domestic animals. The infected rabbit is, from this point of view, the animal of choice since it shows so many of the conditions, including involvement of the central nervous system, found in man.' L. Pearce, *The Treatment of Human Trypanosomiasis with Tryparsamide. A Critical Review, Monographs of the Rockefeller Institute for Medical Research* (New York, 1930), p. 7.

[578] United States Patent Office. Arsenical compound US 1280123 A, 24.9.1918, http://www.google.com/patents/US1280123 (Last accessed 22 April 2014); Pearce, *Treatment of Human Trypanosomiasis*, p. 5.

[579] Drug patents had been 'taboo' among ethical pharmaceutical companies before the First World War. Liebenau, *Medical Science and Medical Industry*, p. 109.

[580] N. Rasmussen, 'The moral economy of the drug company - medical scientist collaboration in interwar America', *Social Studies of Science* 34 (2004), 170-172.

[581] Rasmussen, 'Moral economy', 172; Marks, *Progress of Experiment*, p. 49.

it planned to initiate tests in the Anglo-Egyptian Sudan and by 1920 had made concrete arrangements with the British Colonial and Foreign Offices to that effect.[582]

The postwar period was particularly challenging for German scientists and pharmaceutical companies. To their immense frustration, the Treaty of Versailles had resulted in the division and transfer of German Africa to the victorious imperial powers as colonies or LN mandate territories. This seriously reduced the scope of Germany's pharmaceutical export markets and presented its tropical medicine experts with significant difficulties to gain access to overseas environments for medical research and practice.[583] This naturally made conducting clinical trials there less straightforward, a serious obstacle for a company like Bayer, where chemotherapy research had yielded compounds that in the first place showed promise in the treatment of tropical diseases. If the firm wanted to exploit its new trypanocidal substance Bayer 205, finding a way into tropical Africa was absolutely vital. Negotiations between the German Foreign Office, which was keen on restoring Germany's international scientific prestige and ultimately even its colonial role, and the British Government, interested in the trypanocide for health-policy reasons, enabled Bayer to send a research expedition to Northern Rhodesia in 1921. It was directed by Friedrich Karl Kleine, a military doctor who had participated in Koch's sleeping sickness expedition in 1906-1907 and subsequently become involved in trypanosomiasis control in German East Africa.[584]

Meanwhile in Belgium, Alphonse Broden at the EMT and the Colonial Ministry went to great lengths to advance the Congo as a location for clinical research into new trypanocidal compounds. Broden sought in particular to consolidate the position of the Leopoldville laboratory as a major centre for scientific drug trials after the war. While it had primarily been a research institution before then, the laboratory considerably expanded its activities by 1919, taking on responsibility for a whole range of routine public health duties (such as providing analysis services, screening the resident urban population and passers-by for endemic diseases, offering outpatient treatment, preparing vaccines, training European and African medical auxiliaries etcetera) in

[582] 'Report of the Director of Laboratories to the Members of the Corporation of the RIMR', 15.10.1920, Rockefeller Archive Center (RAC), Rockefeller University Archives, Record Group (RG) 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 8, 1920, pp. 176-177; 'Report of the Director of Laboratories to the Board of Scientific Directors of the RIMR', 17.4.1920, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 8, 1920, p. 6; W. H. Brown and L. Pearce, 'Report on the Present Status of the Investigations being carried out with Tryparsamide', 1.6.1923. - 15.3.1924, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 12, 1923-1924 pp. 179-180.

[583] Neill, *Networks in Tropical Medicine*, p. 182; Greenwood, *Antimicrobial Drugs*, p. 275.

[584] Eckart, *Medizin und Kolonialimperialismus*, p. 509-510; Neill, *Networks in Tropical Medicine*, p. 115.

addition to its scientific work.[585] In 1919, Rodhain feared that it had 'ceased to function as a scientific research institution'.[586] In the following years, the extra tasks indeed somewhat strained the resources available in terms of (lower-level) staff and infrastructure, even if these gradually expanded.[587]

In Brussels, Broden became a crucial intermediary between the pharmaceutical industry and clinical investigators in Leopoldville in the 1920s. He had already helped the Belgian Meurice company develop (a market for) its brand of Atoxyl, and remained actively on the lookout for new trypanocides. To this end, the EMT director liaised directly with foreign scientists and 'ethical' drug firms or their Belgian concessionaires so as to secure samples of promising compounds in return for clinical trial results from Africa.[588] He made substantial efforts, for example, to obtain quantities of the experimental drug Bayer 205. Its manufacturer, however, showed great reluctance to hand out samples to experimenters from Africa's colonial powers. Moreover, Bayer deliberately kept the dye derivative's formula secret in a bid to control the market for the drug and thus protect company interests, but also national goals, i.e. Germany's 'colonial revisionism'.[589] In 1922, on a visit to the German firm funded by the Belgian colonial government, Broden nevertheless managed to acquire a small amount for tests in the Leopoldville laboratory, by insisting on the latter's capacity for 'systematic and scientific' trials on large numbers of patients who could be kept under long-term observation.[590]

As both sleeping sickness therapy expert and EMT director, Broden also acted as a consultant for the Colonial Ministry's medical department. After the war, the latter continued to be targeted by drug firms sending prospectuses and trial samples, and

[585] 'Rapport sur le fonctionnement du laboratoire de Léopoldville-Ouest et des services annexes pendant l'année 1929', *Annales de la Société Belge de Médecine Tropicale* 10 (1930), 233-235; J. Rodhain, 'Les laboratoires de recherches médicales et les fondations pour coloniaux ', in F. Passelecq (dir.), *L'essor économique belge - Expansion coloniale. Etude documentaire sur l'armature économique de la colonie belge du Congo* (Bruxelles, 1932), p. 171.

[586] Pierquin, *Historique du laboratoire médical*, p. 14.

[587] J. Rodhain, 'Note au sujet du fonctionnement général (travaux) des laboratoires de Léopoldville et d'Elisabethville', 11.9.1918, MAEAA, GG, 16862 (GG); 'Fonctionnement du laboratoire de Léopoldville durant l'année 1920', *Annales de la Société Belge de Médecine Tropicale* 1 (1921), 271-274; F. Van den Branden et L. Van Hoof, 'Fonctionnement du laboratoire de Léopoldville pendant l'année 1922', *Annales de la Société Belge de Médecine Tropicale* 3 (1923), 158; F. Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville durant l'année 1926', *Annales de la Société Belge de Médecine Tropicale* 8 (1928), 189.

[588] A. Broden to Director General (9e Direction), 29.12.1920, ITG, Onderzoek, 5.2.5; A. Broden to Director General (9e Direction), 3.5.1921, ITG, Onderzoek, 5.2.5; A. Broden to Félix Mesnil, 23.5.1923, AIP, Fonds F. Mesnil, MES.9, Correspondants étrangers. Belgique; O. Lepage to A. Broden, 15.8.1920, ITG, Onderzoek, 5.2.5; Les Etablissements Poulenc Frères to A. Broden, 21.4.1926, ITG, Onderzoek, 5.2.10; Produits Roche S.A. to A. Broden, 3.2.1928, ITG, Onderzoek, 5.2.8; A. Broden to Mr. Hofman, 2.3.1928, ITG, Onderzoek, 5.2.8; Produits Roche S.A. to A. Broden, 6.4.1928, ITG, Onderzoek, 5.2.8; Paul Van Buggenhoudt to A. Broden, 6.3.1926, ITG, Onderzoek, 5.2.10.

[589] Greenwood, *Antimicrobial Drugs* 2008, p. 276; Eckart, *Medizin und Kolonialimperialismus*, p. 509.

[590] A. Broden to Minister of Colonies, 1.3.1922, MAEAA, Hygiène, 4404.302; Director 7e Direction to 6e Direction, 1922, MAEAA, Hygiène, 4403.301; A. Broden to Minister of Colonies, 8.8.1922, MAEAA, Hygiène, 4403.301.

practitioners asking for their (empirical) remedies to be experimented overseas.[591] In 1920, the director repeated that he wanted to end the prewar modus operandi that saw the administration immediately send drug sellers' latest inventions to all clinicians in the Congo. Instead, Broden urged the department to consult with his EMT first, and only send trial samples of drugs that originated from 'serious' manufacturers and were found satisfactory to the colony's medical laboratories.[592] The colonial authorities in Brussels usually followed this request by referring pharmaceutical companies to the EMT to discuss the possibilities of clinical trials in the Congo, and shipping compounds to Africa once Broden had given his approval.[593] By advising the department on the dispatching of suitable experimental medicines, Broden further strengthened the Leopoldville laboratory's pharmaceutical gatekeeping role as well as his own.[594] From his metropolitan position, he thus continued to contribute to therapeutic reform in the colony, while also involving the EMT in sleeping sickness drug therapy research.

Sometimes the Ministry was more proactive, however. It contacted drug firms itself to obtain trial samples of new potential trypanocides, often at the request of colonial practitioners, and then later informed Broden about it.[595] Moreover, the colonial administration also continued to play its role as a facilitator of therapeutic experimentation in another way. It actively encouraged the introduction of new experimental trypanocides in the Congo by supporting non-Belgian medical researchers in need of human subjects to conduct their trials in the Congo. At this time, sleeping sickness was still a high-profile disease. Authorising scientific expeditions in Belgian colonial territory would send a signal that serious efforts were being made to tackle the epidemic, and also constituted an attempt to gain access to promising new compounds that were hard to obtain because they were not yet commercially available.

In May 1920, for example, Louise Pearce from the RIMR left New York and travelled to the Leopoldville laboratory with her assistant Elizabeth Bowen to experiment

[591] For example: Minister of Colonies to A. Broden, 1.3.1921, ITG, Onderzoek, 5.2.5; 'Stibenyl. Composé organique d'antimoine. Préparé sur les indications de Philip H. Manson-Bahr, D.S.C., pour le traitement des trypanosomiases, Kala-azar, Leishmaniose, filariose, etc.', s.d., ITG, Onderzoek, 5.2.5; Administrateur délégué Meurice to Minister of Colonies, 25.3.1924, MAEAA, Hygiène, 4404.302.

[592] A. Broden to 9e Direction, 13.2.1920, ITG, Onderzoek, 5.2.5.

[593] For example: Minister of Colonies to A. Broden, 12.3.1921, ITG, Onderzoek, 5.2.5.; A. Broden to Director General (9e Direction), 11.4.1921, ITG, Onderzoek, 5.2.5; Secrétaire Général to A. Broden, 4.9.1925, ITG, Onderzoek, 5.2.10; A. Broden to Governor General, 17.3.1927, ITG, Onderzoek, 5.2.8.

[594] For example: A. Broden to Secrétaire Général, 22.1.1924, ITG, Onderzoek, 5.2.10; Director of EMT to Service de l'Hygiène Inspecteur Général, 14.12.1929, ITG, Onderzoek, 5.2.8; A. Broden to 7e Direction, 26.10.1923, MAEAA, Hygiène, 4403.301.

[595] For example: E. Fourneau to Secrétaire Général, 25.2.1924, ITG, Onderzoek, 5.2.8; Note from Director Koller (9e Direction, 2e section) 3.3.1924, ITG, Onderzoek, 5.2.8; Secrétaire Général to Professor Fourneau, 22.2.1924, ITG, Onderzoek, 5.2.8; Minister of Colonies to A. Broden, 30.5.1925, ITG, Onderzoek, 5.2.10; Director 7e Direction to Secrétaire Général, 14.3.1924, MAEAA, Hygiène, 4404.302.

Tryparsamide in the treatment of human sleeping sickness victims for the first time.[596] The RIMR felt that Sudan had 'better living and laboratory facilities' - presumably in the form of the Wellcome Tropical Research Laboratories in Khartoum -, which was not insignificant given its concern to elevate the scientific standards of drug trials.[597] Nonetheless, the plan to go there had to be abandoned for 'political' reasons, which were possibly linked to Pearce's gender.[598] Negotiations between Wickliffe Rose, director of the Rockefeller Foundation's International Health Board, and the Belgian Government, as well as lobbying from the Belgian Queen Elizabeth during a visit to the RIMR in New York, in the end ensured that the Tryparsamide expedition eventually ended up in the Belgian Congo.[599]

A second therapeutic expedition supported by the Belgian authorities was that of Friedrich Karl Kleine, who had started his clinical research with Bayer 205 in Northern Rhodesia. Instigated by its own medical and administrative staff, who were aware of Kleine's work in British territory, Brussels was very eager to get its hands on the reputable German company's experimental sleeping sickness drug. However, the Belgian colonial administration encountered the greatest difficulties to obtain significant quantities for extensive trials in the Congo because of Bayer's decision to exploit the invention as part of a strategy to restore Germany's African colonies. To requests for trial samples the company typically responded that it wanted to await the results from the German expedition in Rhodesia before handing out a substantial amount of Bayer 205 to the Belgians.[600] The colonial medical department did not give up, however, and in addition to sending Broden on a visit to the Bayer firm, it took steps to get Kleine to

[596] Anonymous to Governor General, 26.5.1920, MAEAA, GG, 15716 (GG); J. Rodhain to Leopoldville Laboratory Director, 7.7.1920, MAEAA, GG, 15716 (GG).

[597] 'Report of the Director of Laboratories to the Members of the Corporation of the RIMR', 15.10.1920, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 8, 1920, p. 177; Marks, *Progress of Experiment*, p. 49. On the Wellcome Tropical Research Laboratories, see for example, Bell, *Frontiers of Medicine*, pp. 55-89.

[598] 'Report of the Director of Laboratories to the Members of the Corporation of the RIMR', 15.10.1920, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 8 (1920), p. 177. During a discussion of the tropical diseases expert committee concerning Pearce's participation in a LN sleeping sickness mission, it was mentioned that 'il n'est pas certain que le Gouvernement du Soudan autoriserait une femme à pénétrer sur son territoire'. See 'Société des Nations. Organisation d'Hygiène. Commission d'experts de la maladie du sommeil. Procès Verbal de la séance tenue à Londres le lundi 18 mai 1925 à 11 heures', 18.5.1925, MAEAA, Hygiène, 4461.914.

[599] Anonymous to Governor General, 26.5.1920, MAEAA, GG, 15716 (GG); 'Report of the Director of Laboratories to the Members of the Corporation of the RIMR', 15.10.1920, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 8, 1920, p. 177.

[600] J. David, 'Note concernant un nouveau Trypanocide le « 205 » BAYER', 31.5.1922, MAEAA, Hygiène, 4403.301; E. Van Campenhout to Minister of Colonies, 3.6.1922, MAEAA, Hygiène, 4403.301; Minister of Colonies to Director of Bayer firm, 17.6.1922, MAEAA, Hygiène, 4403.301; Bayer firm to Ministry of Colonies (7e Direction 2e section), 23.6.1922, MAEAA, Hygiène, 4403.301.

continue his mission in the Belgian Congo.[601] The German tropical medicine expert gladly accepted the invitation, given that sleeping sickness prevalence in the colony gave him 'ample opportunity' for large-scale experimentation. In late 1922, Kleine and his collaborators crossed the border into the Belgian Congo to pursue their clinical investigations. They started work around Kiambi in Katanga Province, where they were assisted by doctor Paul Walravens of the Elisabethville laboratory.[602] While Bayer delayed the commercial release of Bayer 205 and kept refusing to provide ample trial samples to the Congo's medical service, the colonial government intensified its material support for the members of the Kleine mission, who were the Belgians' best chance of securing larger quantities of the experimental trypanocide.[603]

These foreign-led research expeditions to the Belgian Congo played an important role in postwar chemotherapeutic knowledge production and trypanocide development. Pearce's stay in Leopoldville, for example, provided a first indication of Tryparsamide's potential as a sleeping sickness drug. While feeling as if she had arrived 'on another planet', the American medical scientist found the laboratory 'fairly equipped' and reported that she could count on the 'excellent cooperation' of colonial staff, which included laboratory director Van den Branden.[604] There was a lack of early cases to experiment on, as 'keeping (them) within reach, so the treatment (was) not interrupted' proved tricky. Moreover, as far as the 'lazaret'-village was concerned, 'it (was) not difficult for a patient to run away and be lost in the bush', according to Pearce.[605] Nevertheless, in the course of her stay she managed to investigate the action of Tryparsamide in 77 cases of sleeping sickness from her basis at the Leopoldville laboratory. The investigations systematically compared the therapeutic and untoward effects of intravenous and intramuscular injections of varying single and repeated doses on patients in both the early and later stages of the disease. Based on observations of the

[601] Note from 7e Direction (2e section), 1.7.1922, MAEAA, Hygiène, 4403.301; 7e Direction (2e section) to vice-Governor General of Katanga, 26.6.1922, MAEAA, Hygiène, 4403.301.

[602] F. K. Kleine, 'On a recent expedition to Africa to investigate the action of Bayer 205 in trypanosomiasis', *Transactions of the Royal Society of Tropical Medicine and Hygiene* 17 (1924), 446; P. Walravens, 'La maladie du sommeil dans la région de la Luvua; traitement par le Bayer 205', *Annales de la Société Belge de Médecine Tropicale* 3 (1923), 223-231.

[603] Minister of Colonies to Commissaire Royal in Usumbura, 27.3.1923, MAEAA, Hygiène, 4403.301; A. Broden to Secrétaire Général, 17.4.1923, ITG, Onderzoek, 5.2.10; Chef de Cabinet Halewyck to E. Van Campenhout, 5.10.1923, MAEAA, Hygiène, 4403.301; Governor Heenen to Minister of Colonies, 12.10.1923, MAEAA, Hygiène 4403.301; A. Broden to 9e Direction, 13.11.1923, ITG, Onderzoek, 5.2.10.

[604] L. Pearce to Dr Heidelberger, 17.7.1920, National Library of Medicine, Profiles in Science. The Michael Heidelberg Papers, http://profiles.nlm.nih.gov/ps/retrieve/ResourceMetadata/DHBBNQ (Last accessed 20 April 2014); 'Report of the Director of Laboratories to the Members of the Corporation of the RIMR', 15.10.1920, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 8, 1920, p. 178.

[605] 'Report of the Director of Laboratories to the Members of the Corporation of the RIMR', 15.10.1920, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 8, 1920, p. 298.

'peripheral sterilization (sic) of lymph glands and blood', clinical improvements, and reductions in the cell content of the spinal fluid (taken as a sign of normalisation in cases with cerebrospinal involvement), she concluded that Tryparsamide had a 'marked trypanocidal activity' in the Gambiense variety of human trypanosomiasis, while only causing occasional and mostly 'transitory' ocular problems in some advanced cases.[606]

In Katanga Province, the therapeutic investigations of the Kleine mission in 1922-1923 further confirmed the trypanocidal action of Bayer 205. The trials did not take place in a clinic connected to a laboratory, but involved the ambulatory treatment of some 150 early and advanced sleeping sickness cases in the Luvua region upstream of Kiambi. Administering repeated intravenous injections of 1g, the experimenters found that the drug cleared Congolese victims' blood of trypanosomes for a much longer period than existing trypanocides, without significant toxic side-effects. Backed by these results, Kleine went on to label Bayer 205 the 'best remedy for sleeping sickness', and suggested it had a major part to play in the control of sleeping sickness.[607] At the instigation of the German Foreign Office, the compound had in the mean time been branded 'Germanin'. The new name further signalled how the pharmaceutical was meant to underscore the legitimacy of Germany's colonial claims.[608] Reflecting a certain British 'sympathy' for the German cause, a 1922 article in the 'African World' portrayed Bayer 205 as the 'key to Tropical Africa'.[609]

German claims notwithstanding, the (further) trajectories of Bayer 205, Tryparsamide and other new trypanocidal compounds in the Congo were ultimately shaped by the therapeutic arbiters of the Leopoldville laboratory. After a furlough in Europe in 1919, Van den Branden had taken up his position as director again in March 1920.[610] In August of that same year, Lucien Van Hoof, yet another former assistant of the Louvain bacteriologist Joseph Denys, joined the lab as Van den Branden's deputy until his detachment to Mayumbe in 1925 to study bacterial dysentery.[611] Despite an increasing medical and administrative workload, both men were heavily involved in trypanosomiasis therapy research, which resulted in several co-authored publications.[612]

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[606] L. Pearce, 'Studies on the treatment of human trypanosomiasis with tryparsamide (the sodium salt of n-phenylglycineamide-p-arsonic acid)', *Journal of Experimental Medicine* 34 (1921), 28, 97-103.

[607] Kleine, 'On a recent expedition to Africa', 446, 452; Walravens, 'Maladie du sommeil dans la région de la Luvua', 223, 230.

[608] Eckart, *Medizin und Kolonialimperialismus*, p. 511.

[609] 'Sleeping sickness and Tsetse Fly. The New German Cure', 19.8.1922, MAEAA, Hygiène, 4403.301; Neill, *Networks in Tropical Medicine*, p. 191.

[610] 'Fonctionnement du laboratoire de Léopoldville durant l'année 1920', *Annales de la Société Belge de Médecine Tropicale* 1 (1921), 271; Dubois, 'Nécrologie. J.-F.-F. Van den Branden', 87.

[611] 'Fonctionnement du laboratoire de Léopoldville durant l'année 1920', p. 271; M. Kivits, 'Lucien Marie Joseph Jean VAN HOOF' dans Académie Royale des Sciences d'Outre-Mer, *Biographie Belge d'Outre-Mer* (Bruxelles, 1968), t. VI, col. 503.

[612] For example: F. Van den Branden et L. Van Hoof, 'Le "Trépol" ou tartro-bismuthate de potassium et de sodium dans la trypanosomiase humaine', *Bulletin de la Société de Pathologie Exotique* 15 (1922), 692-693; F. Van den Branden et L. Van Hoof, 'Essais du silbersalvarsan et du sulfarsénol dans la trypanosomiase humaine',

Their work continued to rest on the laboratory's close links with the Leopoldville sleeping sickness 'lazaret', which Van den Branden referred to as a 'veritable annex' or an 'indispensable subsidiary' as far as trypanosomiasis research was concerned. There, advanced cases and all others kept 'under constant observation' for therapeutic experimentation were hospitalised, and increasingly so in stone pavilions rather than clay dwellings.[613] In addition, the laboratory's activities also remained firmly embedded in Franco-Belgian networks, as Van den Branden maintained close ties with French Pastorians. He interacted on a regular and reportedly 'very cordial' basis with colleagues at Brazzaville's Pasteur Institute, such as Blanchard and Laigret, and exchanges of research results, drug samples and pathogen strains took place in the familiar context of scientific cooperation and competition.[614] Moreover, the Leopoldville lab director continued publishing clinical studies as a single author or with his assistant-director Van Hoof in the 'Bulletin de la Société de Pathologie Exotique'.[615]

Initially, Van den Branden and Van Hoof's intensive experimentation of the new dye, antimonials and arsenicals sent their way did not amount to much. Most of the compounds, including Stovarsol and Stibenyl, were soon enough discarded because they were therapeutically inferior, or at least did not produce better results than the

Annales de la Société Belge de Médecine Tropicale 2 (1922), 125-130; F. Van den Branden et L. Van Hoof, 'Le stibényl (acétyl-paminophényl stibiate de soude) dans la trypanosomiase humaine', *Annales de la Société Belge de Médecine Tropicale* 2 (1922), 37-41; F. Van den Branden et L. Van Hoof, 'Trypanoléine Van Saceghem dans la trypanosomiase humaine', *Comptes Rendus Hebdomadaires des Séances et Mémoires de la Société de Biologie* 88 (1923), 627-629; F. Van den Branden et L. Van Hoof, 'Résultats de l'observation de malades trypanosomés traités au Tryparsamide A63', *Bulletin de la Société de Pathologie Exotique et de sa Filiale de l'Ouest Africain* 16 (1923), 606-665; F. Van den Branden et L. Van Hoof, 'Action du "Bayer 205" sur les trypanosomiases animales (note préliminaire)', *Annales de la Société Belge de Médecine Tropicale* 3 (1923), 309-316; F. Van den Branden et L. Van Hoof, 'Le "Bayer 205" dans le traitement de la trypanosomiase humaine', *Annales de la Société Belge de Médecine Tropicale* 4 (1924), 205-230.

[613] Van den Branden et Van Hoof, 'Fonctionnement du laboratoire de Léopoldville pendant l'année 1922', 159; F. Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville en 1925', *Annales de la Société Belge de Médecine Tropicale* 6 (1926), 283-284; 'Rapport sur le fonctionnement du laboratoire de Léopoldville pendant l'année 1924', *Annales de la Société Belge de Médecine Tropicale* 5 (1925), 142; F. Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville durant l'année 1926', 190; 'Rapport sur le fonctionnement du laboratoire de Léopoldville-Ouest et des services annexes pendant l'année 1928', *Annales de la Société Belge de Médecine Tropicale* 9 (1929), 125.

[614] For example: J. Laigret to Félix Mesnil, 20.11.1925, AIP, Fonds F. Mesnil, MES.7, Laigret; A. Sicé to Félix Mesnil, 6.10.1928, AIP, Fonds F. Mesnil, MES.7, Sicé; A. Sicé to Félix Mesnil, 4.11.1928, AIP, Fonds F. Mesnil, MES.7, Sicé; A. Sicé to Félix Mesnil, 14.1.1929, AIP, Fonds F. Mesnil, MES.7, Sicé; Dr Blanchard to Félix Mesnil, 6.6.1922, AIP, Fonds F. Mesnil, MES.6, Blanchard; Dr Blanchard to Félix Mesnil, 11.12.1922, AIP, Fonds F. Mesnil, , MES.6, Blanchard; Dr Blanchard to Félix Mesnil, 14.5.1923, AIP, Fonds F. Mesnil, MES.6, Blanchard.

[615] For example: F. Van den Branden, 'Essai de traitement de la trypanosomiase humaine par la collobiase d'antimoine', *Bulletin de la Société de Pathologie Exotique* 13 (1920), 27; F. Van den Branden et L. Van Hoof, 'Résultats de l'observation de malades trypanosomés traités au Tryparsamide A63', *Bulletin de la Société de Pathologie Exotique et de sa Filiale de l'Ouest Africain* 16 (1923), 606-665.

chemicals already available for sleeping sickness therapy.[616] As far as Tryparsamide was concerned, Pearce had conceded that further research was required to determine its longer-term effects as well as the most appropriate treatment regimen. After her stay in Leopoldville, she made arrangements with Van den Branden to continue monitoring her patients.[617] Upon her return to the United States, the RIMR sent additional supplies of Tryparsamide to the Congo for further experimentation.[618] Via Broden at the EMT, Van den Branden kept Pearce informed about his findings, but neither Belgian doctors were particularly convinced that the American compound constituted a significant advance on Atoxyl.[619] In 1922, the Leopoldville laboratory researchers also had a chance to experiment the German dye derivative Bayer 205, but they hesitated to draw definitive conclusions.[620] Not surprisingly, therefore, in an overview of sleeping sickness therapy published in 1923, Broden still regarded the combination of Atoxyl and tartar emetic injections as the best available drugs for routine sleeping sickness treatment.[621]

As clinical trials in Leopoldville continued, still more compounds were excluded from the Congo's trypanocidal arsenal. For example, Van den Branden tried Stibosan and Antimosan on a small number of second-stage sleeping sickness victims, but with a less marked trypanocidal action, he did not find them a suitable replacement for tartar emetic.[622] However, as far as Tryparsamide and Bayer 205 were concerned, longer-term and larger-scale observations began to alter opinions in Leopoldville from the second half of 1923 onwards. By then, Van den Branden and Van Hoof's published reports on Tryparsamide were arguing that the drug produced far better results than any other

[616] Broden, 'La thérapeutique des trypanoses humaines', 37; F. Van den Branden, 'Le stovarsol ou "acide acétyloxyaminophénylarsinique" dans le traitement de la trypanosomiase humaine', *Annales de la Société Belge de Médecine Tropicale* 5 (1925), 36; Van Hoof, 'Thérapeutique de la maladie du sommeil', 107-109, 115.

[617] Pearce, 'Studies on the treatment of human trypanosomiasis with tryparsamide', 4, 59, 97, 100; L. Pearce, 'Tryparsamide treatment of African sleeping sickness', *Science* 61 (1925), 91; 'Report of Director of Laboratories to Corporation', 21.10.1921, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 9, 1921, p. 261; L. Pearce to Minister of Colonies Franck, 6.1.1922, MAEAA, Hygiène, 4403.301; 'Translation of portion of letter from Dr Van den Branden', 28.2.1924, RAC, Rockefeller University Archives, RG 210.3 (Business Manager), Box 35, folder 13.

[618] 'Report of Director of Laboratories to Corporation', 21.10.1921, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 9, 1921, p. 261.

[619] 'Report of Director of Laboratories to Corporation', 21.10.1921, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 9, 1921, p. 261; A. Broden, 'Note concernant le mémoire de Miss L. Pearce', 1922, MAEAA, Hygiène, 4403.301. Neither was Rodhain, who in addition anticipated that Tryparsamide's use would be more expensive than Atoxyl. J. Rodhain, 'Note au sujet du travail de Melle L. Pearce', 1922, MAEAA, Hygiène, 4403.301.

[620] J. Rodhain, 'Service de l'hygiène. Rapport annuel 1922', 31.8.1923, MAEAA, Hygiène, 4419.604; Van den Branden et Van Hoof, 'Fonctionnement du laboratoire de Léopoldville pendant l'année 1922', 173.

[621] Broden, 'Thérapeutique des trypanoses humaines', 39.

[622] Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville en 1925', 302 ; Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville durant l'année 1926', 200-201; Van den Branden, 'Le Stibosan "préparation Heyden no.471"'; Van den Branden, 'Le Heyden "661" ou Antimosan'.

trypanocide as far as curing advanced sleeping sickness cases was concerned.[623] At the Luanda tropical medicine conference in July 1923, Van Hoof even hinted that Tryparsamide might at some point replace Atoxyl. He also presented unpublished results on the laboratory's Bayer 205 trials: while moderating the initial enthusiasm of the Kleine mission members by suggesting that the compound was disappointing as a 'curative remedy', they nevertheless highlighted its 'remarkable' preventive potential.[624]

The Leopoldville assessments of Tryparsamide and Bayer 205 significantly boosted Belgian optimism about medicinal prophylaxis in the early 1920s. The promising findings regarding the new drugs' curative and prophylactic properties soon enough convinced chief medical officer Rodhain that a pharmaceutical solution to the sleeping sickness problem was within reach. The observed therapeutic results ensured, he argued in his annual medical report for 1923, that eradication of the disease was now simply a matter of 'organisation and credit'.[625]

The Belgian Congo's involvement in the making of the new trypanocides at the beginning of the decade also helped push the further evaluation of sleeping sickness drugs to the top of the international research agenda. In 1924, the LNHO's tropical diseases expert committee identified the 'comparative' assessment of the 'prophylactic and curative value' of trypanocides as one of the priority areas for investigation by medical institutions in Africa dealing with trypanosomiasis.[626] From the outset, Belgian colonial (medical) authorities had been putting forward the Congo as a specialist centre for such sleeping sickness therapy research. By virtue of 'the energetic utilisation of (its) inexhaustible clinical material', the colony - together with the French Congo - was by the mid-1920s also recognised as such by representatives of other colonial powers.[627] It was of course the Leopoldville medical laboratory in particular that was considered the flagship of postwar trypanocide research in Belgian Africa.[628]

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[623] See for example: 'Rapport sur le fonctionnement du laboratoire de Léopoldville pendant l'année 1924', 155-156; Pearce, 'Tryparsamide treatment of African sleeping sickness', 91.

[624] Van Hoof, 'Thérapeutique de la maladie du sommeil', 123, 126. Walravens' follow-up observations had suggested very promising results from both a prophylactic and curative point of view, including in advanced cases. See 'Telegram van Heenen', 14.3.923, MAEAA, Hygiène, 4403.301; Walravens, 'Maladie du sommeil dans la région de la Luvua', 228, 230. According to a French observer at the Brazzaville Pasteur Institute, Van den Branden and Van Hoof were not always on the best of terms after the latter published the collaborative work on Bayer 205 under his own name at the Luanda conference. Dr Blanchard to Félix Mesnil, 22.1.1924, AIP, Fonds F. Mesnil, MES.6, Blanchard.

[625] 'Congo Belge. Service de l'hygiène. Rapport Annuel 1923', s.d., MAEAA, RA-CB, 81.11; J. Rodhain, 'Service de l'hygiène. Rapport annuel 1922', 31.8.1923, MAEAA, Hygiène, 4419.604.

[626] A. Balfour, E. Van Campenhout, G. Martin and A. G. Bagshawe, 'Société des Nations. Organisation d'Hygiène. Commission des experts pour les maladies tropicales', 12.9.1924, MAEAA, Hygiène, 4461.913.

[627] For example: L. Duke, 'League of Nations. Paper No I. General Review of the activities of the commission. Interim report of the League of Nations International Commission on Human Trypanosomiasis', 12.1926, ITG, Onderzoek, 5.2.11.

[628] 'Société des Nations. Organisation d'Hygiène. Commission d'experts de la maladie du sommeil. Procès Verbal de la séance tenue à Londres le lundi 18 mai 1925 à 11 heures', 18.5.1925, MAEAA, Hygiène, 4461.914.

6.3 High expectations: establishing Tryparsamide effectiveness in the field

The promising results with Bayer 205 and Tryparsamide at the Leopoldville laboratory enticed Congolese medical authorities to seek to expand the use of the new trypanocides in the colony. They encouraged larger-scale 'field trials', notably by itinerant doctors, to complement Van den Branden and Van Hoof's laboratory work.[629] Given that touring sleeping sickness doctors had even less control over trypanosome carriers than their counterparts in lazarets or clinics, the point of such therapeutic investigations in the field was not so much to conduct 'scientific' experiments evaluating the efficacy and safety of new trypanocides.[630] Rather, they were meant to establish a proven drug's 'effectiveness', i.e. assess how it performed in routine clinical practice, and especially whether it could control sleeping sickness in the context of the colony's mass treatment campaign. In this sort of clinical studies, which could take many forms, the boundaries between therapeutic research and public health practice in fact became extremely blurred.[631]

Acquiring substantial quantities of Bayer 205 initially remained problematic, however. Although the drug constituted an important advance in sleeping sickness therapeutics, Rodhain argued in 1923, a delay in commercial release made its use premature in his view.[632] By 1924, Bayer's Belgian concessionaire, Pickaert & Grolée, was sending out pharmaceutical prospectuses claiming that Germanin would help bring about Africa's 'general redemption' by 'sanit(ising)' trypanosome-infected regions. It offered to hand out quantities to the colonial authorities for large-scale experimentation, but claimed it could not do so for free and insisted that the drug was not yet commercially available.[633] Possibly contributing to Bayer's persistent reluctance to freely distribute Germanin were Kleine's plans, as revealed during a gathering of the LNHO tropical diseases expert committee in 1924, to undertake an LN-backed scientific expedition to Katanga to study, among other things, the eradication of sleeping sickness by pharmaceutical means.[634]

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[629] 'Rapport médical annuel du service de l'hygiène 1926', 24.8.1927, MAEAA, Hygiène, 4419.605

[630] G. Trolli, 'Le traitement de la trypanose humaine par la tryparsamide; revue générale', *Annales de la Société Belge de Médecine Tropicale* 7 (1927), 319; J. David, 'Le traitement de la trypanosomiase humaine par la tryparsamide', Annales de la Société Belge de Médecine Tropicale, 7 (1927), 303-309.

[631] On the distinction between 'efficacy - the effect of an intervention demonstrated in a clinical trial - and 'effectiveness, that is, its real-world effect', see Lock and Nguyen, *Anthropology of Biomedicine*, 185.

[632] J. Rodhain, 'Lettre-circulaire "Suite aux considérations sur la prophylaxie de la maladie du sommeil"', 30.3.1923, ITG, Onderzoek, 5.2.7; J. Rodhain, 'Lettre-circulaire "Considérations pratiques sur la prophylaxie de la maladie du sommeil"', 1923.11.20, ITG, Onderzoek, 5.2.7., p. 1.

[633] Letter from Pickaert & Grolée, 1924, MAEAA, Hygiène, 4404.302.

[634] E. Van Campenhout, 'Compte rendu sommaire des discussions du Comité Médical réuni à Londres sous les

By 1925, Brussels was nevertheless purchasing certain quantities of Germanin, the cost of which could be recuperated via war reparation payments.[635] Another solution soon presented itself, however, thanks to the research efforts of Ernest Fourneau. In 1924, he had managed to synthesise a compound in Paris that he believed to be identical to Bayer 205, naming it Fourneau 309.[636] Although at first denying these claims, Bayer was soon forced to acknowledge that the French attempt to copy its trypanocide had been successful. In 1925, the company 'came to an understanding with Fourneau' and concluded a 'marketing agreement' with Poulenc that allowed the French firm to manufacture Bayer 205/Fourneau 309 and commercialise it as 'Moranyl'.[637] Poulenc also provided the Belgian colonial administration with free samples for trials in the Congo, most of which were sent, following Broden's suggestion, to the Leopoldville laboratory.[638] There, Van den Branden found it to be therapeutically equivalent to the German-manufactured compound.[639]

The larger-scale field experimentation of the Bayer 205 compound in the Belgian Congo was initially confined to the Leopoldville laboratory doctors. By 1924, Van den Branden and Van Hoof had concluded more definitively that the trypanocide did not surpass Atoxyl in curing second-stage patients, but confirmed that its great value lay in its ability to effect a very long blood sterilisation with even a single dose, and even in advanced cases.[640] These results led Van den Branden to further explore the compound's prophylactic potential in 1924. He initiated a chemoprophylaxis field trial in Binzia, a

auspices de la Société des Nations en Septembre 1924', 1924, MAEAA, Hygiène, 4461.913; 'League of Nations. Health Organisation. Campaign Against Sleeping Sickness in Equatorial Africa. Memorandum by Professor F. K. Kleine (Translation)', 18.7.1924, MAEAA, Hygiène, 4461.913; E. Van Campenhout to Secrétaire Générale, 20.8.1924, MAEAA, Hygiène, 4461.913.

[635] Secrétaire Général to A. Broden, 27.10.1925, ITG, Onderzoek, 5.2.10; Secrétaire Général to Governor General, 14.9.1925, MAEAA, GG, 16769 (GG).

[636] E. Fourneau to Secrétaire Général, 25.2.1924, ITG, Onderzoek, 5.2.8.

[637] Les Etablissements Poulenc Frères, 'La maladie du sommeil' (Paris, 1927); Greenwood, *Antimicrobial Drugs*, p. 277. Simon Flexner wrote in 1925 to Louise Pearce: '(Bayer and Fourneau) have now joined hands and henceforth will work together'. S. Flexner to L. Pearce, 13.6.1925, RAC, Rockefeller University Archives, 430 P315 (Louise Pearce papers), Box 1, folder (2) 8. 'Marketing agreements' with 'foreign competitors' were not uncommon in the German pharmaceutical industry. Liebenau, 'Ethical business', 126.

[638] Les Etablissements Poulenc Frères to Director 9e Direction, 4.7.1925, ITG, Onderzoek, 5.2.10; Secrétaire Général to A. Broden, 4.9.1925, ITG, Onderzoek, 5.2.10.

[639] F. Van den Branden to Chief Medical Officer in Boma, 8.9.1926, ITG, Stukken van Algemeen Bestuurlijke Aard, 1.7.9.2.2.

[640] 'Rapport sur le fonctionnement du laboratoire de Léopoldville pendant l'année 1924', 152-153; F. Van den Branden et L. Van Hoof, 'Le "Bayer 205" dans le traitement de la trypanosomiase humaine', *Annales de la Société Belge de Médecine Tropicale* 4 (1924), 205-230; F. Van den Branden et L. Van Hoof, 'Conclusions du rapport Docteurs Van den Branden et Van Hoof sur "Le Bayer 205"', 15.2.1924, MAEAA, Hygiène, 4404.302. When Van den Branden and Van Hoof learned that Kleine reported better results with Bayer 205 in the treatment of advanced cases in Katanga, they objected that the German mission members were not able to keep their patients under the 'strict observation' that was possible in Leopoldville. F. Van den Branden and L. Van Hoof, 'Le Bayer 205 dans le traitement de la Trypanosomiase Humaine', 15.2.1924, MAEAA, Hygiène, 4404.302.

'chefferie' in an endemic sleeping sickness area, which he later extended to two other indigenous communities. It was an attempt to obtain 'massive sterilisation' by administering prophylactic Bayer 205 injections to all local inhabitants not yet carrying trypanosomes, so as to protect them against infection. Although Van den Branden found that this 'Bayerisation' would require a yearly renewal of injections (which he anticipated would be rather expensive), he suggested that reduced infection rates in his trial communities could be attributed to the prophylactic Bayer 205 injections.[641]

Later on, further field trials by itinerant doctors involved in sleeping sickness control confirmed Van Hoof and Van den Branden's assessment of the Bayer 205 compound and highlighted its drawbacks in practical terms. Doctors Strada and Lopes from the Uele sleeping sickness mission, for example, were not impressed with Germanin's results in the treatment of chronic trypanosomiasis victims that were beyond the usual Atoxyl and tartar emetic therapy. Given that it was in addition an expensive drug, they could not recommend it.[642] In 1926, Fourche and Ricklin from Forminière's sleeping sickness mission in Kasai initiated 'Bayerisation' trials at Broden's suggestion. While acknowledging that preventive Bayer 205 injections administered indiscriminately to whole communities could provide protection against infection, they were not convinced of this chemoprophylactic strategy of sleeping sickness control. In their view, simply treating trypanosome carriers could suffice to curb the disease, and the drug's price made a general application of preventive injections less feasible anyway.[643]

While the enthusiasm for Bayer 205 in the Belgian Congo somewhat dampened, Tryparsamide increasingly came to the fore as a highly promising option for pharmaceutical sleeping sickness control. In November 1923, Broden had decided to organise an extensive Tryparsamide trial in the colony and started negotiating with Pearce to obtain the required amount of the experimental drug. With the assurance that the resulting reports would be sent to New York before publication, the RIMR sent a first shipment of 5kg a few months later.[644] In the Congo, chief medical officer Rodhain made sure that, as Pearce required, the supplies were distributed to suitable state doctors who

[641] 'Rapport sur le fonctionnement du laboratoire de Léopoldville pendant l'année 1924', 154-155; Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville en 1925', 297-298; Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville durant l'année 1926', 207; F. Van den Branden, 'Seconde note préliminaire sur les essais d'administration de Bayer 205 prophylactique à des agglomérations indigènes', *Annales de la Société Belge de Médecine Tropicale* 7 (1927), 147-149; F. Van den Branden to Chief Medical Officer, 27.7.1925, MAEAA, GG, 15716 (GG).

[642] L. Strada et A. J. Lopes, 'Notes préliminaires sur le traitement de la trypanose humaine par la germanine (205 Bayer)', *Annales de la Société Belge de Médecine Tropicale* 5 (1925), 186; L. Strada et A. J. Lopes, 'Notes complémentaires sur le traitement de la trypanose humaine par le germanine (205 Bayer)', *Annales de la Société Belge de Médecine Tropicale* 7 (1927), 13.

[643] J. A. Fourche et J. Ricklin, 'Expérimentation du Bayer 205 au point de vue préventif dans la pratique itinérante', *Annales de la Société Belge de Médecine Tropicale* 8 (1928), 143, 153-154.

[644] E. Van Campenhout to Minister of Colonies, 24.3.1924, MAEAA, Hygiène, 4404.302.

would only use them for treating sleeping sickness.[645] Soon afterwards, a large second batch of free Tryparsamide arrived, which Rodhain distributed among laboratory and hospital doctors, as well as physicians directing special sleeping sickness missions.[646] Still further supplies for the Congo medical service followed in the course of 1924.[647]

The RIMR's free Tryparsamide shipments enabled Broden and Rodhain to initiate therapeutic investigations in the 'real' world of medical practice, outside of the Leo lab's controlled environment. Their coordination of clinical research in the colony under Pearce's watch to some extent thwarted Van den Branden's own ambitions.[648] He argued for the sleeping sickness missions to engage in a constant exchange of 'observations, results, advice, etc.' with the Leopoldville laboratory, so that the latter could 'centralise' the information gathered throughout the colony and provide therapeutic guidance.[649] However, when Van den Branden in 1924 expressed the wish to collate the Tryparsamide trial results in advanced cases from all over the Congo, on the grounds that he was the first researcher to 'signal the good results with this product', Rodhain simply informed him that it was Broden who was to gather and compare all relevant records.[650] Although the Leopoldville laboratory was typically the first port of call for clinical trials with new trypanocides, it clearly did not have absolute control over therapeutic knowledge production pertaining to the Congo.

As Pearce accumulated more information on Tryparsamide therapy from Africa, she started claiming that it was the only drug with a 'marked therapeutic action in the late stages of the affection', and that sleeping sickness control became a possibility if further observations confirmed the results so far achieved and treatment could be implemented on a large scale.[651] As she asserted herself, the Congo trials in particular were critical in shaping Tryparsamide's therapeutic application as a sleeping sickness drug. The 1923 reports of its superior efficacy in advanced sleeping sickness cases by the Belgian laboratory doctors in Leopoldville as well as C. C. Chesterman, a Baptist missionary in the Congo whom Pearce had also provided with samples, did much to revive interest

[645] Louise Pearce to Simon Flexner, 14.12.1923, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder (1) 7; 'Translations of extracts of the letter from Dr Rodhain (Chief of the Medical Service, Belgian Congo) to Dr Pearce', 26.3.1924, RAC, Rockefeller University Archives, RG 210.3 (Business Manager), Box 35, folder 13.

[646] J. Rodhain to Louise Pearce, 7.1924, MAEAA, GG, 15716 (GG).

[647] L. Pearce to J. Rodhain,17.6.1924, MAEAA, GG, 15716 (GG).

[648] Van den Branden argued that given the Leopoldville laboratory's role in sleeping sickness research, there should be a constant exchange of 'observations, results, advice, etc.' with the special sleeping sickness missions in the colony, so that the lab can 'centralise' the information established by the various missions, and the latter can benefit from the lab's therapeutic research. Van den Branden et Van Hoof, 'Fonctionnement du laboratoire de Léopoldville pendant l'année 1922', 161.

[649] Van den Branden and Van Hoof, 'Fonctionnement du laboratoire de Léopoldville pendant l'année 1922', 161.

[650] F. Van den Branden to Chief Medical Officer, 18.9.1924, MAEAA, GG, 15716 (GG); J. Rodhain to A. Broden, 23.10.1924, MAEAA, GG, 15716 (GG).

[651] Pearce, 'Tryparsamide Treatment of African Sleeping Sickness', 91-92.

elsewhere in colonial Africa.[652] According to Pearce, Bayer 205 initially had a much greater appeal among most clinical investigators because 'the claims made for it (...) were so much greater than those that had been made for tryparsamide'.[653] Tellingly, after leaving the Belgian Congo, Pearce had also sent a quantity of Tryparsamide to the Pastorians in Brazzaville, but they were not convinced of the compound's efficacy until about 1925, after initiating new trials with samples provided by their Leopoldville colleagues.[654] By then, Pearce and Brown held that the drug's ultimate therapeutic value lay in its potential ability to eradicate sleeping sickness and concluded that although requiring substantial amounts of money and personnel, mass treatment was the only viable strategy of disease eradication in the current circumstances.[655]

Around the same time, Van den Branden and Van Hoof's own observations in Leopoldville led them to call for a definitive replacement of Atoxyl with Tryparsamide in mass sleeping sickness treatment.[656] Rodhain set out to 'convince the Government that it (was) in its interest to obtain all the Tryparsamide that was required' for the 1926 budget year.[657] Giovanni Trolli, who succeeded Rodhain as chief medical officer in November 1925, confirmed that the solution to the trypanosomiasis problem lay in the consolidation and expansion of the special-mission model. What was foremost required to 'conquer' the disease, he argued, was (money for) additional staff and greater quantities of the new trypanocides Bayer 205 and, in particular, Tryparsamide.[658] Even political authorities in the Congo supported a more extensive use of the American trypanocide. The Governor General was delighted that African perceptions of its efficacy in advanced cases boosted indigenous confidence in the medical service, which he

[652] Dr Brown and Dr Pearce, 'Report on the Present Status of the Investigations being carried out with Tryparsamide, 1.6.1923 - 15.3.1924', RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 12, 1923-1924, pp. 181, 186-187; W. H. Brown and L. Pearce, 'Tryparsamide in paresis and African sleeping sickness', 10.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louis Pearce papers), Box 1, folder 2.

[653] 'Report of director of laboratories to corporation', 17.10.1924, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 12, 1923-1924, p. 247.

[654] Mertens and Lachenal, 'History of "Belgian" tropical medicine', 1264; L. Pearce to S. Flexner, 24.4.1923, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder (1) 7; L. Pearce to S. Flexner, 31.3.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louis Pearce papers), Box 1, folder (2) 8.

[655] 'Report of director of laboratories to corporation', 17.10.1924, RAC, Rockefeller University Archives, RG 439 (Scientific Reports of the Laboratories to the Board of Scientific Directors), vol. 12, 1923-1924, pp. 250-251; W. H. Brown and L. Pearce, 'Tryparsamide in paresis and African sleeping sickness', 10.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2.

[656] Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville en 1925', 299-300.

[657] J. Rodhain to L. Pearce, 28.9.1925, RAC, Rockefeller University Archives, 450 P315 (Louise Pearce papers), Box 1, folder 2.

[658] *Rapport sur l'Hygiène Publique pendant l'Année 1925*, p. 11; G. Trolli, 'Note générale au sujet des prévisions budgétaires du Service de l'Hygiène pour l'exercice 1925', 16.9.1924, MAEAA, GG, 16847 (GG).

anticipated would greatly facilitate the sleeping sickness campaign.[659] Expectations that Tryparsamide would exert a 'civilising' influence indicate how Europeans, as Laurence Monnais has remarked, came to see pharmaceuticals as 'agents for extending (their) sphere of influence' in colonial territories.[660] Crucially, convinced that the new trypanocides would get sleeping sickness under control in the course of a few years, Governor General Rutten actively endorsed the requests of his medical staff to generalise their use in mass treatment.[661]

6.4 In summary

In the first half of the 1920s, Atoxyl's downturn coexisted with the first phase of a new trypanocide's career cycle in the Belgian Congo: Tryparsamide. Its rise to prominence came about through an interplay between cross-border pharmaceutical circulation and locality, as the colony became a crucial testing site for ethical drug developers' new trypanocidal compounds after the First World War. The chemotherapeutic exchanges in which the Belgian Congo took part in the 1920s continued to take on an inter-imperial shape, but were nevertheless marked by the armed conflict. They involved a greater share of synthetic chemicals developed or manufactured outside of Germany in a bid to break the country's pharmaceutical dominance, while the free distribution of German experimental drugs, in particular Bayer 205, became more difficult. As the EMT and the colonial administration facilitated, supported and instigated clinical research on African trypanosome carriers with these new compounds, the Congo became an important participant in postwar pharmaceutical innovation and therapeutic knowledge production. At the same time, clinical trials in both the laboratory and the field shaped local trypanocide trajectories. Most of the competing medicines were rejected, and it was eventually Tryparsamide that generated high expectations in the Congo as a tool for pharmaceutical disease eradication. It was hailed as a superior drug, fit to replace Atoxyl in mass sleeping sickness treatment, by local medical and political authorities impressed with the drug's curative effects and African responses to it. How the American invention's re-appropriation as a Belgian drug dramatically boosted consumption by the late 1920s will be discussed in the next chapter.

[659] 'Translation of the letter from the Governor General of the Belgian Congo to Dr Pearce', 26.3.1924, RAC, Rockefeller University Archives, RG 210.3 (Business Manager), Box 35, folder 13.

[660] Monnais, 'Colonial medicines to global pharmaceuticals', 261.

[661] Governor General to Minister of Colonies, 3.10.1924, MAEAA, Hygiène, 4404.302.

Chapter 7
Belgian medico-pharmaceutical nationalism: from Tryparsamide to mass Tryponarsyl treatment

This chapter discusses how in the second half of the 1920s, enthusiasm for Tryparsamide in the Congo amounted to a steep increase in the use of the compound, especially when a Belgian copy of the drug branded 'Tryponarsyl' was developed. This acceleration in the new trypanocide's dissemination coincided and was intertwined with a definitive downturn in Atoxyl's career as a sleeping sickness control pharmaceutical in the Belgian colony.

To a large extent, the upsurge in Tryponarsyl consumption was the product of a mutually reinforcing alliance between the Belgian pharmaceutical industry, Belgian tropical medicine and the Belgian colonial administration in a postwar context of commercial, political and medical-scientific competition in the field of human African trypanosomiasis. To satisfy its medical service's growing demand for Tryparsamide, the Brussels administration was looking for suitable suppliers, and found a welcome opportunity in a Belgian-manufactured drug to obtain cheaper drug supplies and at once boost the nation's emerging synthetic pharmaceuticals industry. As the latter sought to obtain a share of the competitive Congolese trypanocide trade, it collaborated with the world of Belgian tropical medicine to develop its Tryparsamide production and secure a market for it. For the leading figures of tropical medicine in both colony and metropole, supporting a 'Belgian' trypanocide allowed claiming national ownership of and contributions to sleeping sickness therapeutics and control. This was deemed vital to the building of a 'Belgian' tropical medicine and the defending of its human trypanosomiasis record in the Congo against a backdrop of inter-imperial scrutiny and comparison. More specifically, it fit within a strategy to neutralise attacks from German colonial revisionists and showcase Belgium's aptitude as a colonial power. Tryponarsyl's upward trajectory thus illustrates how sleeping sickness drugs in the Congo were not simply commodities over which pharmaceutical businesses competed, but also important political symbols in the postwar entanglement of international exchanges and 'medico-pharmaceutical nationalism' in the field of human African trypanosomiasis.[662]

[662] On the interwar mix of (new forms of) internationalism and nationalism in tropical medicine and sleeping sickness control, see also Mertens and Lachenal, 'History of "Belgian" tropical medicine', 1262-1269; Neill, *Networks in Tropical Medicine*, pp. 182-204.

The first section of this chapter examines how Belgium's tropical medicine elite helped the Meurice company gain entry to the Congolese Tryparsamide market. As he sought to advance the reputation of 'Belgian' tropical medicine by highlighting national contributions to sleeping sickness therapeutics, the EMT director's support proved particularly crucial in this respect. He helped organise preclinical and clinical trials that established the Belgian-manufactured drug's therapeutic equivalence to the RIMR's original, and suggested its purchase in lieu of the American-manufactured product. The chapter then explores how Meurice overcame subsequent obstacles to commercialise Tryparsamide as it failed to obtain a Rockefeller manufacturing license. In a move that entailed a Belgian re-appropriation of an American pharmaceutical invention, the company continued Tryparsamide production, but marketed the drug under the trade name 'Tryponarsyl'. This enabled Meurice to proceed with the commercial distribution of the Tryparsamide compound and sign long-term supply contracts with a Brussels administration looking to satisfy, at the lowest possible cost, growing demands from medical and political authorities in the Congo to replace Atoxyl with Tryparsamide in the fight against sleeping sickness. Next follows an overview of how Tryponarsyl held off competition on the Congolese trypanocide market. Although different brands of Tryparsamide and new arsenical compounds continued to circulate to the colony, clinical research at the Leopoldville laboratory failed to identify a drug of superior safety, efficacy or practicality. The chapter ends with a discussion of how, aside from price and pharmacological effects, Tryponarsyl's 'cultural status' as a 'Belgian' trypanocide was a major factor behind the surge in its consumption in the Congo, as it allowed authorities to underscore Belgian capacity in sleeping sickness control at a time of intensifying inter-imperial comparisons and, in particular, German criticism.

7.1 A second chance for the Belgian pharmaceutical industry

As calls from the Congo to replace Atoxyl with Tryparsamide grew louder, the administration in Brussels started exploring how it could supply the colony with more substantial quantities of the new drug. By the end of 1924, Broden was instructed to investigate at what cost the Rockefeller product could be obtained.[663] With evidence of Tryparsamide's therapeutic value in neurosyphilis and sleeping sickness steadily accumulating, the RIMR was at that time about to release the compound for commercial distribution through the granting of manufacturing licenses to carefully selected pharmaceutical companies.[664] This would enable the Institute to make sure that only

[663] Secrétaire Général to A. Broden, 29.11.1924, ITG, Onderzoek, 5.2.10.

[664] A. Broden to Secrétaire Général, 1.12.1924, ITG, Onderzoek, 5.2.10.

drugs of an acceptable quality standard were sold as Tryparsamide, and thus protect both public health and its own reputation. By January 1925, the trypanocide was made commercially available, and the RIMR's director felt that 'the time ha(d) come for the Belgians to purchase the drug'.[665] When Broden addressed his enquiries to the American licensee Powers-Weightman-Rosengarten, an established Philadelphian manufacturer of medicinal chemicals, the latter was willing to 'make a special price' for the colonial government and a certain quantity was purchased. However, the Belgians in the end found the cost of the American-manufactured Tryparsamide prohibitive given the huge amounts required.[666]

A possible solution presented itself in the form of Belgian-manufactured Tryparsamide. Since the war, the Meurice company had been trying to gain entry to the Congolese trypanocide market. Product quality was key to securing market share, however, and the firm's first attempt with 'Atoxyl Meurice' led to serious doubts about its capacity to produce a drug that fulfilled the evolving quality standards of the time. Unwilling to give up, the company started turning to other arsenic compounds, and by 1924 succeeded in synthesising a drug with the same chemical formula as the RIMR's Tryparsamide.[667] Once again, Meurice relied on the EMT's assistance for preclinical tests, which were followed - behind the RIMR's back - by therapeutic trials in the Congo in 1924, the results of which seemed to match those obtained with the American Tryparsamide.[668] Van den Branden and Van Hoof's observations in Leopoldville indeed confirmed that Meurice's compound was therapeutically equivalent.[669]

The continued collaboration between the Meurice firm and Belgian tropical medicine experts was somewhat remarkable given the problems with the company's version of Atoxyl. The prospect of Belgian-manufactured trypanocides, however, fitted Broden's agenda to put Belgian tropical medicine on the map. Although a participant in inter-imperial networks of pharmaceutical development, the EMT director was also keen to claim Belgian ownership of medical research and practice in the Congo, notably in the

[665] S. Flexner to L. Pearce, 26.4.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder (2) 8; W. H. Brown and L. Pearce, 'Tryparsamide in paresis and African sleeping sickness', 10.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2.

[666] A. Broden to Secrétaire Général, 1.12.1924, ITG, Onderzoek, 5.2.10; L. Pearce to S. Flexner, 31.3.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder (2) 8; F. Rosengarten to A. Broden, 9.3.1925, ITG, Onderzoek, 5.2.10; W. H. Brown and L. Pearce, 'Tryparsamide in paresis and African sleeping sickness', 10.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louis Pearce papers), Box 1, folder 2; J. Rodhain to L. Pearce, 28.9.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2; Liebenau, *Medical Science and Medical Industry*, pp. 30, 32, 102.

[667] Darmstadter, 'La contribution de l'industrie belge', 72-73; Pottier, 'L'industrie belge des produits pharmaceutiques', 344; Administrateur délégué Meurice to Minister of Colonies, 25.3.1924, MAEAA, Hygiène, 4404.302; J. Rodhain to L. Pearce, 28.9.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2.

[668] J. Rodhain and A. Broden to Minister of Colonies, 13.10.1925, ITG, Onderzoek, 5.2.10; J. Rodhain to A. Broden, 23.10.1924, MAEAA, GG, 15716 (GG).

[669] Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville en 1925', 299-300.

field of sleeping sickness therapy. His influence on the circulation of experimental trypanocides to the colony, for example, gave him a substantial degree of control over the therapeutic knowledge that was being produced there. He not only helped determine what drugs were subjected to clinical trials, but also frequently collected the resulting reports in Brussels with an eye to their publication in the 'Annales de la Société Belge de Médecine Tropicale'.[670] Modelled on the French 'Société de Pathologie Exotique' and its bulletin, Broden had founded this scientific journal and its specialised medical society in 1920 to strengthen tropical medicine's institutional basis and advance it as a respectable medical specialty in Belgium. With a national forum for the publication and dissemination of Congo-related medical research, Broden could be sure that the fruits of clinical investigations in the colony were not simply reaped by metropolitan science, but by Belgian science in particular.[671] Underscoring the 'Belgian' character of clinical research conducted in the Congo not only enhanced the latter's 'cultural power', but also raised the scientific profile of Broden's tropical medicine, given that the Brussels School itself at that point lacked the funding and infrastructure to be a true research centre.[672] Through the asymmetrical logic of colonialism, interwar drug therapy research in the Congo was thus meant to contribute to the building of a metropolitan-based discipline that could withstand the comparison with its counterparts in neighbouring European states.[673]

The participation of foreign nationals in sleeping sickness therapy research in the Belgian Congo threatened to undermine Broden's plans to build a 'Belgian' tropical medicine after the First World War. Before Pearce's expedition to the Congo, he and Van Campenhout opposed the RIMR's involvement in the colony. They argued that from an international perspective it would look like an admission of inferiority, while in the eyes of the Belgian public the national scientific record - notably in the field of sleeping sickness - justified a certain 'disapprobation' of the appeal made to foreign nationals.[674] When the American expedition's arrival in Leopoldville was imminent, chief medical officer Rodhain urged Van den Branden to give its members a warm welcome, although he admitted that 'it would have been much more elegant of the Americans to put the new experimental products at (the Leo lab director's) personal disposal', and 'hoped (Pearce) (would) recognize (sic) the necessity of taking (him) on as a direct

[670] For example: Secrétaire Général to Minister of Colonies, 8.7.1924, MAEAA, Hygiène, 4404.302; Secrétaire Général to Minister of Colonies, 11.7.1924, MAEAA, Hygiène, 4404.302.

[671] 'Société Belge de Médecine Tropicale. Exposé des Motifs', s.d. , ITG, Onderzoek, 5.3.1.

[672] Haynes argues that the 'appeal to the nation enhanced the cultural power of (Ronald) Ross's research' in Haynes, *Imperial Medicine*, p. 124.

[673] Parts of this paragraph have been published before in Mertens and Lachenal, 'History of "Belgian" tropical medicine'. Among the listed reasons for founding the Société belge de médecine tropicale and its journal was a desire to 'prove the existence, the vitality of Belgian colonial medicine'. See 'Société Belge de Médecine Tropicale. Exposé des Motifs', 1920, ITG, Onderzoek, 5.3.1.

[674] A. Broden and E. Van Campenhout, 'Note pour Monsieur le Ministre', 16.12.1919, MAEAA, Hygiène, 4404.302.

collaborator'.[675] In recognition of her contribution to sleeping sickness therapy research Pearce was eventually elected a corresponding member of the Belgian Tropical Medicine Society in 1922, but Broden and Rodhain privately reproached her for not sufficiently acknowledging Van den Branden's assistance with examining Leopoldville patients in her first publication on Tryparsamide.[676] Apparently ignoring these sensitivities, the Minister of Colonies hoped to intensify American involvement in the fight against sleeping sickness in the Congo in the years following Pearce's visit. Plans were made to encourage a second scientific expedition in the hope that it would eventually entice the Rockefeller Foundation to (financially) support the Belgians' arduous trypanosomiasis campaign after it had earlier declined the invitation on budgetary grounds.[677] The prospect of a new foreign-led expedition in 1924 - which in the end failed to materialise - prompted Broden to point out that Belgian doctors, given the Leopoldville laboratory's fifteen-year track record as 'one of the arbiters' of sleeping sickness therapy, did not have any lessons in therapeutics to learn, and that sending foreign nationals to the Congo to try out new drugs amounted to a 'humiliation'. Moreover, in the case of Bayer 205 in particular, he went on, the colonial government's 'inconsiderate appeal' to foreigners had caused the Belgians to be 'truly at the mercy of the manufacturer'. Broden concluded: 'it is good colonial policy to show proof of nationalism', and this sentiment seemed to extend to a wish to see Belgian sleeping sickness drugs in the colony - although he admitted that Belgium lacked chemists systematically researching trypanocides.[678]

Given the scarcity of trypanocidal drug development in their own metropole, it seems that Belgium's tropical medicine elite in the early 1920s repeatedly had to weigh the benefits of inter-imperial pharmaceutical exchange against a desire to promote the nation's medical-scientific reputation and in the process advance their own careers. When Meurice became involved with Tryparsamide, it provided them with fresh opportunities to underscore Belgian contributions to sleeping sickness therapeutics in the Congo, and thus compete in this arena with other (ex-)colonial powers on a more equal footing. In that sense, the 'symbolic cost' of collaborating with the pharmaceutical industry, i.e. the risk of being seen to support commercial interests in medicine, was for

[675] J. Rodhain to Leopoldville Laboratory Director, 7.7.1920, MAEAA, GG, 15716 (GG).

[676] A. Broden, 'Note concernant le mémoire de Miss L. Pearce', 1922, MAEAA, Hygiène, 4403.301; J. Rodhain, 'Note au sujet du travail de Melle L. Pearce', 1922, MAEAA, Hygiène, 4403.301; A. Broden to L. Pearce, 20.5.1922, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2.

[677] Minister of Colonies to Minister of Foreign Affairs Henri Jaspar, 14.12.1923, MAEAA, Hygiène, 4404.302; E. Van Campenhout to Minister of Colonies, 24.3.1924, MAEAA, Hygiène, 4404.302; Ambassador Baron de Cartier de Marchienne to Robert Silvercruys, 10.3.1924, MAEAA, Hygiène, 4404.302; Ambassador Baron de Cartier de Marchienne to Minister of Foreign Affairs Henri Jaspar, 18.1.1924, MAEAA, Hygiène, 4404.302; Minister of Colonies to S. Flexner, 20.2.1924, MAEAA, Hygiène, 4404.302; Note to Governor General Lippens, 29.9.1924, MAEAA, Hygiène, 4404.302; Note to Governor General, 24.11.1923, MAEAA, Hygiène, 4403.301.

[678] Parts of this paragraph have been published before in Mertens and Lachenal, 'History of "Belgian" tropical medicine'. A. Broden to Minister of Colonies, 22.4.1924, MAEAA, Hygiène, 4404.302.

Broden and other Belgian experts probably offset by the chances it offered to keep up in field of sleeping sickness therapy and demonstrate the practical successes of Belgian tropical medicine in the Congo.[679]

When Meurice started manufacturing Tryparsamide on a modest scale in 1924, it promised price reductions if the Belgian colonial administration would place significant orders.[680] After the successful trials in Leopoldville, the latter promptly requested a considerable quantity to help meet the colonial medical service's demand for the drug.[681] By 1925, the company had definitively given up on trying to get its Atoxyl approved for use by the PCA, and offered to replace the Colonial Ministry's outstanding Atoxyl order with a monetarily equivalent quantity of its new trypanocide.[682] Although the PCA's director was rather skeptical about this proposal because he was unfamiliar with the pricey drug, Broden and Rodhain eventually suggested to the Colonial Minister that Meurice's version could replace the American Tryparsamide.[683] At a colonial-interest conference in Brussels at the end of 1925, Broden even advocated abandoning the use of Atoxyl and replacing it with Tryponarsyl, a drug 'established in Belgium by Belgian chemists'.[684]

7.2 The fall of Atoxyl and the rise of Tryponarsyl: the national re-appropriation and breakthrough of the Tryparsamide compound

Despite their endorsement of Meurice's Tryparsamide on the basis of preclinical and clinical tests, Broden and Rodhain initially expressed some doubts as to whether the Belgian firm would actually be able to produce a drug of consistent quality on the scale required by the Belgian colonial administration.[685] After the Atoxyl debacle, the Meurice

[679] Rasmussen, 'Moral economy of the drug company', 175.

[680] Administrateur délégué Meurice to Minister of Colonies, 25.3.1924, MAEAA, Hygiène, 4404.302; Administrateur délégué Meurice to Minister of Colonies, 9.10.1924, MAEAA, Hygiène, 4404.302.

[681] Secrétaire Général to A. Broden, 29.11.1924, ITG, Onderzoek, 5.2.10.

[682] Administrateur délégué Meurice to Secrétaire Général Arnold, 28.3.1925, ITG, Onderzoek, 5.2.9.

[683] Majeur Pharmacien Vigneron to Secrétaire Général, 30.4.1925, ITG, Onderzoek, 5.2.9; J. Rodhain and A. Broden to Minister of Colonies, 13.10.1925, ITG, Onderzoek, 5.2.10; J. Rodhain to Minister of Colonies, 13.10.1925, ITG, Onderzoek, 5.2.10.

[684] 'Notes sur la Conférence de M. le Docteur Broden. Union Coloniale 10.12.1925', 1.1926, MAEAA, Hygiène, 4404.302.

[685] J. Rodhain and A. Broden to Minister of Colonies, 13.10.1925, ITG, Onderzoek, 5.2.10; J. Rodhain to Minister of Colonies, 13.10.1925, ITG, Onderzoek, 5.2.10.

company appeared to be struggling to deliver large quantities of the new trypanocide.[686] Moreover, its application to obtain a Rockefeller license had been unsuccessful. When the RIMR learnt of Meurice's Tryparsamide-manufacturing efforts in the summer of 1924 (i.e. before the Institute had released the compound for general sale), it asked the firm for drug samples and urged it not to proceed with commercialisation without its authorisation. In the course of 1925, multiple samples were tested, but all failed to meet the RIMR's required standards of chemical purity or biological action.[687] As a consequence, the young Belgian company missed out on a manufacturing license, unlike Poulenc Frères in France, which had been building significant chemotherapy expertise since before the war, and its British partner May & Baker, which was also acquiring a reputation in arsenical drug production through its French contacts.[688]

Meurice did not want to lose the Belgian colonial administration's business to its European competitors, however. It therefore proceeded with industrial Tryparsamide production without a Rockefeller license, marketing its version of the compound under the trade name 'Tryponarsyl', something it was allowed to do under Belgian patent law.[689] Of course this meant that the firm was manufacturing a drug lacking the Rockefeller quality label associated with the registered Tryparsamide trademark.[690] That did not seem to overly bother the Belgian colonial government, with whom Meurice reportedly signed a contract for the supply of 1800kg of Tryponarsyl in 1926.[691] The French and British licensees, on the other hand, were less pleased. May & Baker, for example, which was 'anxious to capture this important market', complained to the RIMR's Business Manager about what it considered Meurice's unlawful interference in the supply of Tryparsamide to the Belgian Congo.[692] Poulenc, which had considered and abandoned the idea of setting up its own Tryparsamide-manufacturing factory in

[686] Governor General to Minister of Colonies, 25.4.1925, MAEAA, GG, 16769 (GG); Secrétaire Général to Governor General, 30.5.1925, MAEAA, Hygiène, 4405.306.

[687] F. S. Howe to S. Flexner, 9.2.1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5.

[688] 'Resume of situation regarding patents and trademark registrations on Tryparsamide, and policies under consideration. Presented at the meeting of the Board of Scientific Directors on October 28, 1933 by Mr. Flinn', 1933, RAC, Rockefeller University Archives, RG 210.3 (Business Manager), Box 35, folder 17; Quirke, 'Foreign influences', 143; Pearce, *The Treatment of Human Trypanosomiasis with Tryparsamide*, p. 5.

[689] 'Report from Doctor Pearce to Doctor Flexner on the present status of Tryparsamide of sleeping sickness in the Congo', 10.1926, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2.

[690] W. H. Brown and L. Pearce, 'Tryparsamide in paresis and African sleeping sickness', 10.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2. Tryparsamide had been registered as a trademark in Belgium on March 24, 1924. See 'License Agreement', 1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5.

[691] Director May & Baker Ltd. to Business Manager, 23.4.1926, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 4; 'Poulenc-Meurice Controversy', RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5.

[692] Director May & Baker Ltd. to Business Manager, 23.4.1926, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 4.

Belgium, also expressed frustration with the difficulties to obtain market share because of Meurice.[693]

Much was at stake for the competing pharmaceutical companies, as demand for the Tryparsamide compound from the Belgian colonial government was unlikely to diminish soon. Since it had started purchasing and supplying its medical staff in the Congo with Tryparsamide and Tryponarsyl, more extensive evidence of the trypanocide's therapeutic value and effectiveness was accumulating. Crucially, feedback from clinicians on the ground pointed to its 'strong moral action on the natives', who 'easily presented themselves' for treatment on account of its curative effects.[694] This was quite a change from the responses to Atoxyl. In 1927, therapeutic results from several hospital practitioners and itinerant sleeping sickness doctors who had conducted 'essais de brousse' were collated and published in a special issue of the 'Annales de la Société Belge de Médecine Tropicale', which was an important marketing forum for Meurice as it influenced prescription practices of physicians in (Belgian) Africa.[695] In an introductory article Van den Branden offered his 'definitive' verdict on Tryparsamide: it was the 'most powerful trypanocide' known today, he argued, and Tryponarsyl's therapeutic action was in all respects comparable.[696] The Leopoldville laboratory director further stipulated that for adult patients, a regimen of 20 to 40g in the early phase and 50 to over 100g in the advanced stage, administered intravenously in weekly doses of 2g, worked best.[697]

Van den Branden and his colleagues had certainly convinced the Belgian Congo's chief medical officer Giovanni Trolli, who in the same issue called for a 'crusade' to

[693] Assistant Business Manager to Esq. P. Blenkinsop, and Director of May & Baker Ltd., 13.5.1926, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 4; Etablissements Poulenc Frères to Frederic Rosengarten, 7.1.1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5; Frederic Rosengarten to F. S. Howe, 22.7.1925, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 3.

[694] Médecin Provincial, 'Province du Congo-Kasai. Service Médical. Rapport Annuel 1927', MAEAA, RA-CB, 87.5; G. Trolli, 'Traitement de la trypanose humaine par la tryparsamide', 333; J. Rodhain to L. Pearce, 28.9.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2; Governor General to Minister of Colonies, 20.9.1927, MAEAA, Hygiène, 4404.302. Pearce later noted regarding the reported effects of Tryparsamide treatment that 'such pronounced clinical amelioration has had a noticeable impression upon the native population and several authors point(ed) out that with the introduction of tryparsamide, native cooperation in the treatment of both old and new cases is now voluntarily offered'. See Pearce, *The Treatment of Human Trypanosomiasis with Tryparsamide*, p. 223.

[695] Trolli, 'Le traitement de la trypanose humaine par la tryparsamide', 331-332. That Meurice saw the *Annales de la Société Belge de Médecine Tropicale* as an important marketing tool is underscored by the fact that it also directly promoted its medicines via the periodical's advertisements.

[696] F. Van den Branden, 'L'emploi de la tryparsamide dans le traitement de la trypanosomiase humaine', *Annales de la Société Belge de Médecine Tropicale* 7 (1927), 213-214.

[697] Van den Branden, 'L'emploi de la tryparsamide dans le traitement de la trypanosomiase humaine', 212; F. Van den Branden, 'Essais de traitement de la trypanosomiase humaine chronique par la tryparsamide', *Annales de la Société Belge de Médecine Tropicale* 7 (1927), 249.

apply such a Tryparsamide treatment everywhere in the colony.[698] Based on his staff members' reports, the head of the medical service called for a 'generalised' use of the trypanocide, and argued for spending all monetary and staff resources available for 'indigenous medical assistance' on a Tryparsamide-based fight against sleeping sickness.[699] Significantly, by 1927, the colony's Governor General pleaded to have Atoxyl replaced with Tryponarsyl.[700]

Meanwhile, the Belgian firm had made 'structural alterations' at its plant to increase output and meet the colonial administration's growing demand for the trypanocide, and in the hope of improving quality standards and thus ultimately securing a Rockefeller license.[701] Such a stamp of approval would advance Meurice's reputation as an ethical pharmaceutical company. The company's efforts were also in the RIMR's interest if it wanted to protect public health and prevent reputation damage from the distribution of an inferior product marketed as an equivalent of its own compound. Because of indignation over Meurice's actions a licensing decision was initially delayed, but by 1927, Louise Pearce confirmed that the Belgian company was 'manufacturing a satisfactory product', and that she saw 'no reason why a license should not be given'.[702]

The RIMR subsequently started negotiations with the Belgian drug firm. However, the parties failed to reach a consensus on the terms of the license agreement because of divergent views on Belgian patent law. As the Americans were eventually no longer convinced that 'any useful purpose would be served by licensing Meurice', i.e. that it would allow them to 'exercis(e) effective control', they abandoned the idea.[703] Just like

[698] Trolli, 'Le traitement de la trypanose humaine par la tryparsamide', 333.

[699] Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 9.

[700] Governor General to Minister of Colonies, 20.9.1927, MAEAA, Hygiène, 4404.302.

[701] 'Report from Doctor Pearce to Doctor Flexner on the present status of Tryparsamide of sleeping sickness in the Congo', 10.1926, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2; L. Pearce to S. Flexner, 14.10.1926, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2 (9).

[702] F. S. Howe to Dr Flexner, 2.6.1926, 'Meurice (Brussels) application for Tryparsamide license', RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 4; Assistant Business Manager to Produits Chimiques & Pharmaceutiques "Meurice", 22.6.1926, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 4; L. Pearce to S. Flexner, 20.6.1927, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2 (9).

[703] 'License Agreement', 1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5; G. L. Lechien to F. S. Howe, 24.3.1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5; F. S. Howe to G. L. Lechien, 5.4.1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5; G. L. Lechien to F. S. Howe, 29.9.1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5; F. S. Howe, 'Note concerning Meurice license', 7.7.1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5. In 1933, as Tryparsamide patents had begun to expire and 'the enforcibility of the original trade-mark registrations (....) (would) become doubtful in most of the important countries of the world', it was decided that the Rockefeller Institute would 'no longer attempt to control the preparation and distribution of Tryparsamide'. The firms who had previously been granted a manufacturing license, however, were permitted to refer to the Institute's approval of their Tryparsamide on labels and in advertisements. See 'Excerpt from

the Institute had anticipated, this decision did not appear to inflict much damage on the pharmaceutical company's trade, given that it was able to keep selling the drug as 'Tryponarsyl' to the Belgian colonial administration, with whom it had signed a long-term contract.[704] According to the RIMR's legal advisor, the Belgian government indirectly had interests in Meurice as an important shareholder of the 'Société Générale de Belgique', which had itself become the drug firm's main shareholder.[705] The 'Société Générale' was a major financial group established in 1822 and controlling much of the Belgian, and increasingly also the Congolese, economy.[706] That without a Rockefeller license Meurice retained control over the price setting of its product possibly gave the firm an even greater competitive advantage on the Congolese market for sleeping sickness drugs.[707] The Belgian compound was in any case cheaper than American-manufactured Tryparsamide, and large orders from the Belgian colonial administration had the advantage of significantly boosting the national synthetic pharmaceuticals industry in which it had a stake.[708]

minutes of meeting of the Board of Scientific Directors held October 28, 1933', 1933, RAC, Rockefeller University Archives, RG 210.3 (Business Manager), Box 35, folder 17.

[704] F. S. Howe, 'Note concerning Meurice license', 7.7.1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5; G. L. Lechien to F. S. Howe, 29.9.1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5.

[705] Maxwell Barus to Mr. Lupenik, 13.7.1926, 'Re: "Tryparsamide" in Belgium', RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 4.

[706] F. Buelens, *Congo, 1885-1960: een financieel-economische geschiedenis* (Berchem, 2007), pp. 213-214, 219-221.

[707] Pearce had signalled in 1926 that with a license, Meurice would comply with all the Rockefeller Institute's requirements, including those on price setting. 'Report from Doctor Pearce to Doctor Flexner on the present status of Tryparsamide of sleeping sickness in the Congo', 10.1926, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2. The draft of the license agreement stipulated that the price Meurice could charge for its Tryparsamide had to 'conform to such standards as may from time to time be approved by the Institute'. 'License Agreement', 1927, RAC, Rockefeller University Archives, RG 212.2 (Assistant Business Manager), Box 3, folder 5.

[708] J. Rodhain to L. Pearce, 28.9.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2; W. H. Brown and L. Pearce, 'Tryparsamide in paresis and African sleeping sickness', 10.1925, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2; 'Report from Doctor Pearce to Doctor Flexner on the present status of Tryparsamide of sleeping sickness in the Congo', 10.1926, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2; L. Pearce to S. Flexner, 14.10.1926, RAC, Rockefeller University Archives, RG 450 P315 (Louise Pearce papers), Box 1, folder 2 (9).

7.3 Competition for Tryponarsyl?

Meurice's position on the Congolese trypanocide market did not go unchallenged. In Leopoldville, Van den Branden continued to receive and test samples of various compounds and pharmaceutical specialties targeting sleeping sickness in the second half of the 1920s.[709] One notable group of products experimented by the Belgian researcher were Tryparsamide analogues from German chemical manufacturers. In 1926, for example, the 'Vereinigte Chemische Werke Charlottenburg' launched a drug with a chemical formula closely similar to that of the American arsenical under the trade name 'Novatoxyl'.[710] The Berlin-based producer of Atoxyl presumably feared losing its trypanocide trade with the Belgian Congo to the Tryparsamide compound. Hoechst tried the same with its pentavalent arsenical 'Hoechst 2754'.[711] A small-scale trial of Novatoxyl in Leopoldville suggested therapeutic effects similar to Tryparsamide. Hoechst 2754 exerted a certain trypanocidal action, but did not seem to leave a particularly favourable impression on Van den Branden.[712]

At the Congo's main medical laboratory, the investigations into useful sleeping sickness drugs did not stop with the Tryparsamide compound, however. In the wake of the latter's therapeutic success, several other new arsenicals found their way to Leopoldville to have their trypanocidal value established. As a result, Rodhain would later declare that it was there that 'the vastest experimentation of trypanocidal products on human(s)' had taken place.[713] This program of new trypanocide development was actively endorsed and supported in the context of the LNHO's African trypanosomiasis initiatives. The tropical diseases expert committee, for example, repeatedly listed the (comparative) study of the prophylactic and therapeutic value of trypanocides among the most pressing issues to be tackled by those investigating

[709] From 1927 onwards, Van den Branden combined the directorship of the Leopoldville laboratory with a function as '*Médecin-Inspecteur*' of the colony's other medical laboratories, until his ultimate return to Belgium in October 1929. Pierquin, *Historique du laboratoire médical*, p. 24; Dubois, 'Nécrologie. J.-F.-F. Van den Branden', 87.

[710] P. Van Buggenhoudt to A. Broden, 6.3.1926, ITG, Onderzoek, 5.2.10.

[711] A. Broden to Governor General, 17.3.1927, ITG, Onderzoek, 5.2.8.

[712] 'Rapport sur le fonctionnement du laboratoire de Léopoldville-Ouest et des services annexes pendant l'année 1928', 143-144; F. Van den Branden, 'Essai de traitement de la trypanosomiase humaine chronique par le novatoxyl', *Bulletin de la Société de Pathologie Exotique et de sa Filiale de l'Ouest Africain* 22 (1929), 431-435; 'Rapport sur le fonctionnement du laboratoire de Léopoldville et des services annexes pendant l'année 1927', *Annales de la Société Belge de Médecine Tropicale* 8 (1928), 264-266; F. Van den Branden, Clevers et M. Moreels, 'Essai de traitement de la trypanosomiase humaine et des infections animales à T. congolense par le "2754" Hoechst', *Bulletin de la Société de Pathologie Exotique et de sa Filiale de l'Ouest Africain* 20 (1927), 734-736; F. Van den Branden, 'Rapport général sur le fonctionnement des laboratoires du Congo belge. Année 1927', MAEAA, RA-CB, 82.8.

[713] Rodhain, 'Les laboratoires de recherches médicales', p. 173.

sleeping sickness in Africa's laboratories.[714] This was confirmed at the 1925 sleeping sickness conference in London, as well as in the report of the LN's international sleeping sickness expedition based at Entebbe, Uganda. The latter set out a program for future trypanosomiasis research that included the study of chemoprophylaxis and the search for effective trypanocides that could be administered orally.[715] Finally, the conclusions of the Paris conference in 1928 contained a section highlighting the 'primordial importance of therapeutic research' given that 'chemotherapy (was) currently the most secure basis of prophylaxis in tropical Africa's central regions'.[716]

Among the most notable new arsenicals looking for a therapeutic match with sleeping sickness in the Belgian Congo at that time were synthetic drugs from the Paris Pasteur Institute's Therapeutic Chemistry Lab, such as Fourneau 270 and 417. Van den Branden's Pasteurian connections definitely played a role here: in the second half of the 1920s, he undertook a series of research visits to the institutes in Paris, Algiers and Tunis. This informed him, among other things, about Ernest Fourneau's new compounds and helped him secure free trypanocide samples for experimentation in Leopoldville.[717] When in August 1928 the Colonial Minister urged authorities in the Congo to once again accommodate an American researcher who wanted to experiment new arsenic compounds in the treatment of human trypanosomiasis cases, Van den Branden proposed to let him use the facilities of the 'specially equipped' Leopoldville laboratory. He offered his full support and cooperation, as long as the visiting scientist would duly acknowledge the collaboration with the colony's own medical staff.[718] After all, Van Den Branden had ultimately benefitted from Pearce's visit because of the continued Tryparsamide supplies, which allowed him to conduct research and publish on sleeping sickness therapy. A month later, Warren K. Stratman-Thomas arrived in Leopoldville with new arsenicals from the University of Wisconsin's Pharmacology Laboratory.[719] Under the direction of Arthur Loevenhart, this lab had become involved in research on

[714] Andrew Balfour, E. Van Campenhout, Gustave Martin and Arthur G. Bagshawe, 'Société des Nations. Organisation d'Hygiène. Commission des experts pour les maladies tropicales', 12.9.1924, MAEAA, Hygiène, 4461.913; 'Société des Nations. Organisation d'Hygiène. L'Etude de la maladie du sommeil et de la tuberculose dans l'Afrique Equatoriale', 4.5.1925, MAEAA, Hygiène, 4461.914; 'Société des Nations. Organisation d'Hygiène. Rapport de la séance du Comité d'Experts de la Maladie du Sommeil en Afrique Equatoriale, tenu à Londres, le 15 décembre 1927', 26.3.1928, MAEAA, Affaires Etrangères, 2934.525.

[715] 'Communiqué aux Membres du Conseil (C.291.1925 III C.H. 331). Société des Nations. Organisation d'Hygiène. Conférence internationale de la maladie du sommeil. Londres, 22 mai 1925', MAEAA, Affaires Etrangères, 2934.525; 'Société des Nations', 11.6.1928, MAEAA, Affaires Etrangères, 2934.525.

[716] Société des Nations. Organisation d'Hygiène. Rapport de la Deuxième Conférence Internationale de la Maladie du Sommeil, 21.11.1928, MAEAA, Affaires Etrangères, 2934.525.

[717] F. Vandenbranden to E. van Campenhout, 8.12.1927, MAEAA, Hygiène, 4405.306; E. Van Campenhout to Minister of Colonies, 10.2.1928, MAEAA, Hygiène, 4404.302.

[718] Minister to Governor General, 25.8.1928, MAEAA, GG, 15144 (GG); G. Trolli, 'Note pour Monsieur le Gouverneur Général', 4.9.1928, MAEAA, GG, 15144 (GG).

[719] Dr C. C. Chesterman to Chief Medical Officer Trolli, 17.9.1928, MAEAA, GG, 15144 (GG); Governor General Tilkens to Governor of Congo-Kasai Province, 24.9.1928, MAEAA, GG, 15144 (GG).

arsenical drugs in neurosyphilis since 1919 and played a role in establishing Tryparsamide's efficacy against the disease.[720]

In Leopoldville, Van den Branden tried the new arsenicals on small numbers of chronic sleeping sickness cases to see how they compared with what had become the standard of care in the Belgian Congo, i.e. the Tryparsamide compound. What he was in fact looking for, the lab report for 1928 revealed, was an arsenic-based drug that matched the Tryparsamide compound's therapeutic action, but was less toxic for the ocular system in advanced cases, or allowed for a shorter and more practical treatment regimen.[721] In other words, his research focused on finding a trypanocide ideally suited to the conditions of the prophylactic sleeping sickness missions.[722] Trials with compounds that were (potentially) easy to administer, such as Acetylarsan (a syphilis drug manufactured by the French chemical and pharmaceutical company 'Usines du Rhône'), Fourneau's oral arsenicals number 269 and 417, and several substances supplied by Stratman-Thomas (including Etharsenol and Proparsenol) yielded little result, however, as none appeared to fulfil the above-mentioned criteria.[723] Illustrating how much drug evaluations could be locally contingent, Van den Branden even dismissed Fourneau 270 (branded 'Orsanin') - which his colleagues in Brazzaville considered a powerful trypanocide and which was introduced in AEF's prophylactic sectors in the early 1930s - on the grounds that it was 'equally energetic' as, but not better than, Tryparsamide in the treatment of human trypanosomiasis.[724] Therefore, although the Leopoldville laboratory director remained very much engaged in cross-border pharmaceutical exchanges with the aim of looking for potentially better trypanocides, his research ultimately confirmed Tryparsamide (and thus Tryponarsyl) as the best available compound for the Belgian colony's mass treatment campaign.

In the second half of the 1920s, Belgian colonial authorities' demand for the American-discovered chemical inspired several pharmaceutical companies to attempt to obtain a share of the Congolese trypanocide trade with their own arsenical products. Targeting this market with different brands of Tryparsamide and with new derivatives, they competed on price, product quality and reputation as well as on therapeutic

[720] M. Curti and V. Carstensen, *The University of Wisconsin: A History, 1848-1925* (Madison, 1949), p. 489; Greenwood, *Antimicrobial Drugs*, p. 62.

[721] 'Rapport sur le fonctionnement du laboratoire de Léopoldville-Ouest et des services annexes pendant l'année 1928', 141-142, 144-146.

[722] F. Van den Branden to Chief Medical Officer, 27.12.1928, MAEAA, GG, 15144 (GG).

[723] Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville durant l'année 1926', 204-205; 'Rapport sur le fonctionnement du laboratoire de Léopoldville-Ouest et des services annexes pendant l'année 1928', 141-143, 144-146.

[724] He admitted, however, to not having sufficient quantities of the drug to 'thoroughly treat' his patients. F. Van den Branden, 'Essais comparatifs du traitement des rats blancs infectés de "trypanosoma congolense" par l'orsanine sodique (270 Fourneau) et par le Tryponarsyl', *Annales de la Société Belge de Médecine Tropicale* 14 (1934), 375-376; 'Rapport sur le fonctionnement du laboratoire de Léopoldville et des services annexes pendant l'année 1927', 267. Headrick, *Colonialism, Health and Illness*, p. 330.

innovation.[725] It was the manufacturer of Tryponarsyl, however, who would ultimately benefit most from the pharmaceuticalisation of sleeping sickness control in the Belgian Congo, not only because research in Leopoldville did not identify a therapeutically superior compound, but especially also because no competitor trypanocide could match its 'cultural status' as a Belgian sleeping sickness drug.[726]

7.4 The success of Belgian sleeping sickness medicine(s)

The Tryparsamide compound's local construction as an effective tool of sleeping sickness eradication boosted the further expansion of itinerant medicinal prophylaxis in the Belgian Congo in the second half of the 1920s. An indication of the growing support for pharmaceutical trypanosomiasis control throughout the first postwar decade can be found in the evolution of the Belgian Congo's medical budget as reported by chief medical officer Trolli. Between 1920 and 1929, the overall medical budget increased from nearly 4 million to 76 million Belgian francs, and the funds allocated to medical equipment and drugs (where trypanocides were among the most frequently prescribed medicines) increased from about 1,2 million francs in 1920 to over 28 million francs, or 38% of the total medical budget, in 1929.[727] These budget increases corresponded with a marked rise in the number of Congolese screened and treated for sleeping sickness (notably in the Congo-Kasai Province in the southwest of the colony).[728] By the second half of the 1920s, for example, over 2 million people (reportedly one fifth of the indigenous population) were examined annually, of which more than 100,000 cases received treatment each year.[729] These efforts also entailed a significant growth in trypanocidal drug consumption. Rodhain estimated in 1924 that 400 kg of trypanocides were consumed by the colonial medical service each year. In 1929, the colony's chief pharmacist suggested a trypanocide consumption of 4000 kg.[730]

[725] On drug price, quality, reputation and innovation as criteria in pharmaceutical competition in interwar America, see Liebenau, *Medical Science and Medical Industry*, p. 126.

[726] On the importance of 'cultural status' in the 'selling potential of a remedy', see Huisman, 'Struggling for the market', p. 66.

[727] *Rapport sur l'Hygiène Publique pendant l'Année 1925*, p. 79; G. Trolli, *Royaume de Belgique. Colonie du Congo Belge. Rapport sur l'Hygiène Publique pendant l'année 1928* (Bruxelles, 1930), p. 5; Trolli, 'Le service médical du Congo Belge depuis sa création jusqu'en 1925', 200.

[728] G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', MAEAA, RA-CB, 83.3bis.

[729] Médecin en Chef adjoint, 'Congo Belge. Rapport du service médical 1926', 24.8.1927, MAEAA, RA-CB, 82.2; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1928*, p. 10.

[730] J. Rodhain to L. Pearce, 7.1924, MAEAA, GG, 15716 (GG); Piton, 'Le ravitaillement de la colonie en produits pharmaceutiques', 498.

Naturally, it was the Tryparsamide compound, and in particular Tryponarsyl, that from the second half of the 1920s became the staple of medicinal prophylaxis in the Belgian Congo. The trypanocide initially purchased in large quantities for the postwar mass treatment campaign was Atoxyl. According to Trolli, by 1925 a certain amount of Bayer 205 was also ordered annually.[731] In 1926, Tryparsamide therapy was still reserved for only 25% of patients (usually for 'bad cases') because it was found too expensive for generalised use. But after repeated calls for increased Tryparsamide supplies from the colony and Meurice's efforts to scale up production, the compound completely replaced Atoxyl in the routine treatment of sleeping sickness cases by 1928-1929.[732] Trolli claimed that 3 million francs per year were spent on Tryparsamide in 1929, which represented over 10% of the reported annual total budget for drugs and medical equipment.[733] By virtue of Meurice's important contracts with the Belgian colonial administration, it was the Tryponarsyl brand in particular that came to dominate the Congolese Tryparsamide market.[734] It prompted the company to claim in 1930 that it was the first to have manufactured the trypanocidal compound on a 'truly industrial scale'.[735]

Aside from efficacy and price, Tryponarsyl's 'cultural status' as a 'Belgian' drug was a particularly significant factor in securing market share in the Congo, because it helped underscore Belgium's capacity to tackle sleeping sickness in a postwar context of international scrutiny of its health record in Africa. Inter-imperial comparisons in the context of the LN's London conference in 1925 had already identified pharmaceutical sleeping sickness control as a particularly Franco-Belgian approach.[736] Meurice-manufactured Tryponarsyl helped Belgian colonial authorities to go even further in constructing a 'national style(...)' of trypanosomiasis control. It allowed them to

[731] *Rapport sur l'Hygiène Publique pendant l'Année 1925*, p. 11. The use of Moranyl was mentioned in reports of the colonial medical service, especially since the late 1920s. For example Dr Daco, 'Province du Congo-Kasai. Service de l'Hygiène. Rapport Annuel 1929', MAEAA, RA-CB, 88.1.

[732] Médecin en Chef adjoint, 'Congo Belge. Rapport du service médical 1926', 24.8.1927, MAEAA, RA-CB, 82.2; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1928*, p. 10; G. Trolli, 'Colonie du Congo Belge. Rapport sur l'Hygiène Publique pendant l'année 1929', 1931, MAEAA, RA-CB, 83.2; Governor General to Minister of Colonies, 20.9.1927, MAEAA, Hygiène, 4404.302.

[733] G. Trolli, 'Colonie du Congo Belge. Rapport sur l'Hygiène Publique pendant l'année 1929', 1931, MAEAA, RA-CB, 83.2; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1928*, p. 5.

[734] 'Report from Doctor Pearce to Doctor Flexner on the present status of Tryparsamide of sleeping sickness in the Congo', 10.1926, RAC, Rockefeller University Archives, 450 P315 (Louise Pearce papers), Box 1, folder 2; L. Pearce to S. Flexner, 14.10.1926, RAC, Rockefeller University Archives 450 P315 (Louise Pearce papers), Box 1, folder 2 (9). Tellingly, a 1930 brochure from the Colonial Ministry describing the typical equipment of itinerant medical staff in the Congo listed 'Triponarsyl' (sic) rather than Tryparsamide among trypanocidal drugs, along with Atoxyl, tartar emetic and Bayer 205. See: Governor General Tilkens to Secrétaire Général, 25.5.1928, MAEAA, GG, 15718 (GG).

[735] Pottier, 'L'industrie belge des produits pharmaceutiques', 352; Darmstadter, 'La contribution de l'industrie belge', 73.

[736] For example: 'Opening Address to the League of Nations Conference on Sleeping Sickness in Africa. By the Chairman, the Honourable W.G. Ormsby-Gore, M.P., F.R.G.S., Under-Secretary of State for the Colonies', 19.5.1925, MAEAA, Hygiène, 4461.914.

appropriate medicinal prophylaxis in the Congo as a specifically 'Belgian' endeavour, and thus provide proof of their nation's capability in this area.[737] Tellingly, at the 1928 conference in Paris, French delegates emphasised Fourneau's compounds 309 and 270 in discussions of mass treatment, whereas the Belgians hailed the therapeutic progress brought by the Tryparsamide compound.[738] Furthermore, in his account to the Minister of Colonies in Brussels, Rodhain was delighted that 'the Belgian (conference) delegation had the satisfaction of hearing homage being paid to the Belgian drug "Tryponarsyl"'.[739]

When reports from the Congo started signalling the promising results of an increasingly Tryponarsyl-based effort to eradicate sleeping sickness, they therefore did not simply confirm for Belgian authorities the appropriateness of the strategy adopted, but in particular also provided evidence of the success of 'Belgian' sleeping sickness medicine. By the second half of the 1920s, the colony's medical leaders indeed hailed the pharmaceutical campaign as a triumph. In 1926, Trolli and his deputy René Mouchet, who had advocated ambulatory treatment since his prewar term at the Leopoldville laboratory, reported that the majority of individuals found infected in the Belgian Congo received at least a 'sterilising treatment'. They concluded that the system of periodical medical surveys and prophylactic treatment by mobile teams had now proven its value, as it amounted to declines in the proportion of infected people in several locations.[740] Moreover, they linked the routine use of the Tryparsamide compound by 1928 to marked increases in the number of apparently cured cases.[741] Such 'brilliant therapeutic results' were held responsible for boosting indigenous confidence in Western medicine and facilitating case detection.[742]

Emphasising Belgium's achievements in sleeping sickness control was vital in a postwar context of inter-imperial comparisons and, in particular, German colonial revisionism. Since 1914, German colonial doctors had criticised the Belgian sleeping sickness record in the Congo and labelled the colony a source of trypanosome infection for neighbouring territories.[743] After the First World War, Belgium got increasingly caught up in what Neill has described as a 'propaganda war' between the Allied Powers -

[737] Mertens and Lachenal, 'History of "Belgian" Tropical Medicine', 1269.

[738] 'Deuxième conférence internationale de la maladie du sommeil. Deuxième séance plénière, tenue à Paris le lundi 5 novembre 1928 à 15 heures', MAEAA, Affaires Etrangères, 2934.525; 'Société des Nations. Organisation d'Hygiène. Deuxième conférence internationale de la maladie du sommeil. Sous-commission des recherches. Deuxième séance, tenue à Paris, le mardi 6 novembre 1928, à 15 heures', MAEAA, Affaires Etrangères, 2934.525.

[739] J. Rodhain, 'Rapport de la délégation belge à la 2e Conférence internationale sur la maladie du sommeil au sujet des travaux de cette conférence, réuni à Paris en novembre 1928. Rapport à Mr. Jaspar, Premier Ministre, Ministre des Colonies', 24.11.1928, MAEAA, Affaires Etrangères, 2934.525.

[740] 'Rapport médical annuel du service de l'hygiène 1926', 24.8.1927, MAEAA, Hygiène, 4419.605; Médecin en Chef adjoint, 'Congo Belge. Rapport du service médical 1926', 24.8.1927, MAEAA, RA-CB, 82.2.

[741] Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1928*, p. 10; G. Trolli, 'Colonie du Congo Belge. Rapport sur l'Hygiène Publique pendant l'année 1929', 1931, MAEAA, RA-CB, 83.2.

[742] R. Mouchet, 'Rapport sur l'hygiène publique 1931', MAEAA, RA-CB, 83.5.

[743] Governor General Fuchs to the Vice Governors General of Katanga and Province Orientale, 22.5.1914, MAEAA, Hygiène, 4403.298; Note from Minister of Foreign Affairs, 16.7.1914, MAEAA, Hygiène, 4403.298.

in particular France - and Germany in the wake of (frustrations about) the Versailles Treaty arrangements regarding the latter's African territories. With the general upsurge in sleeping sickness on the continent, the disease figured centrally in bitter disputes about who had the right and capability to manage African colonies. This reflected a significant change from the 'prewar atmosphere of cooperation' in the world of tropical medicine, and played a vital role in postwar outbursts of Belgian medico-pharmaceutical nationalism pertaining to the Congo.[744] Although the harshest attacks were exchanged between Germany and France, Belgium - as caretaker government of the LN mandate territories Ruanda and Urundi - was not spared German criticisms regarding its aptitude as a colonial power, a reproach to which it was very sensitive.[745]

To a significant extent, the exchanges in the context of the LNHO's trypanosomiasis initiatives reflected and fuelled growing tensions. In a review of the tropical diseases expert committee's interim report in 1924, for example, Emil Steudel criticised Van Campenhout's account of sleeping sickness in Belgian Africa for wrongly claiming that the disease did not occur in Urundi. Steudel, a former senior medical officer in the German colonial army, was keen on proving Germany's superior record in sleeping sickness control and to that effect initiated a campaign highlighting French and also Belgian 'alleged failings' in this domain.[746] In 1925, Van Campenhout called on his British colleague Andrew Balfour to remove Steudel's article from the expert committee's final report, as it condemned the sleeping sickness situation in the mandate territories including Ruanda-Urundi.[747] In addition, when the idea of an autonomous Kleine expedition to Katanga under LNHO auspices was presented to the members of that same committee, Van Campenhout opposed it, arguing that AEF and the Belgian Congo had their own laboratories for sleeping sickness therapy research and were already undertaking their own attempts at disease eradication by organising prophylactic sectors or missions.[748] In doing this, he appeared to be heeding Broden's advice that the Belgians could not afford to leave the impression that they were not capable of fighting sleeping sickness themselves.[749]

German attacks on the Belgian sleeping sickness campaign further intensified by the end of the 1920s. In a continued bid to restore Germany's role in Africa, Steudel

[744] Neill, *Networks in Tropical Medicine*, pp. 183, 189, 193-201.

[745] The 'administrating powers' of the LN mandate territories had to present annual reports for examination at the Permanent Mandate Commission, which facilitated 'direct comparisons' of their medical records. Mertens and Lachenal, 'History of "Belgian" tropical medicine', 1266. On Belgian fears of foreign criticisms of its capacities as a colonial power, see G. Vanthemsche, *Congo. De impact van een kolonie op België* (Tielt, 2007), pp. 97-100.

[746] Neill, *Networks in Tropical Medicine*, pp. 199-200.

[747] E. Van Campenhout to A. Balfour, 14.2.1925, MAEAA, Hygiène, 4461.914; 'Draft of Further Report on Tuberculosis and Sleeping Sickness in Equatorial Africa', 1.1925, MAEAA, Hygiène, 4461.913.

[748] E. Van Campenhout to Secrétaire Générale, 20.8.1924, MAEAA, Hygiène, 4461.913; 'Société des Nations. Rapport du Dr Em. Van Campenhout concernant le Memorandum présenté par M. le Professeur Kleine à la Société des Nations le 18 juillet 1924', 3.9.1924, MAEAA, Hygiène, 4461.913.

[749] A. Broden to Minister of Colonies, 22.4.1924, MAEAA, Hygiène, 4404.302.

published an article on the 'current state of the fight against sleeping sickness' in a 1929 issue of the 'Archiv für Schiffs- und Tropenhygiene', which severely discredited the French and especially the Belgian record. He repeated earlier claims that the Congo was a source of infection - arguing, for example, that it was at the heart of the Rhodesiense problem in the former German East Africa - and criticised the chronic staff shortages as well as the lack of a systematic sleeping sickness campaign in the Belgian colony in comparison with Cameroon and AEF.[750]

The Belgian colony's medical authorities were very sensitive to such criticisms, and their annual reports reflected a constant concern to highlight how much public health efforts in the Congo could withstand inter-imperial comparison. In his report for 1929, chief medical officer Trolli denounced the 'little serious and often self-interested attacks' on the sleeping sickness campaign.[751] Mouchet complained to the Governor General about Steudel's 'veritable pamphlet against the Belgian Congo', which was all the more 'dangerous' given that it was published in one of the most prominent tropical medicine journals and thus would most likely come to the attention of the LN's supervising Permanent Mandate Commission. He feared that unlike the French, the Belgians were not doing enough to publicise their medical achievements in Africa, while they had been the first to organise ambulatory treatment and generalise the use of effective trypanocides such as the Tryparsamide compound. Mouchet suggested asking Rodhain, who had by then become director of the EMT in Brussels, to draft a historical overview of the Belgian efforts to control sleeping sickness to prove Steudel wrong.[752] The medical department in Brussels concurred and urged the Colonial Minister to let Rodhain handle the matter via a reply in the 'Bulletin de la Société de Pathologie Exotique'.[753] The EMT director's advice was indeed sought, and after discussing the matter with French colleagues, he concluded that Steudel's criticisms were part of a strategy to find employment for German doctors in a League of Nations sleeping sickness intervention. Rodhain proposed a two-pronged written response: one for the colonial-interest press highlighting the victories of the sleeping sickness campaign in regions such as Kwango and Kasai, and another for the French 'Bulletin' challenging, on scientific grounds, that the Belgian Congo was at the origin of the Rhodesiense problem in East Africa.[754]

Against this backdrop of hostilities, Belgian-manufactured pharmaceuticals became increasingly important political symbols of the Belgians' efforts to tackle epidemic disease and their ownership of the sleeping sickness campaign in the Congo. Mass treatment in the form of special prophylactic missions conveyed the message that they

[750] E. Steudel, 'L'état actuel de la lutte contre la maladie du sommeil en Afrique (traduction)', 1929, ITG, Onderzoek, 5.3.9; R. Mouchet to Governor General, 2.4.1930, ITG, Onderzoek, 5.3.9.

[751] G. Trolli, 'Colonie du Congo Belge. Rapport sur l'Hygiène Publique pendant l'année 1929', 1931, MAEAA, RA-CB, 83.2.

[752] R. Mouchet to Governor General, 2.4.1930, ITG, Onderzoek, 5.3.9.

[753] Director General a.i. (7e DG) to Minister of Colonies, 29.4.1930, MAEAA, Hygiène, 4405.306.

[754] J. Rodhain to Minister of Colonies, 24.11.1930, MAEAA, Hygiène, 4405.306.

were providing health and fighting depopulation in the colony on their own terms, and the arrival of the 'national' drug Tryponarsyl helped to underscore even more that they were capable colonisers. In that sense, inter-imperial interactions played a significant role in the support for and spread of mass Tryponarsyl treatment in the Belgian Congo and its construction as a 'national' public health strategy.[755]

7.5 In summary

By the late 1920s, enthusiasm for the Tryparsamide compound translated into a starkly increasing consumption that marked a definitive erosion in the use of Atoxyl as a sleeping sickness control drug in the Belgian Congo. It was not so much the Tryparsamide manufactured by Rockefeller-licensed pharmaceutical companies that was administered on a massive scale in the colony, however, but a Belgian firm's copy marketed as 'Tryponarsyl'. The latter constituted a Belgian re-appropriation of an American laboratory discovery that clinical trials in the Congo had shaped into a highly effective sleeping sickness drug. Moreover, Tryponarsyl's success on the Congolese trypanocide market was largely the result of a certain complicity between the Belgian manufacturer, the Belgian tropical medicine community and the Belgian colonial administration to support a 'national' sleeping sickness drug at a time when trypanocides became the subject of intensifying commercial, medical and political competition between (former) colonial powers. For its Belgian champions, Tryponarsyl presented an opportunity to at once break into the Congo's prescription drug trade, reduce the cost of trypanocide supplies, boost Belgium's young synthetic pharmaceuticals industry, and showcase Belgian capability in sleeping sickness therapeutics and control. Its upward trajectory above all reflected how much postwar inter-imperial exchanges in the field of human African trypanosomiasis had become intertwined with medico-pharmaceutical nationalism. How Tryponarsyl entered the next stages of its career will be discussed in the following chapter.

[755] On the role of cross-border exchanges in the construction of 'national styles' in interwar tropical medicine, see also Mertens and Lachenal, 'History of "Belgian" tropical medicine', 1262-1270.

PART III.

THE GRADUAL DOWNTURN OF MASS TRYPONARSYL TREATMENT IN THE 1930s

Chapter 8
Growing disappointment and the decline of Tryponarsyl-based eradication

As Tryponarsyl consumption in the Belgian Congo soared by the late 1920s, it became increasingly clear that the high expectations regarding the drug's effectiveness had been too optimistic. This chapter investigates how, overlapping with the extensive spread of Tryponarsyl, a second stage in the trypanocide's career cycle took off: one of growing 'criticism and disappointment'. Although Tryponarsyl initially remained in use on a large scale, by the second half of the 1930s, its trajectory reached a final phase of 'contracting use' as a tool of sleeping sickness eradication.[756]

Tryponarsyl's career from the late 1920s onwards once again proceeded through an interplay between different social and geographic spheres, notably those of local doctors and central medical authorities, state and private health providers, metropole and colony, Congo and other African territories, tropical medicine and drug industry. Itinerant sleeping sickness doctors from the public and private sector played a key role in initiating a phase of more negative assessments of the drug in the Congo, as they reported problems with toxicity and resistance, and some expressed doubts about the effectiveness of mass Tryponarsyl treatment. In the 1930s, such concerns reverberated in the metropolitan public sphere, as for example Belgian politicians and the German press raised questions about the 'value' of pharmaceutical sleeping sickness control in the Congo.[757] Leading figures in the colonial medical service, however, defended and sustained a large-scale use of Tryponarsyl, to some extent with the collaboration of the Belgian pharmaceutical industry, and credited it with significant reductions in sleeping sickness incidence and prevalence. They nevertheless came to share a certain disappointment with the drug and its ability to fully eradicate sleeping sickness. Moreover, they encouraged a more economical use of trypanocides to reduce the costs of mass treatment, and through exchanges with neighbouring colonies and with the help of a new, autonomous health body came to increasingly promote alternative complementary measures to control the disease and improve African health more generally. In that way, both the subsiding of human trypanosomiasis and the recognised limitations of Tryponarsyl eventually contributed to a diminishing use in the 1930s. Ultimately, developments in the 1930s reflected and contributed to a more complicated

[756] Snelders, Kaplan and Pieters, 'On cannabis', 97.

[757] Tousignant notes how sleeping sickness control in early twentieth-century French Africa also was the object of a 'long(...) history of contests over (its) powers, ethics and value'. Tousignant, 'Politics of mass therapy', 635.

relationship between laboratory science, ethical pharmaceutical industry and collective medicine in the Congo. There was a continued involvement of the colony's medical elite in trypanocide development and promotion in collaboration with the industry, a reinforcing of rational drug policies in the interest of both public health and ethical drug manufacturing, but also a reduced focus on pharmaceutical sleeping sickness control as drug research and the purely microbiological view of infectious disease became less prominent.

This chapter starts with a discussion of the ways in which the Congo's medical leaders maintained a large-scale use of Tryponarsyl in the wake of local accounts of drug toxicity and resistance emerging by the late 1920s. As the Belgian colony's medical service had identified itself so much with mass Tryponarsyl treatment, such reports threatened to undermine its position and prompt questions about its cosy relationship with the Belgian pharmaceutical industry. To secure continued support for the pharmaceutical sleeping sickness campaign and by extension their health service, medical authorities sought to prevent and neutralise the political impact of such unintended drug effects by 'perfecting' the practice and methods of medicinal prophylaxis in the Congo. To a large extent, and similar to the strategies employed by directors of the French West African trypanosomiasis service in the early 1940s to overcome (potential) opposition to pharmaceutical sleeping sickness control, this entailed what Noémi Tousignant has identified as a redefining of toxicity and resistance as 'issues of power and control'.[758]

The first section explores how the leading Belgian Tryponarsyl researcher responded to adverse drug reactions by stepping up pharmaceutical regulation to prevent toxicity incidents rather than questioning mass treatment. He first did so by issuing therapeutic guidelines to control the clinical use of the drug as director of the Leopoldville laboratory. When he later became head of the Belgian Interior Ministry's quality control laboratory for arsenicals, he collaborated with Tryponarsyl's Belgian manufacturer to establish national quality standards. This not only regulated the Congolese Tryparsamide market, but also helped to define drug toxicity as a problem of biomedical irrationality rather than product deficiency. The following section shows how, as the reality of in particular arsenic resistance struck home by the 1930s, medical authorities grew increasingly disillusioned with Tryponarsyl treatment, and its overly standardised application by local sleeping sickness doctors. Although laboratory doctors continued to participate in new drug development through the intervention of the EMT, notably in collaboration with the Belgian pharmaceutical industry, trials in the Congo did not yield a new trypanocide that could form the basis of mass therapy. In consequence, medical authorities resorted to promoting a more diversified therapeutic strategy, guided by systematic lumbar punctures, to rationalise clinical practice. Treatment remained largely Tryponarsyl-based, but it involved combination therapy and larger-dose regimens to deal with the growing problem of arsenic resistance. Another way in which

[758] Ibid., 630.

Tryponarsyl use was initially sustained, as described next, was by medical authorities' insistence on organisational reform as a way to improve mass treatment effectiveness and avoid drug resistance. Chief medical officer Trolli in particular sought to ensure a more comprehensive and regular screening and trypanocide treatment in rural areas through a better coordination and closer integration of the state's prophylactic sleeping sickness missions and private sector AMI providers. Thus could be organised a dense 'medical occupation', powerful enough to effectively purge entire regions from sleeping sickness.

The chapter then proceeds with a discussion of some of the factors contributing to a decline in Tryponarsyl consumption in the 1930s. As doubts about the value of mass Tryponarsyl-based treatment in the Congo were vented more publicly in metropolitan circles, the Congo's medical authorities countered that their approach was resulting in a marked decline of sleeping sickness. Nevertheless, in a climate of budgetary constraints, they instructed clinicians to adopt a more economical use of trypanocides to curb spiralling costs. Moreover, a growing awareness and understanding of the complexities of sleeping sickness epidemiology at the same time pointed them to the limits and unfeasibility of pharmaceutical disease eradication. As a result, mass trypanocide treatment was increasingly complemented with alternative control measures emphasising 'rural hygiene', and the sleeping sickness campaign gradually became much more locally diversified in the 1930s. The embracing of a more ecological stance on human trypanosomiasis also fit in with the development of a broader approach to public health in the Congo, which eventually came to replace mass Tryponarsyl treatment as the linchpin of 'Belgian' indigenous health provision. These shifting views were much inspired by both local observations and inter-imperial exchanges. Taken together, the developments of the 1930s contributed to a downturn in Tryponarsyl's career as a tool of sleeping sickness eradication.

8.1 'Misbehaving medicines' and Van den Branden's pharmaceutical regulation[759]

As the use of Tryponarsyl expanded significantly from the late 1920s onwards, there was a concomitant rise in reports from local sleeping sickness doctors highlighting the downsides of mass treatment with the trypanocide. For instance, there were worrying accounts of unintended drug effects. It had been known since Pearce's therapeutic experiments in 1920 that Tryparsamide treatment could cause 'visual impairment(s)',

[759] Ibid., 625.

especially in advanced cases, but such ocular complications were thought to be quite rare.[760] By the end of the decade, however, greater concerns about Tryponarsyl toxicity started to emerge among some itinerant medical staff, who apparently attributed the problem to poor product quality (e.g. its instability in the tropical climate).[761] Although there seemed to be no incidents on the scale of French Cameroon's 'Bafia affair', where Tryparsamide-induced blindness in hundreds of Africans led to the sanctioning of the head of the special sleeping sickness service Jamot, Governor General Tilkens nevertheless mentioned 'deplorable accidents' occurring in different parts of the Congo in the wake of the routine use of Tryponarsyl.[762] Another reported drawback was the apparent failure to 'sterilise' some sleeping sickness victims with routine Tryponarsyl therapy, a phenomenon that resonated with Paul Ehrlich's discovery of 'arsenic-resistant' trypanosomes in the laboratory at the beginning of the twentieth century.[763] It was first flagged in the Belgian Congo in 1929 by A. Barlovatz, a private doctor from the 'Société de Colonisation Agricole' who collaborated with the official sleeping sickness mission in Mayumbe in the Bas-Congo district, where he noticed that certain trypanosome carriers did not respond to Tryponarsyl treatment.[764]

Such local reports of drug toxicity and resistance had the potential to raise serious doubts about the safety and effectiveness of mass trypanocide treatment in the Belgian Congo. However, in the eyes of the main architects of the colony's Tryponarsyl campaign, these unintended drug effects (initially) did little to invalidate the pharmaceutical strategy of sleeping sickness control. In fact, sleeping sickness therapy expert Van den Branden simply dismissed Barlovatz's claims by arguing in 1930 that the clinician had mistaken relapses caused by a failure to follow treatment guidelines or even reinfections for arsenic-resistant cases, which in his view were only a seldom occurrence.[765]

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[760] Pearce, 'Studies on the treatment of human trypanosomiasis with tryparsamide', 102-103; Trolli, 'Le traitement de la trypanose humaine par la tryparsamide', 335-336.

[761] F. Van den Branden et P. Dumont, 'Contribution à l'étude de la stabilité de la glyphénarsine (Tryparsamide)', *Annales de la Société Belge de Médecine Tropicale* 13 (1933), 451, 454.

[762] Governor General Tilkens to Governor of Equateur Province, 30.12.1931, MAEAA, GG, 8824 (Equateur); Tousignant, 'Politics of mass therapy', 629; Neill, *Networks in Tropical Medicine*, p. 202.

[763] On Ehrlich and drug-resistant trypanosomes, see C. Gradmann, 'Exploring the "therapeutic biology of the parasite". Antibiotic resistance and experimental pharmacology 1900-1940' in A. Romero, C. Gradmann and M. Santemases (eds.), *ESF Networking Program Drugs. Preprint No. 1. Papers presented at the Conference Circulation of Antibiotics: Journeys of Drug Standards, 1930-1970. Madrid, 16th-18th June* (Madrid; Oslo, 2010), pp. 5-22.

[764] J. Rodhain to Director General du Service de l'Hygiène Dr Duren, 6.1.1930, MAEAA, Hygiène, 4405.306; Dr Armani to Chief Medical Officer, 26.2.1930, MAEAA, Hygiène, 4405.306; Dr Carotenuto, 'Rapport annuel sur le travail exécuté par la mission médicale du Mayumbe pendant l'année 1926', 5.1.1927, MAEAA, RA-CB, 82.3; A. Barlovatz, 'L'arsénorésistance dans le traitement de la trypanose humaine par le tryponarsyl (tryparsamide belge)', *Bulletin de la Société de Pathologie Exotique et de sa Filiale de l'Ouest Africain* 22 (1929), 201-226.

[765] F. Van den Branden, 'Au sujet de l'arsénorésistance dans le traitement de la trypanosomiase humaine par le tryponarsyl', *Revue de Thérapeutique "Meurice"* 12 (1930), 435-437.

As far as toxicity was concerned, medical authorities recognised that the use of the Tryparsamide compound inevitably posed a certain inherent risk. In his annual report for 1928, for example, chief medical officer Trolli signalled how 'interesting' it would be to have an arsenical drug with a similar therapeutic value, but without the 'inconvenience' of 'ocular accidents'.[766] Nevertheless, as had been the case with Atoxyl, (abnormal) Tryponarsyl toxicity incidents were primarily linked to irrational therapeutic behaviour and thus became a matter of 'self-regulation' for the Belgian colony's medical service rather than a cue to question pharmaceutical sleeping sickness control.[767] In 1929, Van den Branden issued a circular in his capacity as Leopoldville laboratory director outlining the principles of sleeping sickness therapy in response to reports of adverse drug reactions and an alleged neglect of the clinical research literature (notably the relevant publications in the 'Annales de la Société Belge de Médecine Tropicale') among practitioners.[768] In an attempt to control the clinical use of trypanocides and bring it in line with the tenets of a scientific, 'rational' sleeping sickness therapeutics, he insisted on a repeated analysis of the cerebrospinal fluid, extracted via lumbar punctures, so that appropriate therapeutic protocols could be selected and their effects monitored. A proper course of treatment, he explained, entailed a regimen of Atoxyl and tartar emetic, broadly in accordance with the one described by Rodhain in 1923, or a Tryparsamide/Tryponarsyl cure involving weekly doses of 2g, up to 30g in total for early-stage patients, and 80 to 100g (or if necessary up to 200g) for advanced cases, depending on the state of their cerebrospinal fluid. 'Any other view (on the matter) is empirical', Van den Branden concluded.[769]

Efforts to prevent Tryponarsyl toxicity in the Belgian Congo were not confined to targeting (perceived) biomedical irrationality, however, but also drew on the quality control measures that had previously regulated the colony's Atoxyl market. Van den Branden played a crucial role in this area as well. Upon retiring from Africa for good in 1929, he was appointed professor of 'colonial hygiene' at the EMT, but also director of the 'Central Laboratory of the Hygiene Administration' within the Belgian Interior Ministry. Established in 1904, this institution functioned as a quality control laboratory for biologicals (sera and vaccines) and synthetic arsenic compounds (notably arsphenamine). After Van den Branden's arrival, it also tested trypanocide samples at the Colonial Ministry's request.[770]

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[766] Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1928*, p. 60.

[767] Tousignant, 'Politics of mass therapy', 638.

[768] F. Van den Branden, 'Circulaire relative au traitement de la trypanosomiase humaine', ITG, Stukken van Algemeen Bestuurlijke Aard, 1.6.1.2.1.3; G. Trolli to Provincial Doctors, 15.3.1929, MAEAA, Hygiène, 4404.304; F. Van den Branden to Chief Medical Officer, 10.10.1929, MAEAA, GG, 16849 (Congo-Kasai).

[769] F. Van den Branden, 'Circulaire relative au traitement de la trypanosomiase humaine', ITG, Stukken van Algemeen Bestuurlijke Aard, 1.6.1.2.1.3.

[770] A. Broden to 9e Direction, 21.2.1923, ITG, Onderzoek, 5.2.10; P. De Schouwer, 'L'institut d'hygiène et d'épidémiologie: ses origines, son évolution, ses missions passées et nouvelles', *Annali dell'Istituto Superiori di Sanità* 21 (1985), 507-508; Dubois, 'Nécrologie. J.-F.-F. Van den Branden', 87-88; Dr Paul Brutsaert to Provincial

For Tryponarsyl's Belgian manufacturer, drug quality was of course a highly sensitive issue. As described earlier, the failure to achieve the required quality standards for Atoxyl had forced the Meurice company to withdraw its version of the drug from the Congolese market in the early 1920s. Moreover, the initial struggle to produce a Tryparsamide that passed the RIMR's tests of chemical purity and biological action cost the firm its manufacturing license, and led it to market its product as Tryponarsyl instead. Although Pearce by 1927 found its quality acceptable, Meurice continued to operate without a license from the Institute. This implied that in theory, the Belgian company's drug was not bound to comply with Rockefeller standards, and this all the more so since the Belgian pharmacopoeia did not contain the same chemical and biological prescriptions for 'glyphénarsines' (the name under which the Tryparsamide formulation was listed there).[771] This in turn left Tryponarsyl vulnerable to attacks from those who suspected inherent product deficiencies as the cause of toxicity incidents in the Congo.

Providing evidence of Tryponarsyl quality thus became increasingly important for the Belgian pharmaceutical enterprise if it wanted to secure its lion's share of the Congolese Tryparsamide market, and more broadly, its reputation as a manufacturer of quality prescription drugs. The firm's incorporation into the 'Union Chimique Belge' (UCB) in 1929, the result of a 'merger operation in the Belgian chemical industry', and its connections with Belgium's tropical medicine elite helped it to achieve just that.[772] As the UCB's pharmaceutical division, Meurice was able to perfect industrial production methods and improve its own chemical and biological quality control mechanisms.[773] Moreover, its scientific director Richard Pottier collaborated with Van den Branden to establish national quality standards for the Tryparsamide compound, and in the process demonstrate that Tryponarsyl complied with these.

In his capacity as director of the Interior Ministry's quality control laboratory, Van den Branden emphasised the need for biological, in addition to chemical, checks of drugs, and called for the Belgian pharmacopoeia to adopt toxicity prescriptions for

Doctor in West Leopoldville, 20.10.1936, MAEAA, GG, 18304 (Léopoldville, Léopoldville); K. Velle, 'De centrale gezondheidsadministratie in België vóór de oprichting van het eerste ministerie van volksgezondheid (1849-1936)', *Belgisch Tijdschrift voor Nieuwste Geschiedenis* 21 (1990), 189; 'Wetenschappelijk Instituut Volksgezondheid - Institution Scientifique de Santé Publique', Bestor - Belgian Science and Technology Online Resources, http://www.bestor.be/wiki/index.php/BESTOR (Last accessed 23 March 2014).

[771] In fact it contained no biological prescriptions at all. R. Pottier et F. Van den Branden, 'Note au sujet du tryparsamide ou tryponarsyl (Glyphénarsine de la P.B.IV)', *Annales de la Société Belge de Médecine Tropicale* 13 (1933), 187-188.

[772] K. Bertrams, N. Coupain and E. Homburg, *Solvay: History of a Multinational Family Firm* (Cambridge, 2013), p. 241; 'In memoriam Albert Meurice', 1812; Darmstadter, 'La contribution de l'industrie belge', 74.

[773] Pottier, 'L'industrie belge des produits pharmaceutiques', 355; Darmstadter, 'La contribution de l'industrie belge', 74; 'In memoriam Albert Meurice', 1812-1813.

trypanocides.[774] He was instrumental in developing national toxicity tests for trypanocidal compounds, notably Tryparsamide, and co-authored several scientific papers on the subject with Pottier.[775] Tellingly, their work amounted to dismissals of colonial practitioners' concerns about the inherent abnormal toxicity of certain Tryparsamide phials or batches. More specifically, it confirmed Tryponarsyl's toxic equivalence to other brands of Tryparsamide as well as its stability in tropical conditions, and attributed incidents to external factors such as patient abnormalities, suboptimal storage conditions, and medical practitioners' failure to comply with guidelines for clinical use.[776] To a significant extent, the cooperation between the company scientist and the laboratory doctor cum pharmaceutical regulator thus resulted in a removal of responsibility for adverse drug reactions from the 'creators' of the Tryponarsyl campaign in the Belgian Congo, and assigned it to clinicians instead.

The colony's official sleeping sickness doctors themselves admitted to a degree of non-compliance with 'scientific' treatment protocols. They were not unresponsive to the notion of therapeutic standardisation in a context of mass practice that involved few physicians and large numbers of medical auxiliaries. Prophylactic sleeping sickness missions, therefore, tended to employ standardised procedures for screening and treating trypanosome carriers. However, these did not always follow the laboratory-based guidelines of central medical authorities, as mission directors sought to adapt protocols to local circumstances. For example, as will be described in more detail in chapter 10, conditions in the Kwango mission, notably staff and equipment shortages, delayed the adoption of microscopic diagnostic methods, especially cerebrospinal fluid exams, and led to shorter and simplified treatment regimens. The result was that trypanocide treatment there remained rather indiscriminate, at first including even merely suspected and apparently cured cases (for whom the respective presence or disappearance of trypanosomes had not been microscopically confirmed) in addition to 'true' trypanosome carriers, and not necessarily distinguishing between early and

[774] Pottier et Van den Branden, 'Note au sujet du tryparsamide ou tryponarsyl (Glyphénarsine de la P.B.IV)', 188, 196.

[775] Pottier et Van den Branden, 'Note au sujet du tryparsamide ou tryponarsyl (Glyphénarsine de la P.B.IV)', 187-197; F. Van den Branden et R. Pottier, 'Note au sujet des propriétés chimiques et biologiques de la trystibine - Dn 18', *Annales de la Société Belge de Médecine Tropicale* 17 (1937), 247-248; F. Van den Branden, 'Over de biologische proef van Bayer 205 of Germanine en gelijksoortige produkten: 309 Fourneau of Moranyl en Belganyl', *Annales de la Société Belge de Médecine Tropicale* 18 (1938), 685-692.

[776] F. Van den Branden et R. Pottier, 'Essais de perfectionnement du contrôle biologique des glyphénarsines (tryparsamide, tryponarsyl, novatoxyl, trypothane)', *Annales de la Société Belge de Médecine Tropicale* 18 (1938), 299-311; Van den Branden et Dumont, 'Contribution à l'étude de la stabilité de la glyphénarsine (Tryparsamide)'; F. Van den Branden et R. Pottier, 'L'hexaméthylène tétramine associée à la tryparsamine (sic) dans le traitement de la trypanosomiase. Contrôle biologique du tryponurile', *Annales de la Société Belge de Médecine Tropicale* 14 (1934), 499-502; Dr L. Van Hoof to Provincial Doctor in Léopoldville, 28.9.1937, MAEAA, GG, 20406 (Léopoldville); F. Van den Branden et R. Pottier, 'Au sujet d'accidents dus à la tryparsamide et produits similaires', *Bulletin de la Société de pathologie Exotique et de ses Filiales* 26 (1933), 1026.

advanced patients. In the 1930s, however, the practice of lumbar punctures to extract cerebrospinal fluid was was gradually increased.

8.2 The growing threat of arsenic resistance and the 'perfecting' of therapeutic methods

In the early 1930s, the Belgian Congo's medical leaders were coming to terms with the fact that Tryponarsyl did not entirely meet their high expectations after all. It eventually emerged, for example, that toxicity was a more common occurrence during a normal course of treatment than initially suspected, notably in advanced cases. And while iatrogenic ocular damage appeared to be reversible, it required an immediate stop to Tryponarsyl injections, which of course implied doctors having to turn to other, less effective drugs like tartar emetic and Bayer 205 to kill off a (secondary) patient's trypanosomes and attempt to cure him.[777] Moreover, after Barlovatz's first reports of drug resistance in 1929, the director of the Mayumbe sleeping sickness mission signalled a hundred and five similar cases the following year. By 1932, Congolese medical authorities believed that the problem had spread to almost the entire colony and was steadily increasing, just like in AEF.[778] Even the previously skeptical Van den Branden came to accept the reality of arsenic resistance.[779] The colony's chief medical officer René Mouchet, who had succeeded Trolli in 1932, and his deputy Lucien Van Hoof suspected that the phenomenon was linked to the routine practice of weekly injections of 2g Tryponarsyl doses and feared the creation of foci of 'practically untreatable trypanosomes', which would of course seriously hamper the pharmaceutical attempts at

[777] F. Van den Branden et M. Appelmans, 'Les troubles visuels dans la trypanosomiase humaine', *Annales de la Société Belge de Médecine Tropicale* 14 (1934), 91-92, 105; R. Mouchet to Provincial Doctor in Coquilhatville, 17.6.1933, MAEAA, GG, 8824 (Equateur).

[778] G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis; R. Mouchet, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1932', s.d. MAEAA, RA-CB, 83.6; President of the Conseil Supérieur d'Hygiène Coloniale to Minister of Colonies, 4.7.1932, MAEAA, Hygiène, 4405.306.

[779] Although he seemed to mainly attribute it to irregular and insufficient courses of treatment before the institution of a proper course of Tryponarsyl therapy. F. Van den Branden, 'Influence défavorable d'un traitement insuffisant et irrégulier sur les résultats obtenus avec le tryponarsyl dans le traitement de la trypanosomiase humaine chronique', *Annales de la Société Belge de Médecine Tropicale* 12 (1932), 375, 378.

sleeping sickness eradication.[780] Tellingly, Van Hoof in 1933 referred to Tryponarsyl resistance as 'un point noir' in the medicinal prophylaxis campaign.[781]

Thus at the start of the new decade, the issues with drug resistance and toxicity in the wake of large-scale Tryponarsyl use symbolised, as Van Hoof put it, the 'bitter disappointments of our whole current therapeutics'.[782] This time, however, no seemingly better alternative was immediately at hand, as the Leopoldville laboratory's research had not yielded any significant additions to the Congo's trypanocidal arsenal since the Bayer 205 and Tryparsamide formulas. The 1930s would in that respect bring only little relief. Compared to the previous decade, markedly fewer new compounds then reached the Belgian Congo for testing in human trypanosome infections. To verify and fully grasp this (temporary) slowing down in trypanocidal drug discovery would require a more in-depth study of pharmaceutical R&D in Europe and North America that is beyond the scope of this dissertation. It was possibly linked to the fact that arsenicals became a less promising avenue in the wake of drug-resistant trypanosomes and to the lure of antibacterial chemotherapy in the latter half of the 1930s.[783]

What definitely also played a role is that the evolution of the Leopoldville medical laboratory itself made new trypanocide development less of a focus. When Van den Branden left the laboratory in 1929, his successor Luigi Fornara lacked a similar extensive expertise in sleeping sickness therapy research. In charge of the West Leopoldville 'native' hospital, Fornara had been frequenting the laboratory since 1925 to pursue anatomical pathology investigations, but apparently did not get involved much in tropical chemotherapy.[784] As director of the laboratory, it seems that he was primarily occupied with its expanding public health tasks rather than with science, let alone trypanosomiasis drug research. Tellingly, his colleague at the Brazzaville Pasteur Institute, Adolphe Sicé, remarked in 1930 that he had less contact with Fornara than with Van den Branden.[785] The pattern more or less repeated itself with Fornara's successor Paul Brutsaert, who took up the position in 1935 and presided over the medical laboratory's move from its location in West Leopoldville to the newly built

[780] R. Mouchet, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1932', s.d., MAEAA, RA-CB, 83.6; L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1933', s.d., MAEAA, RA-CB, RA/MED-1.

[781] L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1933', s.d., MAEAA, RA-CB, RA/MED-1.

[782] L. Van Hoof, 'Essai de deux nouveaux antimoniaux, le Dn 7 et le Dn 9, dans la trypanosomiase humaine', *Annales de la Société Belge de Médecine Tropicale* 12 (1932), 198.

[783] In late 1930s Britain, the Medical Research Council and Liverpool School of Tropical Medicine's collaborative efforts in tropical chemotherapy nevertheless produced new trypanocidal compounds, including Neocryl and the diamidines, but these were apparently not tested on a large scale in Leopoldville, or not before the Second World War. Quirke, 'Foreign influences', 144; Greenwood, *Antimicrobial Drugs*, p. 280; Power, *Tropical Medicine in the Twentieth Century*, pp. 79-104.

[784] Van den Branden, 'Rapport sur le fonctionnement du laboratoire de Léopoldville en 1925', 238; 'Rapport sur le fonctionnement du laboratoire de Léopoldville-Ouest et des services annexes pendant l'année 1929', 231.

[785] A. Sicé to Félix Mesnil, 12.4.1930, AIP, Fonds F. Mesnil, MES.7, Sicé.

Princess Astrid Institute in East Leopoldville in 1937.[786] Brutsaert had arrived in the Congo in 1927 to set up a bacteriology and serology laboratory in Elisabethville for the Union Minière du Haut-Katanga, and shared a history of Louvain bacteriology training with the Leopoldville laboratory's foremost sleeping sickness therapy experts Broden, Rodhain, and Van den Branden.[787] Nevertheless, as far as sleeping sickness research was concerned, it appears that Brutsaert did not follow in the footsteps of his Louvain-trained predecessors either.

What in fact happened at the Leopoldville laboratory and Princess Astrid Institute in the 1930s was a steady increase in routine diagnostic and analysis work for most laboratory personnel, with research becoming the privilege of a happy few who were much less involved in the labs' other activities.[788] It was actually Lucien Van Hoof who returned to trypanosomiasis therapy research in Leopoldville after his former collaborator Van den Branden's departure, albeit on a more modest scale and not in a full-time capacity. In 1930, he had been appointed 'Médecin-Inspecteur' of the colony's medical laboratories, and as this position was based at the Leopoldville lab outside of the required inspection trips, Van Hoof could pursue his research there.[789]

Most notable among the new trypanocidal compounds tried by Van Hoof in Leopoldville were those of the UCB's pharmaceutical department. The former Meurice firm was becoming an even more science-based enterprise since its incorporation in the Belgian chemical conglomerate in 1929. An expanded research capacity stimulated further investigations into specific chemotherapy in the 1930s, and amounted to more pharmaceutical innovation.[790] Although the research proved a difficult undertaking requiring a huge amount of patience according to scientific director Pottier, it yielded a number of new compounds and pharmaceutical specialties targeting the Congolese market for sleeping sickness and other endemic tropical disease drugs.[791]

Crucial to the UCB's trypanocide development in the 1930s was the maintaining of close ties with the world of Belgian tropical medicine. After Broden's death in 1929, Rodhain had succeeded him as director of the EMT and later the 'Institut de Médecine Tropicale Prince Léopold' (IMT) in Antwerp, created in 1931 to replace the Brussels

[786] P. Brutsaert, 'Rapport annuel sur le fonctionnement du laboratoire de Bactériologie de Léopoldville-Ouest en 1935', 12.6.1936, MAEAA, RA-CB, 84.6; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, p. 84. Official plans to move Leopoldville's hospital and scientific infrastructure to East Leopoldville, including the building of a new medical research institute, had been made by 1929, but were delayed because of the subsequent economic crisis. Minister of Colonies Jaspar to Governor General, 28.1.1929, MAEAA, Hygiène, 4418.564; Pierquin, *Historique du laboratoire médical*, p. 31.

[787] Pierquin, *Historique du laboratoire médical*, p. 28; Rodhain, 'Les laboratoires de recherches médicales', p. 172. Brutsaert trained in bacteriology in the laboratory of Richard Bruynoghe. See A. Dubois, 'In memoriam P. Brutsaert (1898-1960)', *Annales de la Société Belge de Médecine Tropicale* 40 (1960), 27.

[788] Pierquin, *Historique du laboratoire médical*, pp. 27, 29, 53.

[789] Dubois et Duren, 'Soixante ans d'organisation médicale', 16.

[790] Darmstadter, 'La contribution de l'industrie belge', 74; 'In memoriam Albert Meurice', 1812-1813.

[791] Pottier, 'L'industrie belge des produits pharmaceutiques', 351; Darmstadter, 'La contribution de l'industrie belge', 74.

School because of its more convenient location in a port city. The IMT also had greater clinical and scientific facilities to complement its educational tasks, and thus more closely resembled its counterparts abroad, such as the schools of Liverpool and Hamburg.[792] Under Rodhain, the EMT and IMT (which officially started operations in 1933) intensified scientific activities, including sleeping sickness therapy research.[793] Together with other staff members including in particular Van den Branden, the director was responsible for in vitro and in vivo studies of topics like drug-resistant trypanosomes and the mode of action of trypanocidal drugs.[794] Unlike for example the Paris Pasteur Institute, the IMT never set up its own chemical laboratory for the synthesis of new compounds, given that Rodhain found it too expensive and reasoned that his institution could rely on existing industrial and academic laboratories. But it did remain involved in the preclinical testing of therapeutic agents, notably the UCB's products.[795]

It seems that Rodhain was particularly invested in the UCB's development of tropical disease drugs, not in the least trypanocides. Not only was he an expert in trypanosomiasis therapy from his days at the Leopoldville laboratory, but as former chief medical officer of the Congo he had played an important role in promoting a pharmaceutical strategy of sleeping sickness control there after the First World War. Moreover, Richard Pottier was his brother-in-law, giving the UCB's pharmaceutical division even more privileged access to Belgium's foremost tropical medicine authority at the time, while allowing the latter to pursue his interests in chemotherapy and pharmaceutical disease control.[796]

It also seems that from his first days at the EMT Rodhain had been channelling clinical feedback from the mass treatment campaign in the Congo to the Belgian pharmaceutical company, which shaped the development of new trypanocidal compounds. In 1925, shortly after his final term in the colony as chief medical officer, he had already encouraged the Meurice firm to manufacture Tryponarsyl in tablet form, because that would make it easier for Congolese medical auxiliaries to administer the drug.[797] The process turned out to be more complicated than expected, but by 1932 the UCB's pharmaceutical arm finally managed to compress Tryponarsyl into tablets by

[792] Director General a.i. (7e DG) Duren, 'Note pour Monsieur le Ministre sur l'Institut de Médecine Tropicale Prince Léopold', 27.12.1931, MAEAA, Hygiène, 4447.777; 'Note au sujet de l'Ecole de Médecine Tropicale', 22.8.1933, MAEAA, Hygiène, 4441. The IMT was not only financed from the colonial budget, but also received annual subsidies from the Commission for Relief in Belgium. Note concerning the Prince Leopold Institute for Tropical Medicine, MAEAA, Hygiène, 4441.

[793] The EMT and IMT coexisted for a while. 'Note au sujet de l'Ecole de Médecine Tropicale', 22.8.1933, MAEAA, Hygiène, 4441; Director General a.i. (7e DG) Duren to Minister, 11.9.1931, MAEAA, Hygiène, 4441.713.

[794] A. Duren, 'Note sur l'Ecole de Médecine Tropicale', 12.1.1931, ITG, FD11.

[795] J. Rodhain, 'Première Note au sujet de l'organisation de l'Ecole de Médecine Tropicale "Institut Prince Léopold"', MAEAA, Hygiène, 4448.778; Darmstadter, 'La contribution de l'industrie belge', 74; Union Chimique Belge - Division Produits Pharmaceutiques "Meurice" to J. Rodhain, 29.11.1932, ITG, Onderzoek, 5.3.3bis.

[796] J. Rodhain to R. Van Saceghem, s.d., ITG, Onderzoek, 5.3.13.

[797] J. Rodhain to Minister of Colonies, 13.10.1925, ITG, Onderzoek, 5.2.10.

adding the compound hexamethylenetetramine. Branded as 'Tryponurile', the drug was marketed as an easier to dose and therefore more economical solution to administering Tryponarsyl.[798] In the early 1930s, developments in the Congo also contributed to the UCB's synthesising of a series of new antimony compounds (Dn1 to Dn24). More specifically, a major incentive behind the effort was the emergence of a category of sleeping sickness victims in the colony whose trypanosomes no longer responded to arsenic (i.e. Tryponarsyl) treatment.[799]

As Broden had done before him, Rodhain played a critical intermediary role between the UCB's pharmaceutical department and clinical investigators in tropical territories. For example, his intervention with clinicians in the Congo and elsewhere was vital in shaping drug profiles for the Dn series of antimonials. Most relevant in the context of this dissertation is that he stimulated and supported Van Hoof to try out several experimental Dn compounds in the treatment of advanced sleeping sickness cases.[800] In his position as laboratory inspector, Van Hoof had developed a mutual understanding with Rodhain, with whom he shared a vision for the future of the Congolese medical laboratories involving a closer collaboration with the Antwerp tropical medicine institute.[801] Not surprisingly, therefore, it was with him that the EMT/IMT director liaised to have the UCB's new chemicals experimented in the Congo.[802]

The investigations into sleeping sickness drug therapy in the Belgian colony did not produce a new trypanocide to replace Tryponarsyl as the basis of pharmaceutical disease control in the 1930s, however. Instead, clinical research mostly amounted to a refining and diversification of therapeutic strategies so as to overcome the problems encountered with the standard Tryponarsyl regimen. The UCB's Tryponurile, tested in the Congo in 1933 and subsequently introduced to clinical practice, was essentially Tryponarsyl in tablet form.[803] Among the novel antimony compounds Van Hoof had a chance to study in Leopoldville, he identified one that could be usefully included in combination sleeping sickness therapy.

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[798] Union Chimique Belge - Division Produits Pharmaceutiques "Meurice" to J. Rodhain, 29.11.1932, ITG, Onderzoek, 5.3.3bis.

[799] Darmstadter, 'La contribution de l'industrie belge', 74.

[800] Union Chimique Belge to J. Rodhain, 9.9.1932, ITG, Onderzoek, 5.3.13; J. Rodhain to L. Van Hoof, 12.9.1932, ITG, Onderzoek, 5.3.13; Van Hoof, 'Essai de deux nouveaux antimoniaux', 181-198; L. Van Hoof, 'Un nouveau dérivé antimonié organique, le Dn 18, dans la trypanosomiase humaine', *Annales de la Société Belge de Médecine Tropicale* 13 (1933), 479-493.

[801] Director General a.i. (7e DG) Duren to Minister of Colonies, 25.9.1931, MAEAA, Hygiène, 4448.778; J. Rodhain to Governor General, 29.6.1933, ITG, Onderzoek, 5.3.3.

[802] J. Rodhain to L. Van Hoof, 12.9.1932, ITG, Onderzoek, 5.3.13.

[803] Union Chimique Belge - Division Produits Pharmaceutiques "Meurice" to J. Rodhain, 29.11.1932, ITG, Onderzoek, 5.3.3bis; F. Van den Branden et M. Appelmans, 'Au sujet du Tryponurile', *Annales de la Société Belge de Médecine Tropicale* 15 (1935), 107; G. Trolli, 'Méthode originale d'assistance médicale aux indigènes en milieu rural appliquée au Congo Belge; Fonds Reine Elisabeth pour l'Assistance Médicale aux Indigènes (FOREAMI)', *Bruxelles Médical* 20 (1939), 223.

Several clinicians had already reverted to combinations of existing trypanocides, notably Tryponarsyl, Bayer 205 and/or tartar emetic, for patients who had been undergoing treatment for a long time to little avail.[804] In 1932, Van Hoof started trials with the UCB's antimonials and found they showed promise, in terms of trypanocidal and clinical effects, in sleeping sickness cases where the usual trypanocides had 'lost all efficacy' or had become 'contraindicated'.[805] The organic antimony derivatives also seemed to work well, Van Hoof noted, when associated with Tryponarsyl and Bayer 205, as they boosted the latter drugs' action.[806] Eventually, he settled on the compound Dn18 as a 'médicament d'entretien' for problematic, 'incurable' cases, who remained a public health hazard. He welcomed the fact that the drug was easy to administer for indigenous nurses, and went on to recommend mixed cures consisting of either Germanin/Moranyl and Dn18, or Tryponarsyl and Dn18.[807] The new antimonial was eventually marketed by the UCB under the brand name 'Trystibine', for tropical conditions where 'stibiothérapie' (i.e. antimony therapy) was indicated.[808]

For routine treatment in areas not yet affected by arsenic-resistant trypanosomes, Van Hoof tried and by 1933 recommended Tryponarsyl regimens comprising large initial doses, also called 'traitements massifs'.[809] Tellingly, to objections that this method might provoke toxicity incidents Van Hoof replied that it served a collective goal rather than individual patients' interests. It was specifically aimed, he explained, at dealing with the 'social calamity' of arsenic resistance by preventing the creation of drug-

[804] For example: J. Schwetz, 'Sur un cas de trypanosomiase (humaine) arsénico-résistante', *Annales de la Société Belge de Médecine Tropicale* 13 (1933), 212; R. Laurent, 'Remarques à propos de l'action du traitement par la tryparsamide, sur la lymphocytose du liquide céphalorachidien, au cours de la trypanosomiase', *Annales de la Société Belge de Médecine Tropicale* 12 (1932), 543.

[805] Van Hoof, 'Essai de deux nouveaux antimoniaux', 197-198.

[806] L. Van Hoof, 'Essai d'un nouveau dérivé antimoine organique, Dn 12, dans la trypanosomiase humaine', *Annales de la Société Belge de Médecine Tropicale* 13 (1933), 366.

[807] Van Hoof, 'Un nouveau dérivé antimonié organique, le Dn 18', 491-493. Later comparisons with a series of antimonials developed by Bayer (S.d.t. 386, 471 and 411) confirmed Dn18's superior efficacy in Van Hoof's eyes. F. Van den Branden et L. Van Hoof, 'Le S.d.t. 411, nouvel antimonial trivalent, dans le traitement des rats "variété albinos de mus decumanus", infectés de Trypanosoma congolense; action synergique du Bayer 205 (Germanine); essais de traitement de quelques indigènes trypanosés', *Bulletin des Séances de l'Institut Royal Colonial Belge* 6 (1935), 680, 693.

[808] 'Les spécialités "Meurice"', *Revue de Thérapeutique "Meurice"* (1936), s.p. The clinical trials of Dn18 Rodhain had encouraged elsewhere contributed to the creation of a second therapeutic identity for the compound, namely as a treatment for bilharzia (or schistosomiasis), another parasitic disease endemic in parts of Africa and South America. See for example: J. Rodhain to Dr E. Gobert, 27.9.1933, ITG, Onderzoek, 5.3.13; F. G. Cawston, 'A consideration of the antimony content in drugs used for the destruction of schistosomes', *Revue de Thérapeutique "Meurice"*, (1936), 63-65; R. Van Nitsen, 'Le stibilase (Dn7) et la trystibine (Dn18) en thérapeutique coloniale', *Revue de Thérapeutique "Meurice"*, (1936), 301; *De specialiteiten Meurice* (Brussel, s.d.), p. 94.

[809] Trolli, 'Méthode originale d'assistance médicale', 222.

resistant trypanosome strains.[810] A field trial by a doctor published in the 'Annales de la Société Belge de Médecine Tropicale' in 1933 confirmed that immediately administering large doses of Tryponarsyl appeared to reduce the number of arsenic-resistant cases, although it did not completely 'suppress' them.[811]

Clinical research in the early 1930s led medical authorities to 'perfect (the) rules of therapeutics' and adopt new guidelines that were more context- and case-specific.[812] Sleeping sickness treatment, in other words, was to become more complex than Van den Branden's longer or shorter regimens of weekly 2g Tryponarsyl injections for early and advanced cases, but especially also less standardised than the practices of local sleeping doctors who administered the same course of Tryponarsyl treatment to all infected individuals. Therapy nevertheless remained largely based on that same trypanocide. Stronger start doses were promoted to avert arsenic resistance in pristine areas, and combinations with Bayer 205 and/or antimonials such as tartar emetic or Dn18 were proposed for the treatment of patients already carrying resistant trypanosomes. Crucially, regular screenings of cerebrospinal fluid - for diagnostic and prognostic guidance - were to underpin this diversification of therapeutic strategies.[813]

8.3 From prophylactic missions to 'medical occupation'

For the Congolese medical authorities, the pitfalls of excessive therapeutic standardisation were not the only reason why Tryponarsyl appeared to be failing to deliver on its promise of a swift eradication of sleeping sickness by the early 1930s. To a large extent, they had also come to blame the emergence of drug-resistant

[810] L. Van Hoof to Provincial Doctor in Coquilhatville, 25.10.1935, MAEAA, GG, 8824 (Equateur); Dr G. Schwers to Chef de la M.M.I. du Congo-Ubangi Médecin Principal, 18.11.1935, MAEAA, GG, 8824 (Equateur); R. Mouchet to Provincial Doctor in Coquilhatville, 14.2.1933, MAEAA, GG, 8824 (Equateur).

[811] S. Spyrou, 'Trypanosés-arsénorésistants et fortes doses de tryponarsyl', *Annales de la Société Belge de Médecine Tropicale* 13 (1933), 446.

[812] L. Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, p. 31.

[813] L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1933', s.d., MAEAA, RA-CB, RA/MED-1; R. Mouchet, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1932', s.d., MAEAA, RA-CB, 83.6; R. Mouchet, 'Rapport du Service de L'Hygiène. Année 1932', 5.1933, MAEAA, RA-CB, 83.6; R. Mouchet to Provincial Doctor in Coquilhatville, 14.2.1933, MAEAA, GG, 8824 (Equateur); President of the Conseil Supérieur d'Hygiène Coloniale to Minister of Colonies, 4.7.1932, MAEAA, Hygiène, 4405.306; L. Van Hoof to Provincial Doctor in Coquilhatville, 25.10.1935, MAEAA, GG, 8824 (Equateur); A. Thomas to Provincial Doctor in Coquilhatville, 5.8.1936, MAEAA, GG, 8824 (Equateur); L. Van Hoof to Provincial Doctor in Coquilhatville, 17.6.1936, MAEAA, GG, 8824 (Equateur); Service de l'Hygiène, 'Quelques statistiques et quelques notes thérapeutiques', 1937, MAEAA, RA-CB, 84.8bis; L. Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1936*, p. 35; Trolli, 'Méthode originale d'assistance médicale', 223-224.

trypanosomes on difficulties to ensure regular trypanocide treatment in a context of faltering administrative support and private sector collaboration.[814] Echoing sleeping sickness doctors' reports of obstacles encountered in the local implementation of mass treatment, Trolli in particular emphasised how a lack of resources and coordination caused the pharmaceutical sleeping sickness control efforts to remain too superficial and haphazard. What was required, he argued, was comprehensive screening as well as regular and sufficient treatment and follow-up of all trypanosome carriers, but despite itinerant doctors' devotion to this enormous and arduous task, a lack of European personnel, quick transport modes and microscopes led to sleeping sickness missions - of which there were too few in the first place - overstretching themselves. Unless staff numbers and budgets increased to enable 'un travail de fonds', which also required adequate supervision of European and African auxiliaries, the missions would have to reduce their sphere of action, Trolli suggested.[815] Another reason why eradication proved more elusive than anticipated, according to the head of the medical service, was that territorial authorities often neglected the mechanical prophylaxis and administrative measures (e.g. the enforcement of mandatory sleeping sickness screening and treatment among the Congolese population) required to facilitate medicinal prophylaxis and consolidate its results.[816]

As far as private AMI providers and especially missionaries collaborating with the sleeping sickness campaign were concerned, Trolli repeated local state doctors' complaints that they failed to comply with official methods and instructions. They hampered coordinated attempts at thorough medicinal prophylaxis, for example, by omitting systematic case detection and only treating trypanosomiasis patients who voluntarily presented themselves to them, by favouring the provision of general medical care in dispensaries over the specialisation of sleeping sickness control, or by impinging on official medical staff's areas of activity (cf. also chapter 10).[817]

Ultimately, Trolli's criticisms regarding the colony's administrators and private sector were about securing continued support for the sort of collective medicine pioneered by Schwetz's sleeping sickness mission, predicated on the systematic surveying, screening and treatment of populations and 'governed entirely by the

[814] R. Mouchet to Provincial Doctor in Coquilhatville, 28.9.1932, MAEAA, GG, 8824 (Equateur). In the early 1940s, directors of the AOF's sleeping sickness service also blamed drug resistance on a lack of administrative collaboration. See Tousignant, 'Politics of mass therapy', 640-641.

[815] Trolli, 'Méthode originale d'assistance médicale', 149; G. Trolli, 'Maladie du sommeil. Considérations Générales', 22.6.1931, MAEAA, GG, 16825 (Congo-Kasai); G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis.

[816] G. Trolli, 'Note du médecin en chef', 10/17.1930, MAEAA, GG, 16819 (Congo-Kasai); G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis.

[817] G. Trolli, 'Maladie du sommeil. Considérations Générales', 22.6.1931, MAEAA, GG, 16825 (Congo-Kasai); Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 9; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1928*, pp. 5, 10; G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', MAEAA, RA-CB, 83.3bis; Médecin en Chef adjoint, 'Congo Belge. Rapport du service médical 1926', 24.8.1927, MAEAA, RA-CB, 82.2.

imperatives of demographic growth and the control of epidemics' rather than by other interests.[818] To make sleeping sickness control more effective, however, the chief medical officer proposed a reorganisation of the colony's 'indigenous medical assistance', so that it would better meet the needs of pharmaceutical disease eradication. The program was labelled 'Service de l'Assistance Médicale aux Indigènes' (SAMI) and aimed to integrate prophylactic missions and private AMI providers in a single organisational framework, which came to be seen as a perfected version of the sleeping sickness missions.[819] It entailed a 'systematic and methodical medical crusade', a form of social medicine targeting the indigenous population in its entirety through comprehensive censuses and medical screening by itinerant staff, and a tight network of fixed treatment facilities serviced by state and private doctors and auxiliaries. It thus combined the mobile elements of the sleeping sickness missions with the hospital-based care of the AMI network.[820]

To guarantee an effective and rational prophylaxis, SAMI required uniform administrative procedures and a better coordination between state and private sector providers and between doctors and auxiliaries. This was to be achieved through a clear division of labour and a hierarchical organisation under the control of state doctors. Medical assistance was organised at the level of territorial zones, which were divided into sectors, each consisting of sub-sectors that were themselves made up of 'circles' containing several treatment centres. Each territorial unit had its own medical director with responsibility for overseeing the activities within his sphere of action, collating paperwork such as census reports and drug requests from the level below, and transmitting the resulting information one step up the hierarchical chain of communication. In this rather bureaucratic system, African staff was to be supervised at all times by European auxiliaries, who were themselves under the surveillance of doctors, and private providers were ultimately placed under the control of state doctors, at least as far as indigenous medical assistance was concerned. Moreover, only doctors could be responsible for conducting population and medical surveys.[821]

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[818] G. Lachenal, 'Le médecin qui voulut être roi. Médecine coloniale et utopie au Cameroun', *Annales. Histoire, Science sociales* 65 (2010), 133 quoted in Tousignant, 'Politics of mass therapy', 643.

[819] Dubois and Duren, 'Soixante ans d'organisation médicale', 9. Schwetz wrote in 1946 that 'l'idée de la médecine sociale est née de et dans la lutte contre la maladie du sommeil', and that 'nouvelles méthodes de lutte contre cette maladie furent le point de départ de la médecine sociale pratiquée actuellement sur une vaste échelle'. Schwetz, *L'évolution de la médecine au Congo Belge*, pp. 13-14, 21.

[820] Schwetz, *L'évolution de la médecine au Congo Belge*, p. 29; G. Trolli, 'Circulaire concernant le Service de l'Assistance Médicale Indigène (S.A.M.I.)', 10.12.1931, MAEAA, GG, 18847 (Léopoldville, Banningville); 'Instructions relatives aux documents à tenir et à fournir par les Missions contre la maladie du sommeil et toute mission médicale chargée du Service de l'Assistance Médicale Indigène (SAMI) pour la lutte contre les endémies les plus répandues' dans Congo Belge. Gouvernement local, *Recueil mensuel des circulaires, instructions et ordres de service* (Boma, 1929), pp. 90-91.

[821] G. Trolli, 'Circulaire concernant le Service de l'Assistance Médicale Indigène (S.A.M.I.)', 10.12.1931, MAEAA, GG, 18847 (Léopoldville, Banningville); 'Instructions relatives aux documents à tenir et à fournir', p. 90.

Trolli quickly realised, however, that his rural public health scheme for the Congo required such vast amounts of staff and monetary resources that it would be difficult to implement, especially if applied to the whole colony at once. He therefore suggested a more phased execution by an organisation with greater budgetary and administrative autonomy. The latter was to 'occupy' a smaller region and submit it to 'intensive (medical) action' up to the point of disease eradication. Once 'sanitised', the region could be entrusted to the government's medical service again, and the independent organisation could move on to the next territory.[822]

Backed by the Belgian Colonial Minister Henri Jaspar and the monarchy, Trolli's plans materialised in 1930 with the creation of the 'Fonds Reine Elisabeth pour l'Assistance Médicale aux Indigènes' (FOREAMI). It was set up as an autonomous organisation, independent from the colonial administration, to provide it with the flexibility deemed necessary to swiftly implement the SAMI program in Belgian Africa. FOREAMI had its own budget - funded initially by a donation from the Belgian parliament, a contribution from the 'extraordinary' colonial budget and a personal gift from queen Elisabeth, and later an annual subsidy from the colonial budget - and its own administration, consisting of a board of directors in Brussels and an 'executive committee' in the colony. Coordination and cooperation with the colonial medical service and private medical providers in the Congo was sought via their representation in FOREAMI's administration. For example, doctor Albert Duren, director of the Colonial Ministry's medical department since 1929, was a member of the Brussels board together with representatives from mission societies and other philanthropic organisations, and the Congo's chief medical officer - Trolli himself until 1932 - was a member of the executive committee in the colony. Moreover, FOREAMI doctors and auxiliaries were recruited by the Colonial Ministry and employed as state staff placed at the organisation's disposal.[823]

FOREAMI chose Bas-Congo, where a fairly substantial medical and road infrastructure was already in place, as its first target zone, and in 1931 embarked upon a 'permanent medical and demographic control' of the district that would last until the end of 1934. By 1934, the 'Fonds' also started operating in the Kwango district.[824] In the 1930s, therefore, sleeping sickness control in the Congo fell within the remit of both FOREAMI and the prophylactic missions that had been established in the 1920s. The latter however, more and more adopted the SAMI principles and thus gradually evolved into the governmental equivalents of FOREAMI, which were simply called SAMI.[825] Both types

[822] M. Kivits, 'Le Fonds Reine Elisabeth pour l'Assistance Médicale au Congo (F.O.R.E.A.M.I.) 1930-1960', *Annales de la Société Belge de Médecine Tropicale* 51 (1971), 390.

[823] Ibid., 390-392; M. Kivits, 'Albert Nicolas DUREN' dans Académie Royale des Sciences d'Outre-Mer, *Biographie Belge d'Outre-Mer* (Brussels, 1989), t. VII-C , col. 136. After 1932, Trolli became Foreami's director in Belgium.

[824] Kivits, 'Fonds Reine Elisabeth', 394-395, 397-398.

[825] L. Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935*, p. 13; Schwetz, *Evolution de la médecine*, pp. 26, 29; G. Trolli, 'Circulaire concernant le Service de l'Assistance Médicale Indigène (S.A.M.I.)', 10.12.1931, MAEAA, GG, 18847 (Léopoldville, Banningville).

of rural health service de facto fell under the supervision of the colony's chief medical officer, but retained their own, separate budgets.[826]

8.4 Disputing the value of mass Tryponarsyl treatment

Despite a challenging budgetary context in the wake of the financial crash of 1929, the 1930s saw a gradual expansion of the 'medical occupation' at the heart of Trolli's rural health program in the Belgian Congo.[827] However, it did little to quickly abate criticisms of the 'Belgian' fight agains sleeping sickness that were particularly annoying in a context where the issue of drug resistance raised real concerns about the effectiveness of pharmaceutical strategies of disease eradication. Similar to the contested 'value' of mass treatment in French colonial Africa, the Congo's largely Tryponarsyl-based campaign came to be increasingly scrutinised and questioned in this decade, both externally and internally.[828] For one thing, serious attacks in the German press along the lines of Emil Steudel's charges persisted, with for instance the 'Berliner Tageblatt' in 1934 once again condemning the scarcity of medical practitioners in Belgian Africa, accusing the Congo of putting neighbouring territories at risk of trypanosome infection, and now also denouncing the poor therapeutic value of Tryponarsyl while extolling the virtues of Germanin.[829]

In addition, around the same time questions were asked in the Belgian parliament about the perceived lack of progress in tackling the Congo's demographic crisis given the significant level of expenditure on the colonial medical service, notably on medical drugs. The debate was instigated by Robert Dumont, a former Belgian private company doctor who had participated in the official efforts at pharmaceutical sleeping sickness control in the Kwango district. As will be described in more detail in chapter 10, the experience of itinerant medicinal prophylaxis under state coordination left him rather critical of a public health campaign that in his view was too reductionistic in its focus on human trypanosomiasis and pharmaceutical means of eradication, as well as too collectivist and 'dictatorial' in its imposition of therapeutic and diagnostic procedures.

Lucien Van Hoof, who had succeeded Mouchet as chief medical officer in 1934, defended the Congo's medical service against such attacks by highlighting in his annual

[826] Trolli, 'Méthode originale d'assistance médicale', 154. FOREAMI existed independently from the state medical service, but was 'under the direct control of the Government'. See Trolli, Vanhove et Marquet, 'Exposé de la législation sanitaire', p. 582.

[827] L. Van Hoof, 'Rapport sur l'hygiène publique au Congo belge pendant l'année 1934', MAEAA, RA-CB, 84.3.

[828] Tousignant, 'Politics of mass therapy', 635.

[829] Director Service de l'Hygiène, 'Le service médical du Congo Belge', 1931, MAEAA, Hygiène, 4405.306; Minister of Colonies to Minister of Foreign Affairs, 30.4.1934, ITG, FD26.

medical reports the progress made in the fight against human trypanosomiasis through mass Tryponarsyl treatment. The population and medical survey requirements of SAMI and FOREAMI entailed a significant amount of (paper)work for itinerant medical staff, but also provided a wealth of demographic and epidemiological information that helped medical authorities develop and evaluate policy.[830] By the mid-1930s, annual medical reports triumphantly claimed that millions of Congolese were examined annually (over 5 million or reportedly more than 50% of the population by 1936) and that sleeping sickness incidence rates (the rate of new infections among the at-risk population) had been declining significantly since 1930. Moreover, prevalence (the proportion of trypanosome-infected people in the Congolese population) and the total number of cases in treatment had fallen to well below the levels encountered in the 1920s, and some endemic foci were believed to be 'completely sanitised'. The disease, Van Hoof concluded, was clearly in 'retreat'. This proved that the 'chemical' approach to sleeping sickness control adopted in the Belgian Congo was the right one overall, especially now that therapeutic and diagnostic methods had been 'perfect(ed)', not through the introduction of new trypanocides, but via a 'more judicious use' of existing drugs.[831]

The latter also entailed a more economical usage of trypanocides. As mass Tryponarsyl treatment was scaled up by the late 1920s, medical authorities had held itinerant sleeping sickness doctors' 'unscientific' treatment practices responsible for the ensuing ocular accidents and emergence of drug-resistant trypanosomes. But they also increasingly linked biomedical irrationality to unnecessarily high levels of drug consumption that risked unduly straining the health service's limited resources, which was particularly unwelcome at a time of economic crisis. Pharmaceutical regulation, in this case via central diagnostic guidelines and directives, consequently also came to be regarded as a remedy for the spiralling financial costs of pharmaceutical sleeping sickness eradication. Trolli, for example, repeatedly urged those involved in medicinal prophylaxis to avoid wastefulness by expanding the microscopic analysis of bodily fluids, and in particular eliminate cured cases from treatment by generalising the performance of lumbar punctures.[832] In 1930, he issued instructions to standardise

[830] 'Instructions relatives aux documents à tenir et à fournir', p. 90; L. Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935*, p. 13; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1936*, p. 13.

[831] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935*, pp. 28-29; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1936*, pp. 29-30; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, pp. 30-31. Lyons has challenged the idea that the 1930s decline in sleeping sickness can be 'solely, or even primarily' attributed to the medicinal prophylaxis campaign, and points to the importance of improved conditions for the Congo's populations. Lyons, *Colonial Disease*, pp. 228-230.

[832] G. Trolli, 'Note au sujet de l'intervention du Gouvernement de la Colonie dans la lutte antitrypanosomique dans le Kasai', s.d., MAEAA, GG, 15144 (GG, Congo-Kasai); Governor of Congo Kasai to Governor General, 28.6.1926, MAEAA, GG, 16835 (Congo-Kasai); G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis; R. Mouchet, 'Rapport sur l'hygiène publique 1931', s.d., MAEAA, RA-CB, 83.5.

cerebrospinal fluid tests so that practitioners would use the same criteria to determine whether a sleeping sickness victim's condition had fully normalised.[833]

A concern to limit trypanocide expenditure also contributed to a further rationalisation of pharmaceutical distribution. In 1932, for example, it was decided to end direct drug dispatches to medical posts, and instead centralise all supplies in provincial pharmacies in order to avoid the buildup of dispersed stocks that were difficult to monitor and often went to waste.[834] From 1933 onwards, trypanocides were even to an increasing extent managed and distributed from the colonial government's central pharmaceutical depot in Leopoldville by the head pharmacist.[835] This was the result of a reorganisation accompanying the partial privatisation of the colony's pharmaceutical service in a bid to reduce costs in the 1930s.[836]

Therefore, while medical authorities continued to support an extensive use of Tryponarsyl in the colony, by the early 1930s they also took steps to scale back drug consumption and reserves given the more challenging budgetary context. At the same

[833] In 1930, Chief Medical Officer Trolli also gave instructions to standardise cerebrospinal fluid tests, so that practitioners would use the same criteria to determine whether a normalisation had occurred. G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis.

[834] R. Mouchet, 'Rapport du Service de L'Hygiène. Année 1932', 5.1933, MAEAA, RA-CB, 83.6.

[835] L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1933', s.d., MAEAA, RA-CB, RA/MED-1; L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1938', s.d., MAEAA, RA-CB, 85.1; 'Convention entre la Colonie du Congo Belge et la Compagnie Générale de Produits Chimiques et Pharmaceutiques du Congo Belge ("Cophaco")', 20.4.1937, MAEAA, GG, 7024 (Léopoldville); L. Van Hoof, 'Rapport sur l'hygiène publique au Congo belge pendant l'année 1934', MAEAA, RA-CB, 84.3; L. Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, p. 84. Trypanocides stocked in Leopoldville in 1937 were: Moranyl, Tryponarsyl, Tryponurile and Trystibine. Inspecteur Général (2e DG, 3e Direction) to Director of EMT, 29.11.1929, ITG, Onderzoek, 5.2.8.

[836] A major overhaul of the pharmaceutical service took place in 1933. Besides distributing all drugs needed by the state health service, provincial pharmacies had also been retailing medicines to private agents in the provincial capitals. However, as it was felt that running a comprehensive pharmaceutical service was becoming a costly affair (which in some respects fell outside the state's remit), the colonial administration concluded a temporary agreement with pharmaceutical retail companies Cophaco (*Compagnie Générale de Produits Chimiques et Pharmaceutiques du Congo)* and Socophar (*Société Commerciale Pharmaceutique),* which had been operating a network of private pharmacies in the colony's main urban centres since the late 1920s. Thus in July 1933, the private sector provisionally took over the official pharmacies of Leopoldville, Coquilhatville and Lusambo Province to dispense drugs to private individuals as well as official health services and those entitled to free medicinal provision by the state. By 1938, this situation had become permanent, with all provincial pharmacies transferred to these private 'concessionnaires'. Excluded from this arrangement at the outset, however, were the biologicals and chemicals used in large quantities for epidemic and endemic disease control, which stayed within the ambit of a drastically reduced pharmaceutical service operating at the top of the official medical hierarchy (and until 1938 also in the remaining provinces). See Trolli, 'Le service médical du Congo Belge', 200; Francotte, 'Le voyage d'un pharmacien au Congo belge en 1930', *Congo. Revue générale de la colonie belge* 12 (1931), 76-77, 81; Piton, 'Le ravitaillement de la colonie en produits pharmaceutiques, 503; L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1933', s.d., MAEAA, RA-CB, RA/MED-1; L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1938', s.d., MAEAA, RA-CB, 85.1.

time, the failure to completely eradicate human trypanosomiasis pointed to epidemiological complexities of which the Congo's medical leaders became increasingly aware in the course of the decade, inducing them to somewhat put the effectiveness of mass Tryponarsyl-based treatment into perspective. There were epidemiological 'enigmas' that, among other things, mystified the link between medicinal prophylaxis and sleeping sickness incidence.[837] Trolli himself had already signalled some 'troubling observations' in this respect in 1930, including, for example, that the sleeping sickness situation remained static in some areas despite a lack of systematic control efforts, and that in certain other locations the epidemic disappeared without any intervention.[838] By 1935, Van Hoof expressed frustration at the 'persistence' of certain 'active foci' of sleeping sickness 'despite all efforts', which meant that constant vigilance was required to prevent epidemic flare-ups.[839]

8.5 Alternative approaches

Although the Congo's medical directors in the 1930s maintained that medicinal prophylaxis remained the basis of sleeping sickness control in the Belgian Congo, they also increasingly contemplated alternative strategies to complement the mass treatment approach. Mouchet and in particular Van Hoof were more emphatic than their predecessors in the 1920s in suggesting that the fight against the trypanosome and its transmission could not be limited to the pharmaceutical targeting of human carriers on a mass scale. They insisted that although difficult to implement, 'mechanical' measures to minimise human-fly contact should not be neglected given that the 'therapeutic method alone' was in many places not sufficient.[840] Mechanical prophylaxis could entail the regulation of African mobility and settlement patterns to prevent people from frequenting tsetse-infested areas, as well as vector control.[841] The latter

[837] J. Burke, 'Historique de la lutte contre la maladie du sommeil au Congo, 1885-1964', *Annales de la Société belge de Médecine Tropicale* 51 (1971), 473.

[838] G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', MAEAA, RA-CB, 83.3bis.

[839] L. Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935*, p. 29; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, pp. 30-31, 35; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1936*, p. 30; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1940*, p. 26.

[840] R. Mouchet, 'Rapport sur l'hygiène publique 1931', s.d., MAEAA, RA-CB, 83.5; R. Mouchet, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1932', s.d., MAEAA, RA-CB, 83.6; L. Van Hoof, 'Rapport sur l'hygiène publique au Congo belge pendant l'année 1934', s.d., MAEAA, RA-CB, 84.3; L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1938', s.d., MAEAA, RA-CB, 85.1.

[841] L. Van Hoof, 'Rapport sur l'hygiène publique au Congo belge pendant l'année 1934', s.d., MAEAA, RA-CB, 84.3.

could be attempted by the indirect means of habitat destruction (brush clearing), or directly via the capture of tsetse flies with the Harris trap, a patented device developed by a South African entomologist and trialled in the Belgian Congo in the 1930s. Crucially, however, Van Hoof emphasised that there were no 'dogmatic principles' that could be applied everywhere, so that the fight against sleeping sickness would have to be adapted to local circumstances.[842]

For example, brush clearing became a feasible strategy, he argued, in as far as it targeted a limited number of sites identified by epidemiologists as dangerous foci of infection for humans.[843] For Van Hoof, sleeping sickness control clearly had to be informed by epidemiology, but his understanding of epidemic disease differed from the microbiological view introduced by tropical medicine experts at the beginning of the twentieth century. Whereas Liverpool scientists and others had mainly conceived of sleeping sickness epidemics as a problem of infection spread by the movements of human trypanosome carriers, Van Hoof was developing a more complex and more 'ecological' understanding of sleeping sickness epidemiology.[844] For example, he became increasingly aware of the disease's 'focal nature', i.e. its 'occurr(ence) at or around specific geographic locations' (calling them 'specialised breeding grounds'). Moreover, he noticed that it was not so much an area's fly density as local socio-economic factors underlying African mobility, such as famine and individuals' occupation, that influenced endemicity and incidence.[845] It seems that Van Hoof increasingly adopted the view that one had to look at the complex local interrelations between trypanosomes, tsetse flies, humans and animals to account for sleeping sickness epidemiology, and not merely at the spread of trypanosomes by moving human reservoirs.

What undoubtedly played a role in the development of Van Hoof's more comprehensive stance on human African trypanosomiasis was his involvement in the LN international sleeping sickness expedition in 1926-1927, which was based at the Entebbe trypanosomiasis laboratory and directed by its head H. Lyndhurst Duke. There, the Belgian researcher came into contact with British efforts to understand and control African trypanosomiasis, which reflected and contributed to the development of a more

[842] L. Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935*, p. 29; L. Van Hoof, C. Henrard en E. Peel, 'Mekanische prophylaxie der slaapziekte; strijd tegen de glossinen in Belgisch Congo' in *Acta Conventus Tertii de Tropicis Atque Malariae Morbis* (Amsterdam, 1938), pp. 641-649; R. Mouchet, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1932', s.d., MAEAA, RA-CB, 83.6; L. Van Hoof, 'Rapport sur l'hygiène publique au Congo belge pendant l'année 1934', s.d., MAEAA, RA-CB, 84.3; L. Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935*, p. 29; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1936*, p. 30; K. Brown, 'From Ubombo to Mkhuzi: Disease, Colonial Science, and the Control of Nagana (Livestock Trypanosomiasis) in Zululand, South Africa, c. 1894-1953', *Journal of the History of Medicine and Allied Sciences* 63 (2008), 310.

[843] Van Hoof, Henrard en Peel, 'Mekanische prophylaxie der slaapziekte', pp. 644-645.

[844] Lyons, *Colonial Disease*, pp. 40-42; Neill, *Networks in Tropical Medicine*, p. 115.

[845] Lyons, *Colonial Disease*, pp. 41-42, 47; Van Hoof, Henrard en Peel, 'Mekanische prophylaxie der slaapziekte', p. 645; L. Van Hoof, 'Société des Nations. Enquête Epidémiologique sur la maladie du sommeil dans le disctrict du Budama et le Kavirondo', ITG, Onderzoek, 5.2.11, pp. 108-110.

ecological perspective on infectious disease in Britain in the interwar period.[846] Moreover, as part of the international expedition's 'Epidemiological Studies' program, Van Hoof undertook a six-month epidemiological survey in the Ugandan district of Budama and neighbouring territories, where endemic foci of the Gambiense variety of sleeping sickness existed.[847] His research there focused on the 'nature of virus reservoirs, the modalities of trypanosome transmission, and all geographic, biological, economic and other conditions' shaping the persistence and spread of human trypanosomiasis, and thus reflected how he was adopting a less narrow, more intricate view of sleeping sickness epidemiology.[848]

When Van Hoof returned to the Leopoldville laboratory in 1930 as Inspector, he continued to support a more multifaceted approach to sleeping sickness. He was involved in experimenting new sleeping sickness drugs, but under his watch, practical training in epidemiology and tsetse fly biology was also introduced at the laboratory in the early 1930s.[849] When he became chief medical officer in 1934 on Rodhain's recommendation, he continued to coordinate trypanosomiasis studies at the laboratory.[850] Research was again not confined to clinical trials, but also entailed experimental studies with parasites and vectors to enhance the understanding of sleeping sickness epidemiology in the Belgian Congo. For example, Van Hoof and his collaborators examined and compared the drug resistance and cyclical transmission within tsetse flies of Congolese trypanosome strains of diverse provenance.[851]

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[846] H. Tilley, 'Ecologies of complexity: tropical environments, African trypanosomiasis, and the disease control strategies in British colonial Africa, 1900-1940', *Osiris* 19 (2004), 21-38; Mendelsohn,'From eradication to equilibrium', pp. 308-319.

[847] L. Duke, 'League of Nations. Paper No I. General review of the activities of the Commission. Interim report of the League of Nations International Commission on Human Trypanosomiasis', 12.1926, ITG, Onderzoek, 5.2.11; L. Van Hoof, 'Société des Nations. Enquête Epidémiologique sur la maladie du sommeil dans le disctrict du Budama et le Kavirondo', ITG, Onderzoek, 5.2.11, pp. 1, 108.

[848] L. Van Hoof, 'Société des Nations. Enquête Epidémiologique sur la maladie du sommeil dans le disctrict du Budama et le Kavirondo', ITG, Onderzoek, 5.2.11, p. 1.

[849] L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1933', s.d., MAEAA, RA-CB, RA/MED-1.

[850] 'Province de Léopoldville. Rapport Annuel. 1936', s.d., MAEAA, RA-CB, 135.9; J. Rodhain, 'Nécrologie. L. Van Hoof', *Annales de la Société Belge de Médecine Tropicale* 28 (1948), 382; J. Rodhain to Governor General, 29.6.1933, ITG, Onderzoek, 5.3.3.

[851] L. Van Hoof, 'Rapport sur l'hygiène publique au Congo belge pendant l'année 1934', s.d., MAEAA, RA-CB, 84.3; P. Brutsaert, 'Rapport annuel sur le fonctionnement du laboratoire de Bactériologie de Léopoldville-Ouest en 1935', 12.6.1936, MAEAA, RA-CB, 84.6; J. Rodhain, 'Nécrologie. L. Van Hoof', 383. For examples of studies, see L. Van Hoof et C. Henrard, 'La transmission cyclique de races résistantes de Trypanosoma gambiense par Glossina palpalis', *Annales de la Société Belge de Médecine Tropicale* 13 (1933), 219-244; L. Van Hoof, C. Henrard et E. Peel, 'Influence de repas préliminaires indifférents sur l'évolution de Trypanosoma cazalboui chez Glossina palpalis', *Comptes Rendus Hebdomadaires des Séances et Mémoires de la Société de Biologie* 126 (1937), 1249-1252; L. Van Hoof, C. Henrard et E. Peel, 'Action de repas médicamenteux sur l'évolution des trypanosomes pathogènes chez la Glossina palpalis', *Annales de la Société Belge de Médecine Tropicale* 17 (1937), 385-440; L. Van Hoof, C. Henrard et E. Peel, 'Influences modificatrices de la transmissibilité cyclique du Trypanosoma gambiense par

That sleeping sickness control was integrated in the SAMI/FOREAMI framework in the 1930s further strengthened the role of alternative approaches to complement medicinal prophylaxis. Trolli's social medicine scheme had its origins in the prophylactic sleeping sickness missions established in the 1920s, but it also signalled a crucial shift from a specialised, 'vertical' health campaign to a more 'horizontal' medical program.[852] As he argued that the mobile teams could not remain 'indifferent' to other illnesses, Trolli's ambition was to undertake a 'medical crusade' that was no longer limited to eradicating sleeping sickness: it was to target other endemic diseases as well, and actively promote rural health more generally so as to stimulate the quantitative and qualitative growth of the African 'race'.[853] In a further sign of a more environmental approach to medicine developing in the Belgian Congo in the 1930s, FOREAMI's aim in particular was to launch a 'geographical' rather than a 'nosological' campaign, i.e. to focus on all aspects of public health in a circumscribed region rather than on fighting one or more specific diseases in as large an area as possible.[854] This notably included maternal and child care, but also hygiene, sanitation and nutrition.[855] While specialisation could be justified in certain circumstances, the sleeping sickness missions were to adapt to providing 'as complete as possible medical assistance'.[856]

Although there were significant obstacles to the local implementation of this more holistic approach to public health (cf. also chapter 10), the SAMI/FOREAMI program was gradually rolled out in the colony and sleeping sickness missions were transforming into 'missions d'assistance intégrale et polyvalente'.[857] It meant that as far as sleeping sickness control was concerned, the mass treatment of trypanosome carriers was increasingly combined with (and in some areas even superseded by) other forms of preventive action, especially by the latter half of the 1930s. Medical authorities in fact relied on a more locally diversified approach to keep the disease in check. In areas with remaining high levels of infection, the reduction of human trypanosome reservoirs via comprehensive periodical screening and treatment of infected individuals remained a

Glossina palpalis', *Annales de la Société Belge de Médecine Tropicale* 17 (1937), 249-272; L. Van Hoof, C. Henrard and E. Peel, 'The stability of Bayer 205 resistance in Trypanosoma gambiense', *Transactions of the Royal Society of Tropical Medicine and Hygiene* 32 (1938), 197-208.

[852] Schwetz, *Evolution de la médecine au Congo Belge,* pp. 13-14, 21. Lyons contrasts the 'vertical' sleeping sickness campaign with 'horizontal' health care programs, 'expressing concern in a broad range of health-related issues'. Lyons, *Colonial Disease*, p. 226.

[853] G. Trolli, 'Circulaire concernant le Service de l'Assistance Médicale Indigène (S.A.M.I.)', 10.12.1931, MAEAA, GG, 18847 (Léopoldville, Banningville); Trolli, 'Méthode originale d'assistance médicale', 148, 151; Kivits, 'Fonds Reine Elisabeth', 392-393.

[854] Kivits, 'Fonds Reine Elisabeth', 391.

[855] Trolli, 'Méthode originale d'assistance médicale', 264-298. On FOREAMI and maternal care see also Hunt, *Colonial Lexicon*, p. 252.

[856] R. Mouchet, 'Rapport sur l'hygiène publique 1931', s.d., MAEAA, RA-CB, 83.5; Kivits, 'Fonds Reine Elisabeth', 391.

[857] L. Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'Année 1939*, pp. 1, 4.

priority.[858] It was seen as a form of medical 'surveillance' to prevent the resurgence of epidemics.[859] Where incidence rates were low enough, surveillance could be limited to the locations and occupational groups most at risk, e.g. riverine communities and fishermen, and to travelling Africans.[860] In 'sufficiently sanitised' regions, however, systematic case detection and treatment by mobile teams could be gradually abandoned: as the network of hospitals, rural dispensaries etc. expanded, finding trypanosome carriers could increasingly rely on the 'natives' spontaneously presenting themselves with their illnesses to these health centres. This would help overcome some of the major drawbacks of the prophylactic sleeping sickness missions, highlighted by Van Hoof: not only the significant staff requirements, but also the lack of enthusiasm among many clinicians for 'exaggerated specialisation in a limited domain of tropical pathology' and constant touring.[861]

In addition, pharmaceutical treatment of infected individuals was increasingly complemented with other prophylactic strategies, especially the promotion of 'rural hygiene'. The latter was part of the SAMI/FOREAMI program and included measures to improve general sanitation (which facilitated vector control), health education, and nutrition, aimed at boosting African resistance to disease.[862] It reflected a more environmental approach to health in that it took local conditions and factors predisposing indigenous people to sleeping sickness (as well as other diseases) into account, but the promoting of more 'hygienic' lifestyles at the same time amounted to social engineering and in that sense was no less authoritarian and invasive than compulsory trypanocide treatment. As Van Hoof explained, staff implementing rural hygiene were not only involved in the fight against insect vectors, but also in the 'eradication of deep-rooted prejudices regarding housing, nutrition, pregnancy and personal hygiene etc.'.[863] As it was increasingly implemented throughout the colony, 'rural hygiene' had a positive effect on the 'regression of trypanosomiasis', according to the colony's chief medical officer.[864] Especially where medicinal prophylaxis could not further reduce incidence rates, or in 'sanitised' regions where other factors of the aetiological chain remained in place, protecting the indigenous population against

[858] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, p. 30.

[859] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, pp. 30-31; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'Année 1939*, p. 27.

[860] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, pp. 30-31.

[861] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, p. 75; L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1938', MAEAA, RA-CB, 85.1; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'Année 1939*, p. 4.

[862] Kivits, 'Fonds Reine Elisabeth', 397; Trolli, 'Méthode originale d'assistance médicale', 162, 294-297; Schwetz, *Evolution de la médecine au Congo Belge*, pp. 71, 105.

[863] Van Hoof, Henrard en Peel, 'Mekanische prophylaxie der slaapziekte', pp. 642-643.

[864] L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1938', MAEAA, RA-CB, 85.1.

infection via a 'mechanical defence' and the strengthening of 'biological resistance' was deemed crucial.[865]

To this was added another form of prophylaxis, which entailed administering preventive injections of the Bayer 205 compound to all healthy individuals in endemic areas. As previously mentioned, a few doctors had tried out preventive 'Bayerisation' in the field since the 1920s, but it had never been sanctioned as an official strategy by medical authorities because it wasn't considered very practical.[866] The difficulties experienced in curbing sleeping sickness via the treatment of trypanosome carriers, however, prompted a renewed interest in this form of disease control in the 1930s. Some itinerant doctors proceeded with field trials of Moranyl-based chemoprophylaxis and published studies confirming its effectiveness in the eradication of endemic sleeping sickness foci.[867] The strategy appeared to gain even greater prominence when the UCB added Belganyl to its list of trypanocidal drugs in the second half of the 1930s in what seemed like a direct response to medical developments in the Congo.[868] Samples were tested in 1937 by Van Hoof in Leopoldville, who found it equivalent to the German original, thus approving a new brand for the colony's chemoprophylactic arsenal.[869] By the end of the decade, based on his review of the clinical research literature and his own laboratory studies, Van Hoof judged that '"bayerisation" (would) render services there where other methods (of sleeping sickness control) (were) failing, when having recourse to mechanical prophylaxis was too costly or compromised indigenous people's economies, and especially when despite the means deployed one observe(d) at once the persistence of an irreducible infection index and the abundance of arsenic-resistant cases in a region'.[870] At the outbreak of the Second World War, the method was applied to

[865] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, pp. 31, 40; L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1938', MAEAA, RA-CB, 85.1; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'Année 1939*, p. 27; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1940*, p. 29.

[866] Trolli found preventive bayerisation unpractical, among other things because it required a regular repeating of injections at short intervals and with expensive medicines. G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 11.

[867] Province du Congo-Kasai, 'Rapport annuel du service de l'hygiène. 1930', MAEAA, RA-CB, 88.2; P. De Brauwere et J. Lisfranc, 'Un essai de prophylaxie antitrypanosomique au Bayer 205 et au tryponarsyl Meurice', *Annales de la Société Belge de Médecine Tropicale* 11 (1931), 387-393; A. Orlovitch, 'Sur les résultats de l'action préventive du Bayer 205 ou moranyl dans une région à forte endémie de maladie du sommeil', *Annales de la Société Belge de Médecine Tropicale* 17 (1937), 353-359.

[868] 'Les spécialités "Meurice"', *Revue de Thérapeutique "Meurice"* (1937), s.p.

[869] F. Van den Branden, 'Contrôle biologique du Bayer 205 ou Germanine, et des produits similaires, du 309 Fourneau ou Moranyl et du Belganyl', *Bulletin des Séances de l'Institut Royal Colonial Belge* 9 (1938), 355, 358-360; *De specialiteiten Meurice* (Brussel, s.d.), pp. 24-25.

[870] L. Van Hoof, C. Henrard et E. Peel, 'Observations sur l'efficacité du Bayer 205 contre le Trypanosoma gambiense. I. Durée de la protection conférée par une dose moyenne. Effets secondaires du Bayer 205 sur le pouvoir pathogène des trypanosomes', *Annales de la Société Belge de Médecine Tropicale* 20 (1940), 105-116; L. Van

'active foci' as staff shortages made comprehensive medical screening increasingly difficult.[871]

In a rather unsubtle way, 'Belganyl' of course provided new opportunities to counter German attacks on sleeping sickness control in the Congo and the colonial revanchism associated with Germanin. Another way of defending the Belgian colonial medical record in the wake of criticisms on prophylactic sleeping sickness missions predicated on mass Tryponarsyl treatment was the promotion and national appropriation of the broader public health scheme at the heart of SAMI/FOREAMI. Trolli presented his FOREAMI program as a unique and 'uniquely Belgian' approach to indigenous medical assistance. In a historical overview of published in 1939, for example, he argued that no equivalent existed in other colonies in terms of the means and methods deployed, and that it was Belgium that should be awarded the honour of having applied FOREAMI's singular principles.[872]

As Samuel Coghe has suggested, however, it is likely that Trolli was significantly influenced by the African health program set up in neighbouring Portuguese Angola in the 1920s, which was itself the product of a process of 'inter-imperial learning' about AMI (notably from French colonies) that started with the international tropical medicine conference held in Luanda in 1923. Coghe argues that in 1927, when Trolli was chief medical officer, a sanitary agreement was concluded between the Belgian Congo and Angola that involved exchanges of information and interactions between high-level health staff. Moreover, after a tour in northern Angola in 1928, Trolli reported very positively on the Angolan system for indigenous medical assistance in the Belgian medical press.[873]

A potentially important factor in Trolli's construction of a 'national style' of public health provision that in reality had much more 'mixed origins', Coghe suggests, was the fact that Portugal ranked low on the 'hierarchical ladder of prestige' among imperial powers, so that explicitly acknowledging it as a source of inspiration could do FOREAMI and its founder's reputation more harm than good.[874] Yet Trolli remained equally silent about possible French influences, despite significant initiatives in African health care, for example in French West Africa, that shaped reforms in Angola.[875] In fact, in his 1939 overview article he quoted a French colonial official claiming that 'the French (were) not sufficiently familiar with the magnificent efforts made by the Belgians in their Congo', more specifically with the 'very original institution created by them for indigenous

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Hoof, C. Henrard et E. Peel, 'Observations sur l'efficacité du Bayer 205 contre le Trypanosoma gambiense . IV. Modifications de l'évolution de la trypanosomiase provoquées par le Bayer 205', *Annales de la Société Belge de Médecine Tropicale* 20 (1940), 134-135.

[871] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1940*, p. 26.

[872] Trolli, 'Méthode originale d'assistance médicale', 152, 159.

[873] Coghe, 'Inter-imperial learning', pp. 2, 8, 10.

[874] Coghe, 'Inter-imperial learning', pp. 10-11.

[875] Ibid., p. 8.

medical assistance'.[876] On the eve of the Second World War, medical nationalism had clearly far from subsided and appeared to give a further rationale to the shift from Tryponarsyl-based sleeping sickness eradication to new approaches to public health.

8.6 Reductions in Tryponarsyl consumption

In any case, Belganyl and FOREAMI's gradual rise to prominence symbolised the concomitant decline of mass Tryponarsyl treatment as the embodiment of 'Belgian' indigenous health provision in the Congo. Moreover, through a number of intertwined developments, the 1930s in fact saw a significant reduction in the drug's consumption compared to the previous decade. First of all, there was a decline in sleeping sickness incidence and prevalence, which was paradoxically accompanied by a growing recognition of the limits of (arsenic-based) medicinal prophylaxis and an associated shift to a more diversified (i.e. less exclusively pharmaceutical) approach to sleeping sickness control and a more comprehensive view of public health more generally. In addition, budgetary constraints affecting both the colonial medical service and FOREAMI prompted a 'more economical management' of pharmaceutical stocks and the promotion of diagnostic procedures aimed at reducing levels of trypanocide consumption.[877] In 1934, Van Hoof reported that a 'more rational use' of drugs in the Congo brought down 'glyphénarsine' (i.e. Tryparsamide or Tryponarsyl) consumption to 800kg.[878] Levels oscillated between 1170kg in 1937, 650kg in 1938 and 692kg in 1939, but overall consumption and expenditure in the second half of the 1930s kept well below those reported in the late 1920s.[879]

In view of this, one could argue that the late 1930s heralded an end to the 'career' of Tryparsamide/Tryponarsyl as a sleeping sickness eradication drug in the Belgian Congo. By 1939, preventive Belganyl injections were increasingly used to protect the public against infection in active foci.[880] In the 1940s, a whole new category of drugs called 'diamidines' took over as the basis of pharmaceutical strategies of sleeping sickness control when mass chemoprophylaxis campaigns with Pentamidine and Lomidine were

[876] Trolli, 'Méthode originale d'assistance médicale', 156-157.

[877] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935,* p. 6; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1936*, pp. 5-6.

[878] L. Van Hoof, 'Rapport sur l'hygiène publique au Congo belge pendant l'année 1934', MAEAA, RA-CB, 84.3.

[879] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, p. 84; L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1938', MAEAA, RA-CB, 85.1; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'Année 1939*, p. 80.

[880] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'Année 1939*, p. 27; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1940*, p. 26.

set up between 1945 and 1955.[881] According to Guillaume Lachenal, these campaigns, initiated in the Belgian Congo as well as in French colonies, were (wrongly) imagined as a short 'burst of policing' that would eradicate sleeping sickness and end the 'lifelong treatment of trypanosome carriers and costly screening campaigns'.[882] Finally, after the Second World War, serious problems with drug resistance led to Tryparsamide's replacement with Melarsoprol, an arsenic compound discovered in 1949, as a curative treatment for late-stage trypanosomiasis.[883]

To some extent, the downturn in Tryponarsyl's career in the Congo by the Second World War also prefigured a retreat from tropical disease therapeutics on the part of the Belgian pharmaceutical industry. Although the latter's history remains to be written, it seems fair to say that the Congolese market for trypanocides and Belgian tropical medicine experts in colony and metropole were key to the development of Meurice and later the UCB as a manufacturer of synthetic prescription pharmaceuticals in the interwar period, and for that reason probably even to the emergence of a science-based drug industry in Belgium *tout court*.[884] Looking back on the company's involvement in interwar tropical chemotherapy, a Belgian colonial-interest journal stated in 1946: 'the national industry succeeded in supplying our colony with all the specifics the Congo's medical service resorts to in order to successfully fight the murderous endemic diseases, whose influence it manages to push back little by little. Our industry can feel a certain pride in having accomplished this effort and in having improved, by its own research, the treatment of this scourge, human trypanosomiasis'.[885]

By the 1950s, however, the colonial prescription drug market no longer appeared to have the same appeal to the Belgian pharmaceutical industry. In a 1958 study on the country's metropolitan and overseas drug market, for example, economist Robert Poivre listed the Congo's 'strongly centralised' medical organisation as a major drawback.[886] Demand for prescription pharmaceuticals for indigenous consumption was indeed not so much driven by patients and individual prescribers as by the colonial state, and while the latter's public health interventions at one point created a mass market for endemic tropical disease drugs, the other side of the coin was that the administration at the same time sought to limit its drug expenditure and also controlled the import of

[881] Burke, 'Historique de la lutte contre la maladie du sommeil', 474.

[882] Lachenal, 'Chemoprophylaxis against sleeping sickness', 4.

[883] Burke, 'Historique de la lutte contre la maladie du sommeil', 475.

[884] Robert Poivre draws a clear link between the Belgian Congo, tropical chemotherapy, and the 'boom' of the Belgian pharmaceutical industry in the interwar period. R. Poivre, *Le marché belge et en particulier celui des produits pharmaceutiques, y compris au Congo belge et Ruanda-Urundi* (Bruxelles, 1958), p. 17. On Meurice and the UCB's involvement in drug development for tropical diseases before World War II, see also V. Bienfet, H. Van den Bossche et P. Crooy, 'Contribution de l'industrie pharmaceutique belge' dans P. G. Janssens, M. Kivits et J. Vuylsteke (dir.), *Médecine et hygiène en Afrique Centrale de 1885 à nos jours* (Bruxelles, 1992), pp. 243-245.

[885] Darmstadter, 'La contribution de l'industrie belge', 74. Belgian-manufactured drugs were cheaper for the colonial government. See Poivre, *Marché belge*, p. 17.

[886] Poivre, *Marché belge*, p. 41.

pharmaceutical specialties in the colony.[887] Moreover, state demand could collapse when medical priorities and strategies changed, as was the case with sleeping sickness control. In the 1930s, the UCB itself seemed to diversify its range of pharmaceutical specialties by gradually moving beyond tropical chemotherapy. The firm's attention increasingly turned to novel fields such as hormone therapy and the sulfonamides, the new group of synthetic chemical drugs effective against the bacterial infections of temperate climates and hailed as 'the first miracle drugs'.[888] In other words, it seems that by the end of the interwar period, the UCB was starting to orient itself more and more to metropolitan rather than tropical drug markets, an evolution that only intensified after the Second World War.[889]

8.7 In summary

Used on a vast scale since the late 1920s, Tryponarsyl next entered a phase of disenchantment when it failed to meet earlier high expectations, in particular those of a swift and easy eradication of sleeping sickness. This posed certain challenges to the close ties between laboratory science, ethical pharmaceutical industry and collective medicine in the Belgian Congo. While the tropical medicine elite continued collaborating with the pharmaceutical industry and kept rational drug policies and regulation firmly in place, pharmaceutical sleeping sickness control itself became less self-evident. Local reports of toxicity and in particular arsenic-resistant trypanosomes threatened to undermine a medicinal prophylaxis campaign that represented a substantial medical expenditure and was not always embraced by private sector health providers. An extensive use of Tryponarsyl was nevertheless initially sustained through a certain complicity between Belgian tropical medicine and pharmaceutical industry to define toxicity as an issue of biomedical irrationality rather than poor product quality, a dearth of new replacement trypanocides and an associated recourse to largely Tryponarsyl-based, if more diversified, therapeutic strategies to deal with drug

[887] Ibid., p. 41-44. An authorisation from the Colonial Ministry's medical department or from the colony's central medical or pharmaceutical authorities was required to import medical drugs in the Congo. See M. Kivits et W. Vanderijst, *Code de législation sanitaire du Congo-Belge et du Ruanda-Urundi* (Bruxelles, 1958), p. 14.

[888] Poivre, *Marché belge*, p. 17; Lesch, *First Miracle Drugs*; 'In memoriam Albert Meurice', 1813; Union Chimique Belge. Division Produits Pharmaceutiques "Meurice", 'A nos lecteurs', 3; 'Les spécialités "Meurice"', Revue de Thérapeutique "Meurice" (1937), s.p.; R. Pottier, 'L'emploi du sulfanilamide dans diverses affections bactériennes: strepto, staphylo et méningococcies, gonorrhée, colibacillose, etc.', *Revue de Thérapeutique "Meurice"* (1937), 1087-1092.

[889] According to Bienfet and colleagues, the post-World War II period saw an end to the UCB's research on tropical diseases. Bienfet, Van den Bossche et Crooy, 'Contribution de l'industrie pharmaceutique belge', p. 245.

resistance, and organisational reforms that densified medical ‘occupation’ and thus increased the coverage of regular sleeping sickness screening and therapy in the colony. While doubts were raised about the value of mass Tryponarsyl treatment in metropolitan circles, colonial medical authorities hailed its contribution to significant reductions in sleeping sickness incidence and prevalence. Nevertheless, they also encouraged a more economical use of trypanocides, and in 1930s increasingly shifted to a more ecological, locally diversified approach to sleeping sickness epidemiology and a more holistic view of public health that challenged the primacy of a Tryponarsyl-based eradication of sleeping sickness. The (second half of the) 1930s saw a gradual decline in the drug’s consumption and eventually heralded an end to its career as a tool for stamping out human trypanosomiasis in the Belgian Congo.

PART IV.

LOCAL MEDICINAL PROPHYLAXIS: THE CASE OF THE KWANGO DISTRICT

Chapter 9
Mass Atoxyl treatment: the Schwetz mission controversy

This chapter takes a closer look at some of the local factors that helped shape Atoxyl's postwar career cycle in the Belgian Congo. Focusing on the southwestern Kwango district, it examines the origins and beginnings of the first prophylactic sleeping sickness mission, directed by state doctor Jacques Schwetz, which played an important role in the prioritisation of itinerant medicinal prophylaxis in the colony and therefore in the large-scale spread of Atoxyl after the war. It also explores the many obstacles Schwetz faced in the implementation of his program of comprehensive screening and treatment, how these informed his methods and fuelled local tensions that eventually even reached political circles in the metropole. It is this context of opposition to mass treatment in Kwango, and the potential threat it posed to the future of the sleeping sickness missions, that fed into colonial doctors' disappointment with (the quality of Belgian-manufactured) Atoxyl. In the end, it also contributed to a tightening of pharmaceutical regulation as a way of sustaining support for pharmaceutical sleeping sickness control, resulting in a decline of French and Belgian Atoxyl brands while maintaining the large-scale consumption of the German original.

Noémi Tousignant has recently noted how English-language historians have generally ignored the frictions engendered by pharmaceutical strategies of sleeping sickness control in colonial Africa, even when studying territories where drug treatment was used - including the Belgian Congo -, as they tend to focus on the politics of social and environmental engineering. This is in stark contrast to their French-speaking counterparts, she argues, who have done much to uncover the 'long history of political tensions' over mass treatment and Eugène Jamot's model of special, autonomous sleeping sickness services in French Africa.[890] Building further on Tousignant's observation, this chapter pays particular attention to the clash arising in the early 1920s between Schwetz's official sleeping sickness mission and Kwango's Jesuit missionaries, and its role in generating political conflicts about mass trypanocide treatment in the Belgian Congo .

Before the arrival of the Schwetz mission, Jesuits were responsible for the district's most substantial efforts to curb sleeping sickness, and had received significant support from the colonial state in this endeavour. As epidemic disease control proved largely compatible with the interests of evangelisation, Kikwit missionary Yvan de Pierpont in

[890] Tousignant, 'Politics of mass therapy', 627.

particular became engaged in prophylactic treatment and the implementation of mechanical prophylaxis measures disrupting African lifestyles. Although not using direct coercion, he did not hesitate to capitalise on indigenous fears of state violence to encourage compliance with public health regulations that served to extend the Jesuit mission's 'civilising' influence. In that sense, missionary medical work in Kwango was not necessarily the 'soft' variant of a harder state version of colonial medicine.[891]

However, the arrival of an official sleeping sickness mission, guided exclusively by the imperatives of mass screening and treatment and equipped with significant coercive powers, soon generated considerable tensions. Not dissimilar to the French case, quarrels about Jesuit obstructions of mass treatment and a(n anticlerical) state doctor's undue interference in the missionary sphere of influence soon turned into 'broader debates' about the 'powers' and 'ethics' of prophylactic sleeping sickness missions as exemplified by the one under Schwetz's direction.[892] Catholic opposition to what were deemed excessive coercive powers and unethical diagnostic procedures, forcing Africans merely suspected of sleeping sickness to undergo treatment with dangerous medicines, eventually even amounted to discussions in the Belgian parliament. Such external criticisms tested central political authorities' support for the special sleeping sickness missions, and contributed to pharmaceutical regulation efforts by a colonial medical service seeking to minimise the risks of mass treatment and protect its doctors' hard-won independence from administrative interference (cf. chapter 5). Yet ultimately they did not succeed in challenging the model of official special missions, tasked with mass-scale mandatory screening and treatment, as a legitimate and appropriate strategy of sleeping sickness control in the Belgian Congo in the 1920s.

9.1 Jesuit control efforts before 1919

The Kwango district was an administrative unit south of the Kasai river in the southwest of the Belgian Congo. Although its precise territorial boundaries fluctuated throughout colonial history, the area was roughly made up of the basins of the Kwango and Kwilu rivers north of the Angolan border.[893] The district's colonial economy was based on agricultural industry and trade. This was exemplified in particular by the arrival of the Huileries du Congo Belge (HCB), an oil palm plantation company whose British founder William Lever (of the Lever Brothers soap business) had been granted an enormous

[891] On the misconception of missionary medicine as the 'soft side of colonial medicine', notably in the Belgian Congo, see Hunt, *Colonial Lexicon*, p. 161.

[892] Tousignant, 'Politics of mass therapy', 635.

[893] J. Omasombo, *Kwango. Le Pays des Bana Lumba* (Bruxelles; Kinshasa, 2012), p. 172.

concession from the Belgian administration in 1911. Operating mainly south of the district capital of Bandundu, the HCB harshly recruited thousands of Congolese to harvest the fruits of the palm tree.[894] According to a Jesuit missionary, Kwilu became dominated by the 'reign' of the oil palm.[895] Kwango's indigenous inhabitants formed two distinct cultural entities, which Jan Vansina has labelled the 'Bas-Kasai' and 'between Kwango-Kasai peoples', each consisting of different but culturally and linguistically closely related groups.[896] Failing to grasp the 'rich complexity of interactions among peoples', however, European observers perceived existing diversity in Kwango as evidence of 'ethnic fracture' in a 'mosaic of tribes'.[897]

Colonial state agents started to firmly associate the district - which apparently had not been covered by the Liverpool expedition - with sleeping sickness around 1912, at a time of increased European presence in the area.[898] The district commissioner reported a growing number of cases among Congolese staff in and around the district capital of Bandundu during the previous year. Elsewhere in barely-occupied Kwango, the situation was less clear, but sporadic information from other locations seemed to indicate that it was one of the colony's 'sleeping sickness regions'.[899] The district doctor Jacques David, who embarked on a few medical tours around that time, concluded in 1912 that Kwango was 'entirely contaminated'.[900] In particular Moyen-Kwilu increasingly drew attention as a (perceived) focus of sleeping sickness. It was the district's commercial heart, where small traders operated in addition to the HCB and the 'Compagnie du Kasai', a major trading company established in 1901.[901] On one of his trips, David ventured to Kikwit, a new state post along the Kwilu river, where he found the sleeping sickness situation to be particularly serious.[902]

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[894] Van Reybrouck, *Congo: een geschiedenis*, p. 140; Buelens, *Congo, 1885-1960: een financieel-economische geschiedenis*, p. 156.

[895] J. Van Wing, 'Au Kwilu. Industrie et commerce. Situation sociale - missions', *Revue Missionnaire des Jésuites belges* 10 (1928), 358.

[896] J. Vansina, *Introduction à l'ethnographie du Congo* (Kinshasa, 1966) pp. 25, 129, 145.

[897] Van Wing, 'Au Kwilu', 358; Lyons, *Colonial Disease*, p. 163.

[898] Lyons, *Colonial Disease*, p. 94. Schwetz attributed the emergence of sleeping sickness in Kwilu to the 'penetration of the white man' in the region since 1911. J. Schwetz, 'La maladie du sommeil dans le Moyen Kwilu (District du Kwango, Congo belge), en 1918', 11.1919, MAEAA, GG, 15712 (GG).

[899] Commissaire Général Vanwert, 'Extrait District du Kwango. Considérations budgétaires pour 1912', 6.6.1911, MAEAA, RA-CB, 80.3.

[900] Commissaire Général Van Wert to Governor General, 6.4.1912, 'Rapport annuel médical (district du Kwango)', MAEAA, RA-CB, 80.3.

[901] Dr Heiberg, 'Rapport médical pour 1913, 28.5.1914, MAEAA, RA-CB, 81.1. Leverville, established in 1911, was HCB's commercial centre in Kwilu. J. Schwetz, 'La maladie du sommeil dans le moyen-Kwilu (district du Kwango, Congo belge) en 1918', *Bulletin de la Société de Pathologie Exotique* 12 (1919), 798-799; Buelens, *Congo, 1885-1960*, p. 149.

[902] J. David, 'La Maladie du sommeil au Kwilu', 18.4.1912, MAEAA, GG, 16782 (GG).

Before 1919, however, not much (medicinal) action was undertaken against sleeping sickness by Kwango's colonisers.[903] The administration was far too thin on the ground to mount a meaningful prophylactic treatment campaign, especially among the indigenous population outside of the scarce state posts. The district's only official doctor was too occupied with screening staff and visitors in Bandundu to undertake ambulatory Atoxyl treatment in 'native villages'. Moreover, both the district commissioner and doctor David showed little appetite to enforce disease control measures and invasive biomedical procedures in a region that had scarcely been 'occupied', with a population that they felt was not yet very 'open to persuasion'.[904] The big concession companies did not offer much in the way of help either: the 'Compagnie du Kasai' did not have a medical officer, while the HCB doctor was reportedly too tied up in Leverville to deal with sleeping sickness in Kwilu.[905]

To a significant extent, the vacuum left by the state and concession companies in Kwango was filled by missionaries, especially Jesuits, who had a history of early involvement in sleeping sickness control efforts in the Congo.[906] By 1907, they had become increasingly alarmed by sleeping sickness mortality in the Kwango 'préfecture', the Jesuit sphere of influence in southwest Congo comprising - but extending beyond - the administrative Kwango district. In particular Hyacinth Vanderyst, a botanist who had arrived in Kisantu (Moyen-Congo district) in 1906, resolved to take action against the disease and thus put Jesuit missions on the path of sleeping sickness prophylaxis. He had followed a bacteriology course in Louvain in 1902, and in 1907 went to the Leopoldville laboratory to study sleeping sickness diagnosis and therapy, which in turn inspired laboratory doctors Broden and Rodhain to start organising practical tropical medicine training for missionaries. In Kisantu, Vanderyst embarked on a campaign to microscopically detect trypanosomiasis cases among mission staff, isolate them and provide treatment. To that end, he erected the lazaret of Saint-Jean Berchmans (and later that of the Sacré-Coeur de Jésus), which he directed until 1913.[907] In the lazaret, Atoxyl was administered to infected individuals via injections or, following advice from

[903] J. Schwetz, 'La maladie du sommeil dans le moyen-Kwilu', p. 809-811.

[904] Commissaire Général Vanwert, 'Extrait District du Kwango. Considérations budgétaires pour 1912', 6.6.1911, MAEAA, RA-CB, 80.3; Commissaire Général Van Wert to Governor General, 6.4.1912, 'Rapport annuel médical (district du Kwango)', MAEAA, RA-CB, 80.3. During his visit in 1912, David admitted that in Kikwit he had not dared puncture the lymph glands of Africans working for 'commerçants' for fear that they would 'desert'. See J. David, 'La Maladie du sommeil au Kwilu', 18.4.1912, MAEAA, GG, 16782 (GG).

[905] J. Schwetz, 'La maladie du sommeil dans le moyen-Kwilu', p. 809.

[906] X. Dusausoit, 'Planter l'église. Le contrôle du territoire et des populations' dans A. Deneef, X. Dusausoit, C. Evers, M. Pilette et X. Rousseaux, *Les Jésuites au Congo - Zaire. Cent ans d'épopée* (Bruxelles, 1995), p. 84.

[907] H. Vanderyst, 'Le renouvellement et le relèvement de la population de Kisantu par l'action missionnaire', *Aide Médicale aux Missions* 1 (1929), 11-12, 22-24, 50, 53, 71-72; H. Vanderyst, *Notions élémentaires concernant les maladies tropicales* (Bruxelles, 1929), pp. ix, xxi, 160.

Broden and Rodhain, also orally.[908] According to Vanderyst, this lazaret regime, even if it did not (yet) produce cures, at least improved patients' conditions considerably and reduced the chances of infection by keeping trypanosome carriers in a sanitary, tsetse-poor environment.[909]

For christian missionaries, medical work traditionally constituted a way of extending their influence over indigenous peoples and was therefore deeply intertwined with the aims of evangelisation. The example of the Jesuits in the Belgian Congo shows that they also got involved in infectious disease prevention, most likely because they needed to protect their own health within mission posts and safeguard their endeavour's survival. In that way, missionaries were not always less inclined than state doctors to conceive of Africans and African settlements as sources of parasites.[910] In addition, they also contributed to the official sleeping sickness campaign because it was beneficial in terms of the financial and material support it entailed.

In any case, Jesuit efforts to control sleeping sickness did not remain confined to the Kisantu lazaret for long. In line with the 1910 sleeping sickness policy reforms, Jesuits elsewhere became increasingly involved, and they also adopted Atoxyl treatment as a prophylactic strategy in itself, taking place outside of the lazaret context. For example, in the mission station of Wombali, where Vanderyst had instituted trypanosomiasis screening and treatment in 1910, parasite carriers were not isolated but allowed to continue their normal activities while receiving twice-weekly Atoxyl injections to boost their health and prevent further infection.[911] Some Jesuit missionaries went further and incorporated medicinal prophylaxis into their evangelisation rounds. During what they called a 'medical-apostolic tour' in the Nsele valley, for example, Joseph Greggio and Hanquet examined villages in the region to get a sense of the sleeping sickness problem there. Many of the people found infected were sent to the lazaret in Kisantu, but those who refused (or were too ill) were injected on the spot.[912]

In the administrative Kwango district, the practice of itinerant prophylactic treatment was taken up by Yvan de Pierpont in particular. After a first term in Kisantu, where he had observed Vanderyst's medical work, de Pierpont arrived at the Jesuit

[908] I. de Pierpont, 'Mission du Kwango. Le lazaret de Kisantu', *Missions belges de la Compagnie de Jésus: Congo, Bengale, Ceylan* (1908), 91. Vanderyst mentioned in 1929 that Atoxyl was the medicine most used by missionaries. Vanderyst, *Notions élémentaires*, p. 159.

[909] I. de Pierpont, 'Lazaret de Kisantu', 91.

[910] On missionary strategies of spatial separation by way of malaria prevention and control see for example C. M. Good, *The Steamer Parish: The Rise and Fall of Missionary Medicine on an African Frontier* (Chicago, 2004), p. 267.

[911] J. Hamerlinck, 'Mission du Kwango. La lutte contre la maladie du sommeil à la mission de Wombali', *Missions belges de la Compagnie de Jésus: Congo, Bengale, Ceylan (1912)*, 381-382; J. Hamerlinck, 'Rapport sur les résultats obtenus dans la lutte contre la maladie du sommeil, à la Mission de Wombali, établi au 1r avril 1913', 1.4.1913, MAEAA, GG, 19645 (GG).

[912] H. Moris, 'Mission du Kwango. Les missionnaires et la maladie du sommeil', *Missions belges de la Compagnie de Jésus: Congo, Bengale, Ceylan (1911)*, 458-460.

mission of Kikwit, on the left bank of the Kwilu river, in May 1915.[913] At that time, the mission had a lazaret where not only African mission staff, but people from indigenous villages in the area as well were treated for sleeping sickness.[914] De Pierpont noted, however, that the latter often only came when they were already in an advanced stage of the disease, or that they frequently interrupted treatment to return to their villages, for example because of difficulties to provide for themselves in Kikwit.[915] In an effort to extend the mission's sphere of prophylactic action, the Jesuit soon agreed with his fellow missionaries that he would go on a tour to assess the 'sanitary state' of the region around the mission post, while they continued running the lazaret.[916] Despite a lack of formal tropical medicine training (he had not attended the EMT in Brussels nor the practical course at the Leopoldville laboratory), de Pierpont in July 1915 embarked on the first of a series of journeys through Kikwit territory that involved diagnosing and treating people with sleeping sickness.[917] As more trypanosome carriers thus received ambulatory treatment, de Pierpont asserted, the lazaret in Kikwit gradually became less important.[918]

For de Pierpont, sleeping sickness control was very much linked to, and went hand in hand with, the mission's evangelisation goals. His tours through Kikwit, which de Pierpont described as 'à la fois médical et apostolique', were to a large extent also about getting to know the territory's indigenous population and recruiting new catechumens.[919] What is more, de Pierpont considered medical work an important 'civilising' tool in itself. The most important obstacle to extending the influence of Christianity, he argued, were the so-called 'féticheurs', the local healers: 'in almost all villages, the Féticheur is the pernicious man who in the background is the immovable

[913] de Pierpont, 'Lazaret de Kisantu', 86; I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, Documentation and Research centre for Religion, Culture and Society (KADOC), Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, p. 2.

[914] Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG).

[915] Y. de Pierpont to doctor, 24.11.1915, MAEAA, GG, 16793 (Congo-Kasai, Kikwit).

[916] Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG).

[917] Y. de Pierpont to doctor, 24.11.1915, MAEAA, GG, 16793 (Congo-Kasai, Kikwit); 'Mission du Kwango. Journal de Voyage du Père Ivan de Pierpont, S. J.', 7.7.-10.8.1915, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 1; I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, p. 3-4. During the First World War, de Pierpont had nevertheless received some basic medical training in Louvain. L. Wilmet, *Un broussard héroïque. Le P. Ivan de Pierpont, S.J.* (Charleroi; Paris, 1939), p. 68.

[918] Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG).

[919] 'Mission du Kwango. Journal de Voyage du Père Ivan de Pierpont, S. J.', 7.7.-10.8.1915, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 1, pp. 1, 6-7; I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, pp. 3, 10, 16, 22.

core of resistance against every of the white man's actions'.[920] If Africans had recourse to western medicine, this would in his eyes help draw them away from the influence of local healers.[921] Consequently, de Pierpont usually approached the villages he visited by presenting himself as 'Mompa (mon père)' who tends to the ill in Kikwit and who has come to treat sleeping sickness victims.[922] By May 1916, and with the help of 'sanitary brigades' of young catechumens, de Pierpont also started to include brush clearing on his tours as a way to aid his prophylactic efforts. The Jesuit missionary felt that mechanical prophylaxis as well was quite compatible with his evangelical work: not only could he take the opportunity to educate the youngsters who joined him as part of his brigade, but bringing African settlements in line with the state's sanitary requirements disrupted indigenous lifestyles, which in his opinion was not a bad thing as it amounted to civilisation.[923]

Because of his prophylaxis efforts in a district where European attempts at human trypanosomiasis control in indigenous communities were otherwise virtually nonexistent, de Pierpont enjoyed significant support from the colonial government. At a time when Jesuit missions generally lacked the resources to buy much medical equipment and the First World War seriously disrupted the supply of (German) drugs to the Congo, the Kikwit mission enjoyed something of a preferential treatment.[924] Through a 'personal intervention' by the Governor General Eugène Henry, for example, de Pierpont received a state subsidy to set up his 'sanitary brigades'.[925] Moreover, the Governor made an effort to accommodate his emphatic requests for Atoxyl, which had been in seriously short supply in Kikwit.[926] As a result (and notwithstanding delays, for

[920] Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG).

[921] de Pierpont connected biomedical treatment with civilisation: 'Les premiers secourus sont ceux qui font un premier pas vers la civilisation en venant à nous'. I. de Pierpont to Governor General, 25.2.1917, 'Rapport Médical (1 semestre 1917) sur la question de la trypanose dans la région de Kikwit', MAEAA, Hygiène, 4406.332.

[922] 'Mission du Kwango. Journal de Voyage du Père Ivan de Pierpont, S. J.', 7.7.-10.8.1915, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 1, p. 8.

[923] Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG); I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, pp. 18-19.

[924] F. Allard to District Commissioner of Kwango, 13.2.1913, 'Rapport sur l'état sanitaire des populations habitant la régions voisine de Yungu St Ernest', MAEAA, GG, 19645 (GG). According to de Pierpont, the Jesuit mission at Kikwit was the Governor General's 'enfant de prédilection'. Y. de Pierpont to Governor General, 8.12.1916, MAEAA, GG, 16793 (Congo-Kasai, Kikwit).

[925] Y. de Pierpont to Governor General, 8.12.1916, MAEAA, GG, 16793 (Congo-Kasai, Kikwit); I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, pp. 18, 24.

[926] Governor General to Y. de Pierpont, 28.3.1917, MAEAA, GG, 16793 (Congo-Kasai, Kikwit); Y. de Pierpont to doctor, 24.11.1915, MAEAA, GG, 16793 (Congo-Kasai, Kikwit).

example because of drugs going bad), de Pierpont was provided with French-manufactured Atoxyl and Soamin during the war.[927]

While the administration conveniently found in de Pierpont the 'first promotor of the fight against sleeping sickness in Kwango', the missionary himself to a significant extent tried to capitalise on this position and use state support for his own agenda, namely to expand his and the Jesuit mission's (civilising) influence in Kikwit.[928] For example, in a sign that he was not merely guided by the imperatives of epidemic disease control, de Pierpont did not want to confine the mission to treating sleeping sickness cases. Back in 1907, he had learnt in Kisantu that Africans were often reluctant to have their glands punctured for diagnostic purposes, and that Atoxyl was not a magic-bullet cure and therefore not an ideal civilising tool.[929] If the Jesuit was to break the hold of 'féticheurs' on indigenous communities by beating them on their own terrain, he would have to do more to gain trust as a medical provider. Therefore, when the Pierpont asked the government for trypanocides, he included requests for other drugs as well, so that the Kikwit missionaries could 'cure the natives of their other miseries' and become what fellow Jesuit Fernand Allard had called 'praticiens d'occasion'.[930] de Pierpont was especially eager to obtain (Neo)salvarsan, which produced spectacular, quick cures in syphilis and yaws sufferers of which there were significant numbers. Arguing that providing (Salvarsan) treatment for other illnesses boosted indigenous confidence in European remedies and thus encouraged Africans to undergo screening and treatment for sleeping sickness, de Pierpont succeeded in winning government support to run a dispensary at the Kikwit mission.[931]

The apparent popularity of the dispensary - in 1917 de Pierpont quite incredibly reported more than 26 000 medical consultations in the course of a year - suggests that the observable therapeutic efficacy of (Neo)Salvarsan considerably warmed Kikwit's inhabitants to European medicines, which the Jesuit linked to civilisation.[932] A similar

[927] Dr Cammermeyer to Governor General, 26.2.1917, MAEAA, GG, 16793 (Congo-Kasai, Kikwit); Y. de Pierpont to Governor General, 8.12.1916, MAEAA, GG, 16793 (Congo-Kasai, Kikwit).

[928] Governor General to Minister of Colonies, 28.4.1921, MAEAA, Hygiène, 4406.333.

[929] de Pierpont, 'Lazaret de Kisantu', 85-87, 91.

[930] Y. de Pierpont to Doctor, 24.11.1915, MAEAA, GG, 16793 (Congo-Kasai, Kikwit); F. Allard to District Commissioner of Kwango, 13.2.1913, 'Rapport sur l'état sanitaire des populations habitant la régions voisine de Yungu St Ernest', MAEAA, GG, 19645 (GG).

[931] Y. de Pierpont to Doctor, 24.11.1915, MAEAA, GG, 16793 (Congo-Kasai, Kikwit); Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG); I. de Pierpont to Governor General, 25.2.1917, 'Rapport Médical (1 semestre 1917) sur la question de la trypanose dans la région de Kikwit', MAEAA, Hygiène, 4406.332.

[932] Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG); I. de Pierpont to Governor General, 25.2.1917, 'Rapport Médical (1 semestre 1917) sur la question de la trypanose dans la région de Kikwit', MAEAA, Hygiène, 4406.332.

popularity has been observed in other colonies.[933] However, the indigenous responses to the medical procedures involved in European sleeping sickness control were much more mixed. This indicated that Africans were 'selective' in their 'recourse' to biomedical drugs, but also pointed to a variety of African responses to sleeping sickness medicine that can be hard to 'disentangl(e)'.[934] On his tours in Kikwit territory, de Pierpont was certainly not able to examine and treat everyone. Cooperation appeared easier to achieve in communities already familiar with the Kikwit Jesuits and their medical activities.[935] Yet not all villages or villagers he encountered were equally willing to undergo physical examinations and (regular) trypanocide treatment. Sometimes de Pierpont found that inhabitants had fled upon his arrival, or that they concealed their sleeping sickness victims from him.[936] In addition, he sometimes struggled to administer a regular course of treatment, as identified trypanosomiasis victims failed to systematically present themselves for injections on agreed dates and only came 'when it sprang to mind'.[937]

Instances of avoidance and rejection most probably had multiple determinants, some of an explicitly medical nature and others not.[938] For example, de Pierpont himself often linked non-compliance to a lack of authority among European-appointed African 'chiefs' supposed to ensure indigenous cooperation with colonial policies, or to active opposition to christian influences from traditional authority figures, including local healers.[939] The unfamiliarity and unpleasantness of the medical practices involved naturally also contributed to evasions. Local populations might not have identified early-stage human trypanosomiasis, with its multiplicity of possible symptoms, as sleeping sickness or even as a single disease, and held very different ideas about disease

[933] See for example, L. White, '"They Could Make Their Victims Dull": Genres and Genres, Fantasies and Cures in Colonial Southern Uganda', *American Historical Review* 100 (1995), 1394-1395; M. H. Dawson, 'The 1920s Anti-Yaws Campaigns and Colonial Medical Policy in Kenya', *International Journal of African Historical Studies* 20 (1987), 417-435.

[934] Lyons, *Colonial Disease*, pp. 183, 195; L. Monnais and N. Tousignant, 'The Colonial Life of Pharmaceuticals: Accessibility to Health Care, Consumption of Medicines and Medical Pluralism in French Vietnam, 1905-1945', *Journal of Vietnamese Studies* 1 (2006), 145.

[935] 'Mission du Kwango. Journal de Voyage du Père Ivan de Pierpont, S. J.', 7.7.-10.8.1915, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 1, p. 2.

[936] 'Mission du Kwango. Journal de Voyage du Père Ivan de Pierpont, S. J.', 7.7.-10.8.1915, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 1, p. 6; I. de Pierpont to Governor General, 16.7.1917, 'Rapport sur le travail fourni au Lazaret de la mission pendant le premier semestre 1917', MAEAA, Hygiène, 4406.332.

[937] I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, p. 5.

[938] Lyons, *Colonial Disease*, p. 185.

[939] 'Mission du Kwango. Journal de Voyage du Père Ivan de Pierpont, S. J.', 7.7.-10.8.1915, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 1, p. 6; I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, pp. 4, 10, 12. According to de Pierpont, some Africans feared reprisals from 'féticheurs' if they came for medical exams or treatment.

causation and appropriate therapies.[940] According to some Jesuits, there was a stigma attached to sleeping sickness that Africans sought to avoid at all costs by resisting medical exams.[941] Moreover, as Lyons has argued, there was a widespread fear among the Congo's peoples of the invasive procedures used by Europeans, notably the painful extraction of bodily fluids via punctures for diagnostic purposes. This was often expressed in the form of 'rumours', as de Pierpont also noted, about needles spreading sleeping sickness and causing death.[942] In addition, the fact that Atoxyl injections did not produce quick and clearly visible results, and often even proved toxic, must have left many local inhabitants unimpressed and fearful.[943] And even those patients who did let themselves be injected, did not necessarily easily persist with treatment. A Jesuit missionary in Yungu St. Ernest observed, for example, that it was perhaps possible to persuade a trypanosome-infected individual to seek treatment at 'moments of crisis', but much more difficult to have him 'continue a treatment that appear(ed) particularly disagreeable to him, and the salutary powers of which (didn't) seem immediately tangible to him'.[944]

It seems that on his tours de Pierpont focused prophylactic sleeping sickness treatment on 'indigènes de bonne volonté'.[945] Imposing unpopular biomedical procedures on reluctant villagers would do little to win them over and lure them away from indigenous healers' influence. As far as mechanical prophylaxis was concerned, however, de Pierpont appeared to shy away much less from insisting on measures which he knew were unpopular among Kikwit's populace. He reasoned that 'the doctor cannot let himself be stopped by the idea that his patient will cry'.[946] Improving sanitation, relocating and re-grouping indigenous communities amounted to social engineering in the name of hygiene, which was of course much more immediately compatible with his civilising aims. To potential objections that re-siting villages disrupted indigenous

[940] Lyons, *Colonial Disease*, pp. 166-168, 180-190.

[941] F. Allard to District Commissioner of Kwango, 13.2.1913, 'Rapport sur l'état sanitaire des populations habitant la régions voisine de Yungu St Ernest', MAEAA, GG, 19645 (GG); Vanderyst, 'Renouvellement et le relèvement de la population de Kisantu', 50.

[942] I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, pp. 6, 7, 8; Y. de Pierpont to doctor, 24.11.1915, MAEAA, GG, 16793 (Congo-Kasai, Kikwit); Lyons, *Colonial Disease*, pp. 188-189. On the 'genre' of rumours as African 'commentaries' on the unequal power relations of biomedicine rather than manifestations of ignorance, see P. W. Geissler and R. Pool, 'Popular concerns about medical research projects in Sub-Saharan Africa - a critical voice in debates about research ethics', *Tropical Medicine and International Health* 11 (2006), 975-982.

[943] Lyons, *Colonial Disease*, pp. 197-198.

[944] F. Allard to District Commissioner of Kwango, 13.2.1913, 'Rapport sur l'état sanitaire des populations habitant la régions voisine de Yungu St Ernest', MAEAA, GG, 19645 (GG).

[945] I de Pierpont to Governor General, 16.7.1917, 'Rapport sur le travail fourni au Lazaret de la mission pendant le premier semestre 1917', MAEAA, Hygiène, 4406.332.

[946] Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG).

lifestyles, de Pierpont replied: 'if one wants to observe all indigenous customs, one should renounce civilising, because many (...) are the antipode of all civilisation'.[947]

But de Pierpont did and could not directly use force to get local villagers to observe sleeping sickness prescriptions. Instead, the missionary sought to position himself as an 'intermediary' between the colonial state and its African subjects to ensure compliance with public health regulations and at the same time secure the mission's influence in the area.[948] For example, when Kikwit's administrator wanted to implement mechanical prophylaxis in the territory, de Pierpont, capitalising on indigenous fears of state violence, offered to help re-site and sanitise the villages that preferred not to have a state agent do it 'manu militari'.[949] The administrator, who was short on staff to enforce all brush clearing and relocating, naturally agreed that the Jesuit could oversee the sanitation work in the mission's sphere of action.[950] Another indication of de Pierpont's mediating role is that he got to screen people for sleeping sickness because they wanted a medical passport in case the state asked them for it.[951]

De Pierpont's comfortable relationship with the state and its agents continued when Kwango's district doctor arrived in Kikwit territory in March 1918. The administration had been much alarmed about the sleeping sickness situation in the district, a state of affairs to which the missionary's reports to the government in no small measure contributed. The colony's own annual medical report for 1917 counted the Kwilu basin and Kikwit among the regions 'particularly affected by trypanosomiasis'.[952] As de Pierpont himself conceded, his means were 'modest' and so was his action radius; he was therefore happy to see the district's doctor operate in Kikwit territory.[953] He had even sent 'directives' to guide Dr Seegers' 'mission' to assess and fight sleeping sickness in the region.[954] Both ended up working in the same area in a rather complementary and indeed cooperative manner. For example, Seegers and the territorial agent who accompanied him often left de Pierpont to screen and administer trypanocidal treatment in the villages they had 'arrange(d)', i.e. re-sited and brush cleared. Moreover,

[947] Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG).

[948] I. de Pierpont, 'Second journal du Père Ivan de Pierpont S. J., Missionnaire au Congo Belge', 12.1919, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 3, p. 5.

[949] Y. de Pierpont to Governor General, 15.11.1917, 'Rapport médical sur le travail fourni à la Mission de Kikwit durant le second semestre de 1917', MAEAA, GG, 16844 (GG).

[950] I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, pp. 18-19.

[951] I. de Pierpont, 'Mission du Sacré-Coeur de Jésus', 10.12.1918, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 2, pp. 20-21; I. de Pierpont, 'Second journal du Père Ivan de Pierpont S. J., Missionnaire au Congo Belge', 12.1919, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 3, p. 12.

[952] 'Rapport annuel 1917. Service de l'Hygiène', s.d., MAEAA, RA-CB, 81.6.

[953] Y. de Pierpont to Governor General, 28.4.1918, MAEAA, Hygiène, 4408.335.

[954] District Commissioner to District Doctor, 11.3.1918, MAEAA, Hygiène, 4406.332.

de Pierpont benefited from the pair's sometimes heavy-handed approach (they had been authorised to destroy the homes of those unwilling to relocate): he received indigenous requests to re-arrange and screen villages where he had previously never been admitted.[955]

Seegers' six-week stay in Kikwit, however, did little to dispel the fears about trypanosomiasis in Kwango. In fact, reporting high levels of mortality, the district doctor shared much of de Pierpont's pessimism. The problem was compounded, he felt, by an indigenous population that was beyond 'persuasion' and hence did not willingly comply with sleeping sickness policy. He estimated that 'energetic measures' by the government were indicated to prepare the ground for medical work, which itself required regular visits by a doctor or 'agent sanitaire'.[956] Shortly after Seegers had made his recommendations known to the district commissioner, the veteran sleeping sickness doctor Jacques Schwetz was called to Kwango. In Bandundu he learned that the Governor General was appointing him to direct the campaign against human trypanosomiasis in Kwilu and Kikwit. The Russian-born doctor accepted, albeit reluctantly, as he was about to go on furlough and did not feel up to what he felt would be a long and arduous task.[957]

9.2 Proposals for an official special mission

Being unfamiliar with the region, Schwetz's first feat was an exploratory tour of the Moyen-Kwilu basin that took place between October 1918 and January 1919.[958] The result of his inspection was a very critical assessment of the sleeping sickness situation and the (Jesuit-dominated) attempts at controlling the disease in Kwilu so far. The veteran state doctor considered sleeping sickness prophylaxis in Kwango a failure, for which he held its 'sporadic' nature and focus on measures that were not feasible locally (such as brush

[955] Y. de Pierpont to Governor General, 28.4.1918, MAEAA, Hygiène, 4408.335; Y. de Pierpont to Governor General, 28.4.1918, MAEAA, GG, 16795 (Congo-Kasai); Dr Seegers to District Commissioner in Bandundu, 15.5.1918, 'Rapport médical sur la mission accomplie du 12 mars 1918 au 20 avril 1918 en région Sud de Kikwit pour la lutte contre la maladie du sommeil', MAEAA, GG, 15150 (Congo-Kasai, Kikwit); District Commissioner to District Doctor, 11.3.1918, MAEAA, Hygiène, 4406.332.

[956] Dr Seegers to District Commissioner in Bandundu, 15.5.1918, 'Rapport médical sur la mission accomplie du 12 mars 1918 au 20 avril 1918 en région Sud de Kikwit pour la lutte contre la maladie du sommeil', MAEAA, GG, 15150 (Congo-Kasai, Kikwit).

[957] J. Schwetz, Report on the sleeping sickness situation in Kwilu, 25.5.1919, MAEAA, GG, 16795 (Congo-Kasai); J. Schwetz, 'La maladie du sommeil dans le Moyen Kwilu (District du Kwango, Congo belge), en 1918', 11.1919, MAEAA, GG, 15712 (GG); J. Schwetz to District Commissioner, 6.9.1918, MAEAA, Hygiène, 4406.332.

[958] J. Schwetz to District Commissioner, 6.9.1918, MAEAA, Hygiène, 4406.332; J. Schwetz, 'La maladie du sommeil dans le Moyen Kwilu (District du Kwango, Congo belge), en 1918', 11.1919, MAEAA, GG, 15712 (GG).

clearing) responsible.[959] To a significant extent, Schwetz argued, the colonial administration was to blame: its scant presence in the Kwango district prevented serious trypanosomiasis control.[960] Yet he reserved his most stinging criticisms for de Pierpont. The Jesuit's medical incompetence, Schwetz believed, led to errors and misguided strategies, and precluded any systematic, methodical work. Being a missionary, he confined himself to treating infected individuals within the Catholic orbit, or wherever his 'tournée(s) d'évangélisation' happened to lead him. Moreover, as he gave instructions to the district doctor rather than the other way around, de Pierpont clearly had too much power in Schwetz's view.[961] In short, the latter decried that sleeping sickness control in Kwilu was in the hands of 'amateurs or auxiliaries' rather than medical experts.[962]

What Schwetz proposed as an alternative was a 'commission of doctors and Congolese nurses' that would focus exclusively on instituting 'systematic and regular ambulatory treatment' in the Kwilu basin. He felt that sending a medical mission to comprehensively screen and treat a specified target area for sleeping sickness was the least unrealistic out of all prophylactic strategies.[963] The mission was to be directed by an experienced medical professional and evaluated after two years. Crucially, it had to be an official body, so that it would have state authority and could 'direct and coordinate' assistance from private medical providers such as missionaries and company doctors.[964] Autonomy was another important requirement. The special mission would need the territorial service's cooperation to execute its program of pharmaceutical disease control, but had to be able to operate independently from local authorities. Moreover, Schwetz sought independence from the Congo's chief medical officer so as to avoid mission members being bombarded with 'contradictory orders' or summoned to perform other tasks.[965]

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[959] J. Schwetz, *Rapport sur les travaux de la mission médicale*, p. 12; J. Schwetz, Report on the sleeping sickness situation in Kwilu, 25.5.1919, MAEAA, GG, 16795 (Congo-Kasai); J. Schwetz, 'La maladie du sommeil dans le Moyen Kwilu (District du Kwango, Congo belge), en 1918', 11.1919, MAEAA, GG, 15712 (GG).

[960] J. Schwetz, Report on the sleeping sickness situation in Kwilu, 25.5.1919, MAEAA, GG, 16795 (Congo-Kasai).

[961] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 12; J. Schwetz, 'La maladie du sommeil dans le Moyen Kwilu (District du Kwango, Congo belge), en 1918', 11.1919, MAEAA, GG, 15712 (GG); J. Schwetz, Report on the sleeping sickness situation in Kwilu, 25.5.1919, MAEAA, GG, 16795 (Congo-Kasai).

[962] J. Schwetz to District Commissioner, 18.2.1919, MAEAA, Hygiène, 4406.332.

[963] J. Schwetz, 'La maladie du sommeil dans le Moyen Kwilu (District du Kwango, Congo belge), en 1918', 11.1919, MAEAA, GG, 15712 (GG); J. Schwetz, Report on the sleeping sickness situation in Kwilu, 25.5.1919, MAEAA, GG, 16795 (Congo-Kasai).

[964] J. Schwetz, 'La maladie du sommeil dans le Moyen Kwilu (District du Kwango, Congo belge), en 1918', 11.1919, MAEAA, GG, 15712 (GG); J. Schwetz, Report on the sleeping sickness situation in Kwilu, 25.5.1919, MAEAA, GG, 16795 (Congo-Kasai).

[965] J. Schwetz, Report on the sleeping sickness situation in Kwilu, 25.5.1919, MAEAA, GG, 16795 (Congo-Kasai); J. Schwetz to District Commissioner, 18.2.1919, MAEAA, Hygiène, 4406.332.

The colonial medical department in Brussels approved the proposals for an autonomous special mission in Kwilu, the annual cost of which was estimated at 200.000 francs, on the grounds that it fit in well with the department's own plans for trypanosomiasis control in the colony.[966] However, while the start of the mission was delayed until staff and funds became available, sleeping sickness prophylaxis resumed its usual course in Kwilu. The completion of Schwetz's prospecting tour in the region had marked an end to his third term in the Congo.[967] This left room for de Pierpont to continue his prophylactic activities in Kikwit with the support of the local government. Accompanied by his 'sanitary brigades' and African medical auxiliaries, armed with Atoxyl/Soamin and tartar emetic, and with the help of a territorial agent, the Jesuit missionary carried on touring, brush clearing and injecting trypanosome carriers in 1919. He had even been authorised, in the absence of a state doctor, to decide on the re-siting of badly situated villages.[968] His medical work was seen by the vice-Governor General as an example of what could be achieved by government-subsidised missionaries.[969]

By the end of 1919, however, the situation in Kikwit was about to change as the Minister of Colonies Louis Franck appointed a medical mission to Kwilu under the directorship of Schwetz. The latter had not intended to take on this role - he wanted to go elsewhere and do 'another sort of work' for his fourth term - , but he was granted significant support and powers to implement the public health program of his design.[970] The newly appointed director was promised two colleagues familiar with the Kwango district, the doctors David and Seegers, as well as three 'agents sanitaires' and twenty-three African nurses and auxiliaries. Funds would be put at the mission's disposal by the local authorities as needed. Territorial service staff were expected to help mission members in their travels and dealings with the 'natives' and see to the execution of the preventive measures prescribed, while Schwetz retained the freedom to organise prophylaxis in Kwango as he saw fit.[971]

[966] E. Van Campenhout, 'Prophylaxie de la maladie du sommeil au Kwilu. Rapport du Dr Schwetz', 10.6.1919, MAEAA, Hygiène, 4406.332.

[967] J. Schwetz, Autobiographical note, 7.1950, ITG, FD7.

[968] I. de Pierpont, 'Second journal du Père Ivan de Pierpont S. J. Missionnaire au Congo Belge', 12.1919, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 3, pp. 2-3; Y. de Pierpont to Governor General, 23.11.1919, MAEAA, GG, 16795 (Congo-Kasai).

[969] Vice-Governor General to Governor General, 11.1.1920, MAEAA, GG, 16844 (GG).

[970] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

[971] Minister of Colonies Louis Franck to Governor General, 9.12.1919, MAEAA, GG, 16795 (Congo-Kasai).

9.3 Many obstacles to comprehensive screening and treatment

In February 1920, Schwetz arrived in Kikwit territory from Leopoldville with three (prospective) male African nurses and a plan of action for comprehensive sleeping sickness screening and treatment in Kwilu. He had chosen the state post of Kikwit as the centre of the medical mission because of the sleeping sickness problem in the area, but also because it was the end point of the navigable part of the Kwilu river and the only post with appropriate buildings.[972] The plan was to simultaneously start work in the Kikwit, Bulungu and Niadi/Kandale territories, with a doctor, an 'agent sanitaire' and a group of African nurses assigned to each. Doctors were to screen indigenous villages, draw up a list of sleeping sickness cases and initiate drug treatment. Nurses would then complete the course of treatment that consisted of ten injections in total (administered at a rate of one injection every ten days) and was conceived as at once curative and prophylactic. The sanitary agents had to visit the same villages and with the patient lists in hand check up on, and where necessary complement, the nurses' work. Once the trypanosome carriers of a region had received a series of ten injections, doctors were to re-examine it to assess the prophylactic and curative effects of the first course of treatment (i.e. establish the proportion of new cases and the condition of those who had received treatment), and start injecting old and newly detected cases.[973]

The diagnostic and therapeutic procedures adopted by Schwetz were adapted as much as possible to local realities and circumstances. Treatment was to be based on intramuscular or intravenous injections with Soamin or Atoxyl, in doses of 1g for adults and 0,5 for children. It did not include tartar emetic because its difficult posology made it dangerous in the hands of African nurses in Schwetz's view. Schwetz also encouraged his staff to experiment with simplified treatment schemes, such as orally administered Atoxyl, if they found the time. People in the advanced, 'sleeping' stage of the disease were not treated for the time being, because it was felt that this was not 'opportune'.[974] Chances of obtaining a cure in advanced cases were slim, and if they died despite receiving treatment this would not boost indigenous confidence in trypanocidal treatment.

[972] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

[973] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 10-11; J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[974] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 10-11; J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

Indigenous sensitivities and local circumstances also played a role in Schwetz's choice of diagnostic methods. Case detection in the Schwetz mission was to based on a simple clinical rather than a more complex microscopic diagnosis, i.e. on palpation of the cervical lymph nodes rather than on searching trypanosomes in blood and lymph juice samples. Those with swollen nodes would receive treatment. In this way, the population to be screened would not have to be punctured, which Schwetz found more convenient, as he had noticed an indigenous aversion to needles - although he apparently saw less problems with therapeutic injections.[975] Moreover, in the context of mass screening and treatment by mobile teams in Kwilu's rural interior, Schwetz found the simple method of palpation more practical and 'expeditious'. He admitted that it was less 'scientific' than the microscopic exam of blood an lymph juice, and that there was a risk that non-infected individuals would be wrongly identified as sleeping sickness cases (and thus receive drug treatment). But given the practical rather than scientific character of the mission, the requirements of comprehensive screening and treatment, and the urgency of sleeping sickness control in Kwilu, he thought it less dangerous to treat a few non-infected people than to overlook infected people.[976]

While waiting for additional medical staff, trypanocides (Atoxyl) and syringes to arrive in Kikwit, Schwetz decided to focus on preparatory work for the mission. Together with doctor David, he started touring the area to examine the population, but the work did not go as smoothly as hoped.[977] Schwetz was surprised that de Pierpont's sleeping sickness work had received so much praise from the administration: after examining the villages where the missionary had been active, Schwetz concluded that the sleeping sickness problem in Kikwit was worse than the latter had suggested in his latest reports. De Pierpont had not worked systematically but confounded 'evangelisation' with 'la politique indigène' and medicine, according to Schwetz.[978] Moreover, the many empty villages encountered on their tour signalled that the local population had a habit of fleeing despite advance warnings that the doctors simple came to see them and not to ask for 'prestations', as they had probably come to expect from state agents. It prevented Schwetz and David from proceeding with medical screening,

[975] J. Schwetz, 'A propos du diagnostic le plus expéditif de la maladie du sommeil dans la pratique ambulatoire de la brousse', 11.1919, MAEAA, Hygiène, 4403.301.

[976] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 5-6. The exigencies of collective medicine in rural areas made a simple reliance on gland palpation acceptable in Schwetz's view, as he argued 'la besogne de la brousse est rarement scientifique'. See J. Schwetz, 'A propos du diagnostic le plus expéditif de la maladie du sommeil dans la pratique ambulatoire de la brousse', 11.1919, MAEAA, Hygiène, 4403.301.

[977] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

[978] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

and suggested to the medical mission's director that much of Kikwit territory still awaited 'occupation' by the territorial service.[979]

With the arrival of a dozen certified and prospective nurses, and two sanitary agents to assist Schwetz, David and Seegers, the mission finally took off. Soon enough, however, more and new difficulties emerged. The 'rudimentary occupation' of Kwilu continued to hamper screening and treatment, in that it was difficult to get the 'natives' to present themselves. In addition, Schwetz was not impressed with the quantity and quality of African nurses that had been sent to him. A lack of medical schools made it difficult to train and recruit sufficient numbers of African medical auxiliaries, especially for AMI work in rural areas. Moreover, many of the mission's nurses were unsuitable, according to Schwetz, for example because they were used to the comforts of larger urban centres and thus hated the itinerant life of the mission, or because they disdained and were harsh to the local population.[980] Some of the European staff disappointed him as well, because the work turned out to be rather incompatible with married life. Dr Seegers, for example, prematurely quit the mission for that reason.[981] Schwetz also concluded that not much help was to be expected from the private sector either: de Pierpont did not want to work under the medical mission's direction, he claimed, so in order to avoid conflicts a deal was made stipulating that the treatment of a number of villages near Kikwit would be 'reserved' for the missionary. The HCB had a lazaret in Leverville where some fifty to a hundred sleeping sickness victims were in treatment, but this was insignificant in light of the thousands of cases in the area. And there was no ambulatory doctor to tour interior villages and riverine posts.[982]

A major setback for the mission identified by Schwetz were the problems with the supply of quality trypanocidal drugs. The mission had been supplied with 80kg of Atoxyl manufactured by the Meurice company, but injections with the drug appeared to give rise to some serious side-effects and even a few deaths. This left the mission in disarray, Schwetz claimed, and caused African people to flee. Schwetz blamed the toxicity incidents on the poor quality of the drugs he had been given, and criticised the

[979] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

[980] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai); Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 109-110.

[981] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

[982] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai); J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

government for accepting a product from a non-reputable brand. Despite urgent request however, replacement Atoxyl did not arrive soon.[983]

The obstacles and difficulties encountered during the mission's first months led Schwetz to modify certain aspects of his plan of action. First of all, he decided to in the first instance restrict the medical mission's activities to Kikwit territory. Once the first injection series was completed, the mission could then gradually expand into neighbouring territories, like an 'oil stain'.[984] Focusing on comprehensive screening and treatment in a compact area was more viable and better than trying to target a few isolated 'islands' at once. The territory was divided into different spheres of action that were assigned to the three remaining European staff, doctor David and two 'agents sanitaires', while Schwetz himself often remained in the state post of Kikwit to manage the medical mission's administration.[985] While waiting for new supplies of Atoxyl - which did not arrive until January 1921 -, the use of the incriminated batch of Meurice-manufactured drugs was resumed, but the solution and posology were altered so as to render the drugs less dangerous (although this in turn prolonged the course of treatment).[986] To administer injections, the mission relied more on its European staff members as well as on locally recruited and trained African injectors than on certified nurses from Boma or Leopoldville.[987] According to Schwetz, Africans quickly mastered injection techniques. He felt that local injectors were better suited to 'brousse' practice, which required independent work in indigenous villages, than nurses, who were used to working in hospitals and laboratories under permanent European supervision. Local injectors would inspire more trust in Kikwit's population, Schwetz believed: they showed less contempt for the local communities from whence they originated themselves, and being 'less civilised', they would be less exacting and less likely to 'act as conquerors in the villages' than the nurses from Boma or Leopoldville. Suitable pupils could be recruited among local youngsters with basic literacy skills. Perhaps not surprisingly, Schwetz found candidates among the people in the missionaries' sphere of influence, especially orphans and 'liberated slaves'.[988]

[983] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

[984] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai); Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 49.

[985] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai); Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 11; J. Schwetz, 'Compte-rendu succinct des travaux de la mission médicale du Kwango Kasai en 1920-1923', *Revista Médica dé Angola* 4 (1923), 152.

[986] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai).

[987] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 11.

[988] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai); Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 109-110.

Another important modification was that given the lack of 'occupation' and proper administrative organisation of Kikwit territory, the medical mission became a 'mixed', 'medical-administrative' mission. Its members' became involved in preliminary administrative work without which they could not proceed with medical screening and treatment, such as grouping dispersed hamlets together, drawing up maps, and conducting population censuses. For this work, and for ensuring compliance with mandatory sleeping sickness treatment, the mission members closely collaborated with Kikwit's territorial administrator Marcel François and his assistant Mr. Téchy, who at the mission's request went to give a 'coup de main' where necessary. As Schwetz observed, 'his tour more closely resembled that of a small conqueror-warrior than that of a doctor'.[989]

Despite modifications to Schwetz's plan of action in an attempt to better cope with the realities of medicinal prophylaxis in Moyen-Kwilu, progress during the mission's first year was not as smooth as Schwetz had anticipated. Finishing the first series of ten injections in Kikwit territory alone took much longer than the expected six months, and this in turn delayed the mission's expansion into the neighbouring territories of Bulungu and Kandale until the spring of 1921.[990] It also completely thwarted plans to spill pharmaceutical sleeping sickness control over to the Kasai district as well, something that was deemed important in light of the district's close economic links with the commercial hub of Kikwit.[991]

The explanations offered by mission staff for these delays sounded rather familiar. Schwetz and his team had to work in difficult terrain, characterised by a very rudimentary road network and a general lack of 'occupation' and administrative 'organisation'. Kikwit territory, for example, was considered particularly 'backward' in this respect: there were few 'chefferies', no true villages, and mostly extremely scattered 'hamlets' the size of small 'family units'. Large parts were only exposed to the colonial state during its annual, swift tax collection tours.[992] The situation in Bulungu was somewhat better, but the Lutshima river area in Kandale once again presented significant challenges in the form of a hostile, 'insoumis' population.[993]

On top of the obstacles associated with the terrain came what Schwetz labelled an ever more pressing 'atoxyl-syringe crisis'. Reserves were low, and by the end of 1920 mission members reported having almost completely run out of trypanocides and

[989] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 1-2; J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[990] J. Schwetz, 'Extrait du rapport de la mission médicale antitrypanosomique du Kwilu-Kwango, 1920-1921', *Annales de la Société Belge de Médecine Tropicale* 1 (1921), 341; Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 49, 61.

[991] Schwetz, 'Extrait du rapport de la mission médicale', 365; J. Schwetz, 'Note pour Monsieur le Médecin en Chef (réponse à la note du 15 avril 1921)', 17.4.1921, MAEAA, Hygiène, 4406.333.

[992] Schwetz, 'Extrait du rapport de la mission médicale', 342, 358.

[993] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 50, 61.

syringes. With a new shipment of Atoxyl, Soamin and injection equipment only arriving in January 1921, the Schwetz mission had almost been forced to interrupt its activities for want of medical supplies.[994]

Problems regarding the quantity and quality of medical staff continued to be another major issue. First of all, the mission suffered a shortage of European medical personnel. With the departure of doctor Seegers, only four European team members remained in July 1920, and it was only by the end of 1921 that the projected numbers of three doctors and three sanitary agents were complete.[995] Newly arriving staff, moreover, could not immediately be deployed, but - for the sake of uniformity - had to familiarise themselves first with the mission's particular diagnostic and therapeutic procedures.[996] In addition, doctors and sanitary agents claimed having to spend much time making up for the inadequacy of African injectors. Despite earlier expectations, and although locally recruited auxiliaries were apparently skilled at administering trypanocides, Schwetz and David argued that, just like the certified nurses, they lacked integrity and required constant supervision.[997] Schwetz reportedly even handed over some individuals to the judicial authorities because of their 'méfaits', 'exactions' and 'agissements' in indigenous communities.[998] According to David, African nurses and injectors could not really be trusted with the local indigenous population. He noted, for example, how they accepted gifts from sleeping sickness victims who wanted to 'avoid the needle', thus jeopardising the regular course of treatment.[999] Tellingly, in a 'vademecum' that outlined the expected standards of behaviour for African medical auxiliaries, David included the stipulations that the latter had to be caring towards their patients and trustworthy, and could not ask them for payment or sell medicines.[1000] Schwetz explained African misbehaviour as the result of a propensity to 'abuse' the authority they had been given.[1001] It seems that injectors at least sometimes used the drugs and syringes that came with the job for their own purposes, including as an instrument of power.

In these circumstances, and despite his ambitions of a comprehensive approach, Schwetz had to admit that it was 'totally utopian' to expect to screen the whole indigenous population in the targeted areas and administer a complete and regular course of treatment to all individuals found infected. Medicinal prophylaxis by mobile

[994] J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[995] J. Schwetz, 'Rapport sur les travaux préliminaires et préparatoires de la Mission médicale du Kwilu', 7.1920, MAEAA, GG, 16795 (Congo-Kasai); Schwetz, 'Compte-rendu succinct des travaux de la mission médicale', 151.

[996] Dr Hector De Wolf, 'Rapport sur le traitement des malades de sommeil à l'Ouest du Bas-Kwengo', 2.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[997] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 111-112; Schwetz, 'Extrait du rapport de la mission médicale', 342, 360.

[998] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 111.

[999] Schwetz, 'Extrait du rapport de la mission médicale', 360-361.

[1000] J. David, *Vade-mecum à l'usage des infirmiers et des assistants médicaux indigènes* (Bruxelles, 1922), pp. 7-9.

[1001] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 110.

medical teams, although reaching significantly greater numbers of people than before, clearly had its limits, and the 'consumers' of trypanocides also played a role in that. Indigenous non-compliance, however, was not confined to the hardly occupied areas, where African 'nonchalance' and the absence of authoritative 'chefs' accounted for people's absence from medical exams and injections sessions (cf. the empty villages) in the European mission members' view.[1002] This sort of 'collective' non-compliance, David argued, simply required 'European tenacity' to make clear that there was no point in trying to escape the unavoidable.[1003] Non-compliance (termed 'la mauvaise volonté indigène') also occurred in areas that were considered more 'civilis(ed)' and where people had been 'submitted', they reported, albeit on a more 'individual' scale, in a greater variety of forms and in less transparent ways.[1004]

Some people tried to escape the administrative aspects of the mission, i.e. the population census, because this listing of African subjects was used for tax collection purposes. According to David, others wanted to hide their slaves from state agents who might wish to liberate them.[1005] Kwango's inhabitants also actively avoided the mission's medical activities. Schwetz stated that many 'natives' did not understand the 'humanitarian goal' of his mission.[1006] This might be because, as David claimed, they did not recognise the early stage of sleeping sickness, so often refused to believe they were ill during this phase.[1007] Perhaps avoiding medical exams was a way of avoiding what was perceived as being wrongfully labelled a diseased person, and the consequences such a label carried. Mission members also reported Africans fearing or rejecting injections with trypanocidal drugs. This was attributed to indigenous 'superstition' or the painfulness of the procedure, but also to the occurrence of serious side-effects and occasionally even death, in other words, drug toxicity.[1008] Others were more accepting of trypanocides, but in a rather selective way. For example, mission staff reported how some sleeping sickness victims decided that three injections were enough and 'categorically refuse(d)' further injections.[1009] It seems that they had other expectations of biomedical drugs and different ideas about what constituted a cure. In his guidelines for African medical auxiliaries, David insisted that they warn trypanosome carriers that treatment would take a long time and require repeated medical exams, even if they

[1002] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 13-14.

[1003] Schwetz, 'Extrait du rapport de la mission médicale', 361.

[1004] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 13-14; Schwetz, 'Extrait du rapport de la mission médicale', 361.

[1005] Schwetz, 'Extrait du rapport de la mission médicale', 361.

[1006] J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[1007] David, *Vade-mecum à l'usage des infirmiers*, p. 181.

[1008] Schwetz, 'Extrait du rapport de la mission médicale', 361; Dr Hector De Wolf, 'Rapport sur le traitement des malades de sommeil à l'Ouest du Bas-Kwengo', 2.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[1009] J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

thought they were cured.[1010] Acceptance could also depend on the drug provider. The sanitary agent Bauman, for example, observed that locals in the Lutshima basin refused treatment from the African 'infirmier' he had left behind, meaning that he had to return there to oversee the injection sessions. David noted a similar refusal of treatment by African auxiliaries.[1011] This sort of response was possibly linked to the type of behaviour - the use of trypanocides to make demands on local communities - ascribed to nurses and injectors by European mission members.

Besides active avoidance strategies, local inhabitants were sometimes involuntarily non-compliant.[1012] For example, attributing absences during injections sessions to conflicts between different indigenous communities, the existence of slavery or the kidnapping of women, Baumann seemed to suggest that local social relations and power structures sometimes contravened medicinal prophylaxis without necessarily involving a deliberate act of indigenous resistance to the medical mission.[1013] However, it was the private sector, whose interests were not always compatible with the requirements of mass screening and treatment, that was seen as an especially disruptive factor.[1014] Schwetz complained that 'everyone approve(d) the fight against sleeping sickness, but on the condition that it (did) not, not even temporarily, harm his particular interests'.[1015] In his view, the presence of commercial enterprises like the HCB and Catholic (i.e. Jesuit) missionaries in particular constituted an obstacle to mass treatment in Moyen-Kwilu. Under their influence, Schwetz argued, 'capitas-acheteurs', charged with buying oil palm fruits, and catechists in indigenous villages ignored orders from state agents and overruled the 'chefs' appointed by the colonial administration. They made inhabitants miss sleeping sickness sessions by recruiting them for porterage and the oil palm trade, or sending them to a Catholic mission post respectively.[1016] Doctor De Wolf confirmed that he had difficulties treating trypanosome carriers working for the HCB west of the lower Kwenge river because they were constantly on the move.[1017] In sum, the Schwetz

[1010] David, *Vade-mecum à l'usage des infirmiers*, p. 183.

[1011] Agent sanitaire Baumann, 'Rapport sur la lutte contre la maladie du sommeil dans la région de la Lutshima (territoire de Kikwit)', 1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[1012] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 13.

[1013] Agent sanitaire Baumann, 'Rapport sur la lutte contre la maladie du sommeil dans la région de la Lutshima (territoire de Kikwit)', 1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[1014] Schwetz added that the obstacles in Kwilu were not down to the territorial service, as Téchy, François and district commissioner Sörensen did everything they could to help the mission. J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[1015] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 14.

[1016] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 14, 20; J. Schwetz, 'Rapport sur les travaux de la mission médicale antitrypanosomique du Kwilu-Kwango, en 1920 (février 1920-février 1921)', 10.3.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[1017] Dr Hector De Wolf, 'Rapport sur le traitement des malades de sommeil à l'Ouest du Bas-Kwengo', 2.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

mission members felt that companies and missionaries were not only of little assistance in, but also obstructed, the mass treatment campaign.

9.4 Contested powers

Despite Schwetz's criticisms, the HCB itself seemed rather favourably disposed towards the special governmental mission, and in particular appreciated its 'administrative' work and considerable powers. The company's local director, for example, personally thanked Schwetz for his 'excellent work' in HCB's important Lusanga concession in the Kwango territorial district. He particularly appreciated the medical mission's efforts to get a dispersed indigenous population under control, as it facilitated labour recruitment: 'the native, grouped and subjected, has started work'.[1018] Since 1918, the HCB had begun organising a medical service for its European and African staff, comprising a principal doctor in Kinshasa and medical staff in its concession territories in the Congo basin.[1019] Although the service suffered from serious shortages of medical personnel, it employed an itinerant doctor between May 1920 and May 1921 to take up medicinal prophylaxis in Lusanga. In agreement with Schwetz, HCB's medical officer Neville Williams visited villages on the right bank of the river Kwilu. Both agreed, however, that the results of this work were not great. Williams had found it difficult to deal with indigenous people who lived in scattered settlements and opposed treatment. Moreover, he was unsure about what 'power' or 'legal authority' he had to enforce sleeping sickness screening and treatment, a task that was difficult enough for the Schwetz mission, which could even count on 'soldiers and considerable power'.[1020] Not surprisingly perhaps, the HCB, which for economic reasons was unwilling to increase medical staff in Kwilu anyway, seemed rather happy to leave sleeping sickness control in its Kwango concession as much as possible to the Schwetz mission.[1021]

Initially, during Schwetz's exploratory tour, de Pierpont had also seemed to accept the state doctor's criticisms. The missionary agreed that his reports had painted too rosy a picture of the situation in Kikwit, and admitted that his lack of medical and entomological knowledge had caused him to make mistakes in his prophylactic activities. Just like Neville Williams, de Pierpont invoked his own lack of coercive powers

[1018] Director General of S.A. des Huileries du Congo Belge (Lusanga area) to J. Schwetz, 3.1.1921, MAEAA, Hygiène, 4406.333.

[1019] H. Seidelin, 'Une année de fonctionnement d'un service médical au Congo', *Annales de la Société Belge de Médecine Tropicale* 6 (1926), 57-58.

[1020] Dr Neville Williams, 'Summary report of sleeping sickness work. May 1920-May 1921', 3.6.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[1021] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 50.

to account for some of the shortcomings of his sleeping sickness work. He argued that 'as a private person, (he) lack(ed) the right to force the natives to group together and depend(ed) on their goodwill'.[1022]

However, as the Schwetz mission in 1920 decided to focus on Kikwit territory and increasingly encroached on the Jesuit's sphere of influence, the relationship quickly turned sour. de Pierpont was under the impression that Schwetz wanted to restrict the scope of his medical actions as much as possible.[1023] Moreover, during the medical mission's first year a series of incidents occurred that saw Congolese people within the Catholic orbit being charged with, arrested and detained for failing to comply with sleeping sickness legislation and its requirements of compulsory screening and trypanocide treatment.[1024] It resulted in de Pierpont filing complaints against Schwetz and territorial administrator François for violence against and arbitrary arrests of catechists and school children.[1025] What he considered as the continual 'pestering' by Schwetz and the local administration also led de Pierpont to stop his efforts at medicinal prophylaxis in indigenous villages and confine himself to sleeping sickness cases coming to the Kikwit Catholic mission for treatment.[1026] Soon enough de Pierpont's Jesuit superiors, seemingly spurred on by Schwetz's reputation as a jewish 'friend of Lenin', a 'protégé of Mr. Vandervelde' (the Belgian socialist minister) and an 'enraged anti-Catholic', looked to raise the issue of his 'abuse of power' with the colonial authorities.[1027]

[1022] Y. de Pierpont to Governor General, 30.11.1918, 'Rapport médical pour la région de Kikwit-2e semestre 1918', MAEAA, GG, 16795 (Congo-Kasai).

[1023] I. de Pierpont, Report on sleeping sickness and J. Schwetz, 23.3.1921, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 04-08.

[1024] The ordinance of 8 July 1920 stipulated that Africans were obliged to present themselves for medical exams when summoned by medical or territorial staff, and undergo treatment if found infected. Moreover, they could be punished if they failed to comply. See 'Ordonnance du 8 Juillet 1920, n°57/7, déterminant les mesures à prendre pour combattre la maladie du sommeil' dans Bulletin administratif et commercial du Congo belge (Boma, 1920), pp. 694-697.

[1025] I. de Pierpont to Monsieur le Substitut du Procureur du Roi de Bandundu, 25.2.1921, MAEAA, GG, 22222 (Léopoldville, Bandundu); Y. de Pierpont, 'Plainte contre Monsieur François Marcel, Administrateur territorial à Kikwit', 1.3.1921, MAEAA, GG, 22222 (Léopoldville, Bandundu); I. de Pierpont, 'Plainte contre Monsieur François Marcel Administrateur Territorial de Kikwit', 1.3.1921, MAEAA, GG, 22222 (Léopoldville, Bandundu).

[1026] I. de Pierpont, Report on sleeping sickness and J. Schwetz, 23.3.1921, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 04-08.

[1027] I. de Pierpont to Préfet Apostolique du Kwango, 12.6.1921, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 09-12; Father Brielman to Father Socius, 17.8.1921, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 17-18; Summary of the Schwetz affair, 3.1.1922, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 20-21.

Faced with these accusations, Schwetz retorted that the problem lay with the Kikwit missionaries, who obstructed his medical mission with their 'independent attitude'.[1028] From the very beginning the state doctor had anticipated, or so he informed the Governor General, that de Pierpont would never 'resign himself to the simple role of collaborator', given his attempts to 'command everything and everyone'.[1029] The only reason why, according to Schwetz, the Jesuit had instigated enquiries into the actions of medical staff and local administrators was that they refused to be his 'instruments' and dance to his tune. Maybe it was time, he suggested, to 'definitively sanitise (...) Kikwit of the unhealthy mentality Father de Pierpont ha(d) introduced'.[1030] By September 1921, however, Schwetz had grown tired of the struggles and accusations in Kikwit, and offered to resign as director of the Kwango medical mission.[1031]

Colonial authorities responded to the conflict in a manner that was broadly supportive of Schwetz and his medical mission. Public prosecutors, for example, eventually dropped the cases against the director and his collaborators. They felt that the whole affair revolved around a 'vulgar personal grudge' in which they wished to play no part. Pursuing de Pierpont's complaints was not in the public interest, and would only fuel animosity between the main protagonists, it was argued.[1032] Leading doctors in the colony found Schwetz's criticisms of de Pierpont - along with his other attacks on the practice and policy of sleeping sickness control in the Congo - not very courteous, and did not entirely agree with his choice of diagnostic and therapeutic procedures.[1033] Nevertheless, chief medical officer Rodhain insisted that the Schwetz mission was accomplishing important work in particularly tough circumstances.[1034]

The Governor General for his part ascribed the difficulties between Schwetz and de Pierpont to a clash of personalities, and the latter's waning influence in the face of a well-resourced, official medical body. He agreed with Rodhain's endorsement and proposed to extend the Schwetz mission eastwards to curb the progression of sleeping sickness into the Kasai district.[1035] When the conflict in Kikwit persisted and Schwetz threatened to resign, however, Governor Lippens, in line with his 'anti-missionaries

[1028] 'Résumé. Dossier Missions. Farde I', MAEAA, Missions, 628.4b.

[1029] Schwetz to Governor General (30.8.1921) in 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b.

[1030] J. Schwetz to Monsieur le Substitut de Kabinda, 17.9.1921, MAEAA, GG, 22244 (Léopoldville, Kwilu, Kikwit).

[1031] J. Schwetz to Governor General, 26.9.1921, MAEAA, Hygiène, 4407.334 (III).

[1032] Procureur du Roi to Monsieur le Substitut du Procureur du Roi de Bandundu, 30.4.1921, MAEAA, GG, 22222 (Léopoldville, Bandundu); Procureur du Roi to Procureur général in Boma, 21.10.1921, MAEAA, GG, 22244 (Léopoldville, Kwilu, Kikwit); Procureur général in Boma to Procureur du Roi in Léopoldville, 5.11.1921, MAEAA, GG 22244 (Léopoldville, Kwilu, Kikwit).

[1033] F. Van den Branden, 'Note concernant le rapport de Monsieur le Docteur Schwetz', 20.8.1920, MAEAA, GG, 16795 (Congo-Kasai); Dr Van Goidsenhoven, 'Note concernant le rapport de la Mission Médicale en Kwilu', 1.9.1920, GG, 16795 (Congo-Kasai); J. Rodhain to J. Schwetz, 21.4.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[1034] J. Rodhain to J. Schwetz, 21.4.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu).

[1035] Governor General to Minister of Colonies, 26.4.1921, MAEAA, GG, 16803 (Congo-Kasai, Kwango, Kwilu).

policy', hardened his stance towards the Jesuits.[1036] While 'Préfet Apostolique' De Vos was urged to make his missionaries comply with the requirements of mass treatment, a government doctor was sent to inspect the situation in Kikwit. The anticlerical Lippens, however, did not wait for the latter's report to proclaim his local government's support for Schwetz. Moreover, when doctor Polledro judged that Schwetz's prophylactic measures in Kikwit, which the missionaries perceived as a nuisance, were justified, the Governor put de Pierpont in the wrong.[1037] He felt that the powers granted to Schwetz should not be obstructed and that all Europeans, including missionaries, had to respect the authority of the State. Finally, he proposed to simply forget about the incidents in Kikwit.[1038]

De Pierpont's rebuke by Lippens outraged the colony's Jesuit community. They felt he had done his best to assist, rather than hamper, the medical mission, for example by treating sleeping sickness victims in the villages entrusted to his care, or by sending literate youngsters to retrain as indigenous medical auxiliaries.[1039] The only thing the Kikwit missionary was guilty of was questioning instructions that he rightly regarded as 'arbitrary'. It was Schwetz who was in the wrong, they argued, adding that Polledro had merely wanted to 'sav(e) his colleague's professional honour'. Moreover, unlike what the colonial authorities in their view seemed to suggest, the conflict between Schwetz and de Pierpont was not 'une simple palabre congolaise' about some minor incidents; it was about a state agent's abuse of power, which in the Congo apparently could go unpunished.[1040] With Schwetz enjoying such high-level support, de Pierpont refused to take any further part in the sleeping sickness campaign, and together with his Jesuit superiors he felt that the only option left was to go public about the events in Kikwit and expose the sort of 'abuses' that were taking place in the Congolese 'brousse'.[1041]

[1036] G. Vanthemsche, *Congo. De impact van de kolonie op België* (Tielt, 2007), p. 65.

[1037] Vice-Governor General Bureau to Préfet Apostolique (16.9.1921) in 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b; 'Résumé. Dossier Missions. Farde I', MAEAA, Missions, 628.4b; 'Résumé. Dossier Missions. Farde II', MAEAA, Missions, 628.4b; 'Résumé. Dossier Missions. Farde III', MAEAA, Missions, 628.4b; Summary of the Schwetz affair, 3.1.1922, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 20-21.

[1038] 'Note sur les incidents de Kikwit (Mission Schwetz/Missionnaires)' (14.12.1921) in 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b; 'Rapport de Pierpont. Note du Gouverneur Général' in 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b; 'Résumé. Dossier Missions. Farde I', MAEAA, Missions, 628.4b; Summary of the Schwetz affair, 3.1.1922, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 20-21.

[1039] 'Note concernant les difficultés survenues entre M. Le Docteur Schwetz et les Missionnaires à Kikwit' in 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b.

[1040] 'Note concernant les difficultés survenues entre M. Le Docteur Schwetz et les Missionnaires à Kikwit' in 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b; Father Le Grand to Minister of Colonies, 5.2.1922, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 23-31.

[1041] 'Résumé. Dossier Missions. Farde I', MAEAA, Missions, 628.4b; de Pierpont to Governor General (28.10.1921) in 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b; Préfet Apostolique Devos to Governor

9.5 The Schwetz mission continued

Schwetz, on the other hand, seemed convinced by the colonial administration's support, as he stayed on as director of the Kwango medical mission. With a strengthening of staff numbers in 1922 (taking the total to five doctors, five 'agents sanitaires' and between forty and fifty Congolese nurses-injectors), the team started re-examining its Kwilu territories and at the government's request also gradually widened its territorial scope.[1042] By mid-1923, it was covering eight administrative territories: Kikwit, Bulungu, Kandale, Niadi, Idiofa (or Kamtsha-Lubue), Bas-Kwilu, Bapende and Lukula. These were not all worked at once, but rather screened and re-visited in succession. As the mission's sphere of action expanded in several directions from its Kikwit centre, including eastwards to the Kasai district, it became known as the Kwango-Kasai medical mission. Except for Kandale, however, the south(west) of the Kwango district was not included because Schwetz had established that sleeping sickness was not so much of a problem there.[1043]

Embarking on this new phase in the mission's existence, Schwetz introduced a few modifications to its modus operandi. Population censuses, for example, were conducted in a more comprehensive manner so that it would be easier during re-examinations to distinguish between newly infected cases and trypanosome carriers that were simply overlooked the first time. Although this surveying was, in the words of doctor De Wolf, 'tiring and demoralising work', it led to an increase in the number of people screened for sleeping sickness.[1044] In response to comments made by chief medical officer Rodhain, Africans in the advanced stage of the disease were now also given a prophylactic treatment (although without any expectation of a cure), and a cheaper, quicker and allegedly more effective drug regimen was adopted.[1045] It entailed intravenous injections of Atoxyl and tartar emetic, the pace and order of which could be freely determined by the mission members to suit local conditions, as long as infected individuals received five injections of each drug within a month and a half.[1046]

General (22.11.1921) in 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b; 'Note concernant les difficultés survenues entre M. Le Docteur Schwetz et les Missionnaires à Kikwit' in 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b; Father Le Grand to Minister of Colonies, 5.2.1922, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 23-31.

[1042] Schwetz, 'Compte-rendu succinct des travaux de la mission médicale', 151; Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 2; Minister of Colonies, 'Note au Roi', 7.7.1921, MAEAA, Hygiène, 4406.333.

[1043] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 2, 80, 113, 130.

[1044] Ibid., p. 35; J. Schwetz, 'Note sur les tableaux', 5.1923, MAEAA, Hygiène, 4407.334 (II).

[1045] J. Rodhain to J. Schwetz, 21.4.1921, MAEAA, GG, 16860 (Congo-Kasai, Moyen-Congo, Kwilu); Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 31, 37, 59.

[1046] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 31, 37.

What did not change, however, was the reliance on palpation of the cervical lymph nodes as a diagnostic tool, not only for the first medical screening of a territory but also its subsequent re-examinations. When previously treated cases no longer showed swollen lymph nodes, they were considered 'bien portant' rather than actually 'cured' - as there was no microscopic exam to definitively establish the absence of trypanosomes -, and continued to receive trypanocide injections.[1047] Therefore, together with the medical mission's expansion, the more thorough screening and the inclusion of victims in the advanced stage of the disease, the continued use of palpation contributed to an increase in Africans receiving trypanocidal drug treatment in Kwango.

The results of medicinal prophylaxis seemed promising, especially from a prophylactic point of view, which was ultimately deemed the most important in the fight against a 'social scourge'.[1048] By june 1923, for example, Kikwit territory had been reviewed three times and was thus taken as a crucial 'touchstone' of the effectiveness of mass sleeping sickness treatment as devised by Schwetz. The latter was satisfied to report a marked reduction in the proportion of new sleeping sickness cases there since 1920. Naturally, the curative results were much more difficult to gauge, because no elaborate microscopic exams were conducted. All that could be said, Schwetz argued, was that some previously identified trypanosome carriers were in a clinically good condition.[1049] Doctor David was a bit more optimistic in this respect: he estimated that 'cures' were more common in early cases than suspected.[1050]

However encouraging, Schwetz at the same time admitted that the results of his disease control program so far could not possibly be 'perfect'. Not every member of the targeted population was being examined or given a complete course of treatment, and once again progress was sometimes slower or less durable than he found desirable. In short, while the medical mission broadened and deepened its scope, it also continued to encounter, he felt, significant obstacles limiting its reach.[1051]

Some difficulties were related to the choice of trypanocidal drugs. The new therapeutic regimen of Atoxyl and tartar emetic required intravenous injections, and since most African medical auxiliaries were not yet familiar with this procedure, it (initially) slowed down treatment.[1052] Moreover, the problem of drug toxicity recurred in 1923, resulting in 'strong reactions' and even a number of new fatalities, which were

[1047] Ibid., pp. 32-34.

[1048] Ibid., p. 63.

[1049] Ibid., pp. 40-43.

[1050] J. David, 'Rapport sur le 2e réexamen du territoire de Kikwit. Région Babunda-Kwilu rive droite - S.', 14.6.1923, MAEAA, Hygiène, 4407.304 (II).

[1051] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 32, 45, 59, 79.

[1052] Ibid., p. 31.

again mainly attributed to Meurice-manufactured atoxyl.[1053] This time, however, such incidents seemed to cause less consternation in territories like Kikwit, where mission members had been active for a while. For example, after an instance of Atoxyl-related mortality there sanitary agent Demaret expressed relief that the accident had happened at a time when the locals, he claimed, had got to know and trust him, so that it did not cause too much damage to his reputation.[1054]

Demaret's colleagues confirmed that Kikwit's inhabitants showed an ever-greater confidence in and understanding of the medical mission's benefits, to the extent that they generally no longer sought to avoid medical exams and injections, and Europeans expected sleeping sickness prophylaxis to become part of the local 'mores'.[1055] It seems that African experiences of therapeutic efficacy played a part in this: clinical improvements, a decrease in mortality, but above all women proving fecund after a course of treatment - indicating that locals had their own notion of pharmaceutical efficacy - reportedly generated indigenous excitement.[1056] This is not to say that there were no indigenous attempts to escape (repeated) trypanocide treatment in the territories being revisited in 1922 and 1923: for example, there were accounts of avoidance strategies that entailed old cases being falsely reported as dead, and of patients refusing to undergo further series of injections because they were feeling well.[1057]

A more serious obstacle in Schwetz's view, however, was that progress made in the administrative organisation of Kwilu since 1920 often proved difficult to maintain because of a dearth of territorial staff. Each time mission members revisited Kikwit, for example, villages they had 'created' had disintegrated and time had to be spent 're-occupying' certain regions.[1058] On top of that came the continued interference of private interests with the practice of mass treatment in Kikwit and Bulungu. For example,

[1053] Agent sanitaire Demaret, 'Rapport sur le troisième examen des deux rives du Kwengo (Sud-Ouest du territoire de Kikwit). Décembre 1922 - Mai 1923', 10.6.1923, MAEAA, Hygiène, 4407.334 (II); A. Broden to 9e Direction, 20.9.1923, ITG, Onderzoek, 5.2.10; Governor General to Secrétaire Général, 25.1.1924, ITG, Onderzoek, 5.2.10.

[1054] Agent sanitaire Demaret, 'Rapport sur le troisième examen des deux rives du Kwengo (Sud-Ouest du territoire de Kikwit). Décembre 1922 - Mai 1923', 10.6.1923, MAEAA, Hygiène, 4407.334 (II).

[1055] J. David, 'Rapport sur le 2e réexamen du territoire de Kikwit. Région Babunda-Kwilu rive droite - S.', 14.6.1923, MAEAA, Hygiène, 4407.304 (II); Agent sanitaire Depoorter, 'Rapport sur le deuxième réexamen de la rive droite du Kwilu (Région dite Babunda Sud) Territoire de Kikwit, en avril-mai 1923', 13.6.1923, MAEAA, Hygiène, 4407.334 (II); J. Schwetz, 'Note sur les tableaux', 5.1923, MAEAA, Hygiène, 4407.334 (II).

[1056] J. David, 'Rapport sur le 2e réexamen du territoire de Kikwit. Région Babunda-Kwilu rive droite - S.', 14.6.1923, MAEAA, Hygiène, 4407.304 (II); Agent sanitaire Depoorter, 'Rapport sur le deuxième réexamen de la rive droite du Kwilu (Région dite Babunda Sud) Territoire de Kikwit, en avril-mai 1923', 13.6.1923, MAEAA, Hygiène, 4407.334 (II).

[1057] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 30; Agent sanitaire Baumann, 'Rapport sur le réexamen de la population du territoire de Kandale', 31.1.1923, MAEAA, Hygiène, 4407.334 (I).

[1058] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 29, 44-45.

medical staff experienced difficulties to find previously treated trypanosome carriers who had been recruited by the HCB or as porters, or had gone to a Catholic mission post.[1059] According to Schwetz, some private employers cared only for their 'immediate material interests' and showed hostility towards the medical mission. In such a large-scale operation it was simply impossible, he concluded, not to hurt someone's interests.[1060]

Similar stories about the need to balance mass screening and treatment with economic activities emerged from the mission's new territories. In Bapende territory, for example, the indigenous population depended economically on providing porterage services, which David did not want to hamper for the sake of sleeping sickness control. At the same time he did suspend HCB's recruitment of workers in the region for its oil palm plantations in Kwilu.[1061] Besides the influence of the private sector, the lack of state 'occupation' was once again identified as a major obstacle to mass treatment in the territories visited by the mission for the first time.[1062] This absence of state authority was held responsible for indigenous hostility and non-compliance with the requirements of pharmaceutical disease control. In little-known parts of Niadi, Bapende and Lukula, for example, medical mission members met with (armed) resistance from populations who reportedly opposed the presence of 'Bula Matari', seen as an invader bringing harm and making 'painful' and 'vexatious' demands.[1063] The response, in Lukula in particular, was a concerted effort by medical staff and territorial agents to 'simultaneously exercise a strong pressure on the natives' and coerce them into 'submission'.[1064] Schwetz commented that they were thus involved in a 'travail incombant au service territorial'.[1065] Nevertheless, 'indigenous tenacity' forced the

[1059] Ibid., p. 30; J. Schwetz, 'Note sur les tableaux', 5.1923, MAEAA, Hygiène, 4407.334 (II).

[1060] J. Schwetz, 'Troisième rapport annuel sur les travaux de la Mission Médical du Kwango-Kasai. Premier Semestre: Juillet-Décembre 1922: Le réexamen du territoire de Bulungu', 5.1923, MAEAA, Hygiène, 4407.334 (I).

[1061] J. David, 'Note sur le territoire des Bapende, régions examinées par le Dr David, de la Mission médicale du Kwango-Kasai', 1.6.1923, MAEAA, Hygiène, 4407.334 (II).

[1062] J. Schwetz, Troisième rapport annuel sur les travaux de la Mission Médicale du Kwango-Kasai. Deuxième semestre: Janvier-Juin 1923. Première partie: Le territoire des Bapende (Kilembe) (District du Kasai), 1923.6, MAEAA, Hygiène, 4407, 334 (II); Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 76.

[1063] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 66, 88-89, 97-99.

[1064] J. Schwetz, 'Troisième rapport annuel sur les travaux de la Mission Médicale du Kwango-Kasai. Deuxième semestre: Janvier-Juin 1923. Deuxième partie: le Territoire de la Lukula (District du Kwango)', 6.1923, MAEAA, Hygiène, 4407.334 (II); Agent sanitaire Darrouzain, 'Rapport sur le travail dans l'entre Kafi-Luula, Territoire de la Lukula. District du Kwango de Février à mai 1923', 6.1923, MAEAA, Hygiène, 4407.334 (II); Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 66, 71.

[1065] J. Schwetz, 'Troisième rapport annuel sur les travaux de la Mission Médicale du Kwango-Kasai. Deuxième semestre: Janvier-Juin 1923. Deuxième partie: le Territoire de la Lukula (District du Kwango)', 6.1923, MAEAA, Hygiène, 4407.334 (II).

medical mission to suspend its activities in or withdraw from certain areas, such as the northeast of Bapende and the south of Lukula.[1066]

9.6 Political conflicts resumed

By the spring of 1923, the Kwango-Kasai medical mission came at a crossroads. Schwetz was nearing the end of his term in the colony and would leave for Europe soon, thus prompting questions about the future of the mission. Although it had been conceived as a temporary undertaking and had already cost close to 1,5 million francs in its first three years, Schwetz wanted it to continue after his departure.[1067] To his dismay, the local government - where Martin Rutten had replaced Maurice Lippens - had suggested entrusting the screening and treatment of Bulungu, Kikwit and Niadi to the HCB and Jesuit missionaries.[1068] The colonial medical service joined Schwetz in disagreeing, however, and called for state medical staff to proceed with pharmaceutical sleeping sickness control in Kwango. Emile Lejeune, who headed the medical service of Congo-Kasai Province, argued that the HCB would do nothing in the way of trypanosomiasis control, while the missionaries' sphere of action was and had to be fairly restricted if prophylactic work was to be done properly and an inadmissible 'emprise d'autorité' was to be avoided.[1069] Rodhain was not in favour of giving an active role to private company doctors in itinerant sleeping sickness control either: in his view, they lacked 'real authority' over the local population, and it would be impossible for the state service to exert 'effective control' over their work.[1070] The medical department in Brussels echoed the sentiments of its doctors in the Congo, and decided that the fight against sleeping sickness in Kwilu should continue under direct government control and with state medical staff, at least for another few years.[1071] Consequently, when Schwetz left the mission in June 1923, his loyal collaborator David took over as director and carried on with mass sleeping sickness treatment in Kwango and part of Kasai.[1072]

[1066] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 88-89; 97-99.

[1067] Schwetz, 'Compte-rendu succinct des travaux de la mission médicale', 152; 'Maladie du Sommeil au Congo - Missions médicales', s.d., MAEAA, Hygiène, 4406.333; Dr E. Lejeune, 'Maladie du sommeil dans le Kwango et le Kasai', MAEAA, Hygiène, 4407.334 (I).

[1068] J. Schwetz, 'Troisième rapport annuel sur les travaux de la Mission Médical du Kwango-Kasai. Premier Semestre: Juillet-Décembre 1922: Le réexamen du territoire de Bulungu', 5.1923, MAEAA, Hygiène, 4407.334 (I).

[1069] Dr E. Lejeune, 'Maladie du sommeil dans le Kwango et le Kasai', MAEAA, Hygiène, 4407.334 (I).

[1070] 'Maladie du Sommeil au Congo - Missions médicales', s.d., MAEAA, Hygiène, 4406.333.

[1071] E. Van Campenhout, 'Note pour Monsieur le Ministre', 6.4.1923, MAEAA, Hygiène, 4406.333.

[1072] J. David, 'Mission médicale du Kwango-Kasai. 4ième Rapport Annuel. 2e semestre Juillet Décembre 1923', 15.2.1924, MAEAA, Hygiène, 4407.334 (III).

However, after Schwetz's departure the Jesuits stepped up their campaign against him and his mass treatment scheme. After de Pierpont's rebuke by Governor General Lippens in 1921, the relationship between the Kikwit missionaries and the Schwetz mission had not improved, and (unsuccessful) complaints about the pestering and mistreatment of christians in the name of sleeping sickness control persisted.[1073] Moreover, the medical mission had expanded geographically at a time when the Jesuits themselves, apparently spurred on by Protestant competitors, sought to spread their influence more widely in Kwango.[1074] According to Schwetz, the medical mission's arrival amounted, in the missionaries' view, to a form of state occupation that hampered the recruitment of 'free labour' for Catholic mission posts.[1075] In turn, the Jesuit expansion in Kwango proved controversial with Schwetz's supporter Lippens, who accused missionaries in Ipamu, for example, of illegally occupying land and undermining the administration's policies on the governance of indigenous people.[1076] When Schwetz's forceful intervention in Lukula led to a formal complaint by the Jesuit superior of Gingungi about mass arrests, the case was once again dropped.[1077] Therefore, when the state doctor's term in Kwango expired, it seems that the Jesuits were anxious for him never to return so as to avoid finding themselves again at the mercy of what they perceived as an anticlerical doctor with excessive powers.[1078]

[1073] Note 'Vexations dénoncées par les Jésuites', s.d., MAEAA, Missions, 628.4a; 'Résumé. Dossier Missions. Farde I', MAEAA, Missions, 628.4b; Excerpts of a letter by Louis Gillet, 13.3.1922, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 32; Préfêt Apostolique Stanislas De Vos to Père Provincial, 24.4.1922, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 33-34; Father Willaert to Governor General, 25.5.1922, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 38; de Pierpont, '3e Journal de voyage du Père Ivan de Pierpont, S. J. Missionaire à Kikwit (par Bandundu), Congo Belge', 4.1923, KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10702, 5, p. 3; de Pierpont to Père Provincial, 25.10.1922, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 40.

[1074] Y. Struyf, 'Ma première visite aux Badinga', *Missions belges de la Compagnie de Jésus: Congo, Bengale, Ceylan* (1922), 132-134; J. Beckers, 'Que Dieu protège la tribu des Bapende', *Missions belges de la Compagnie de Jésus: Congo, Bengale, Ceylan* (1922), 136; J. Beckers, 'Retour du P. de Pierpont', *Missions belges de la Compagnie de Jésus: Congo, Bengale, Ceylan* (1922), 50-51.

[1075] Schwetz to vice-Governor General , 8.6.1922, MAEAA, Missions, 628.4a.

[1076] 'Résumé. Dossier Missions. Farde IV', MAEAA, Missions, 628.4b.

[1077] Father Legrand to unnamed Father, 15.2.1924, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 49-50.

[1078] The Governor General informed Father Le Grand that Schwetz and Téchy would not return to Kikwit when their term expired. Note 'Vexations dénoncées par les Jésuites', s.d., MAEAA, Missions, 628.4a. Kwango's Vicaire Apostolique De Vos stated in 1924 that 'les missionnaires ne demandent pas mieux que d'être aidés, encouragés, enseignés par des médecins belges qui partagent leurs croyances religieuses, qui pratiquent leur religion'. Quoted in Société Médicale Belge de Saint-Luc, 'Une Oeuvre de Salut. L'Aide médicale aux Missions du Congo', s.d., KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10511, 4, p. 19.

Given that attempts to have Schwetz condemned by authorities in the colony were unsuccessful, Jesuit efforts now especially focused on discrediting the state doctor and his prophylactic mission in the Belgian metropole. Hyacinth Vanderyst, for example, who had been involved in sleeping sickness control in Ipamu, capitalised on scientific criticisms of Schwetz's methods to question the powers and ethics of mass sleeping sickness treatment, especially as implemented by 'foreign' (meaning non-Catholic) doctors.[1079] Several (French) medical experts were critical of Schwetz's error-prone palpation-based system of case detection, or his use of the unwieldy tartar emetic in combination with Atoxyl. Such criticisms came to the fore in scientific publications, for example, but also during the international medical conference in Luanda in July 1923, where Vanderyst was one of the speakers at a session on sleeping sickness control.[1080] There the missionary undoubtedly witnessed a discussion about itinerant medicinal prophylaxis methods that saw French specialists like Jamot and Blanchard oppose an exclusively palpation-based, non-microscopic diagnosis.[1081] Eventually the sleeping sickness experts in Luanda, who also included Rodhain, Lejeune and Schwetz, came to agree that palpation alone was not the most scientific approach, but could in exceptional circumstances be accepted to some extent for the sake of protecting public health.[1082] Vanderyst, however, took the Schwetz mission's particular diagnostic procedures as proof of its questionable ethics.

In a lecture in November 1923 for the 'Société médicale belge de Saint-Luc', an organisation established in Brussels in 1922 with the aim of promoting christian values in medical practice, the Jesuit reiterated the experts' view that lymph node palpation was an 'incomplete' method of screening in itinerant practice, which needed to be complemented by microscopic exams of blood or lymph juice.[1083] This was not a mere scientific point for Vanderyst, however, but one that carried important ethical implications. The use of palpation in a medical mission easily led to diagnostic mistakes, he argued, which were aggravated by the massive scale of screening in such a mission. In the Jesuit's view, the use of palpation in medical missions also pointed to a distinct medical ethics for Africans and Europeans, and violated the former's rights because it endorsed 'empirical' rather than scientifically sanctioned practice in the name of protecting public health. He felt that public health practice should be science-based, and

[1079] H. Vanderyst, 'Les grandes missions prophylactiques contre la trypanosomiase en Afrique centrale. Leurs rapports avec la morale médicale', s.d., MAEAA, Hygiène, 4407.334 (III).

[1080] Blanchard et Laigret, 'Sur la prophylaxie de la maladie du sommeil', 485-490, 491-492; Walravens, 'Compte-rendu du Congrès de médecine tropicale', 196.

[1081] Walravens, 'Compte-rendu du Congrès de médecine tropicale', 196; 'Acta da sexta sessao do 1.° congresso de medicina tropical da Africa ocidental', *Revista Médica dé Angola* 4 (1923), 42.

[1082] Walravens, 'Compte-rendu du Congrès de médecine tropicale', 196; 'Acta da sexta sessao do 1.° congresso de medicina tropical', 45; Blanchard et Laigret, 'Sur la prophylaxie de la maladie du sommeil', 485-490; Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, p. 9.

[1083] H. Vanderyst, 'Les grandes missions prophylactiques contre la trypanosomiase en Afrique centrale. Leurs rapports avec la morale médicale', s.d., MAEAA, Hygiène, 4407.334 (III).

all the more so since Africans had no choice but to undergo mandatory sleeping sickness screening and treatment and the medical missions had extensive, even 'excessive', coercive powers'. The use of palpation, which was bound to lead to errors, also posed ethical questions because labelling people as trypanosome carriers had serious implications, Vanderyst argued. It entailed a loss of freedom (e.g. it restricted mobility and required attendance at exam and injection sessions), could lead to dismissal by European employers, and to rejection or worse by victims' own families and communities because of the social stigma attached to sleeping sickness, which in turn could affect mental health. Moreover, it exposed people to dangerous medical treatments. In Vanderyst's view, the state had no right to force people merely suspected of sleeping sickness to undergo treatment, especially not with dangerous medicines such as intravenous emetic injections administered by unsupervised African injectors.[1084]

After hearing this lecture, the Saint-Luc medical society appointed a commission to study the matter. It proved very receptive to Vanderyst's criticisms, and ended up confirming his condemnation of the Kwango mission's methods as 'antiscientific' and immoral. In February 1924, the commission transmitted Vanderyst's objections to the Minister of Colonies in the hope that the government would take action. The Catholic medical society called for a revision of the diagnostic and therapeutic methods applied by sleeping sickness missions in the Congo. Moreover, it repeated Vanderyst's insistence that only Belgian nationals should be entrusted with such important undertakings.[1085]

The colonial medical department in Brussels quickly dismissed the Catholics' criticisms. While Schwetz had his critics within the colonial medical service, it seems that it wanted to protect him and by extension itself against external attacks. The department retorted that microscopic diagnosis was difficult to apply in the 'brousse', so Schwetz had adopted palpation as the most expeditious method given the circumstances in Kwango and given that the aim of the medical mission was to sterilise the blood of all trypanosome carriers as quickly and thoroughly as possible. Moreover, chief medical officer Rodhain approved and even endorsed it in regions with conditions similar to Kwango's. He had also recommended the mixed Atoxyl and tartar emetic treatment, as African auxiliaries were skilful injectors, even more so than the missionaries who administered dangerous drugs themselves. Finally, Schwetz had acted within the law of 1920, it was argued, and Vanderyst exaggerated the stigma suffered by people identified as sleeping sickness victims. The department did agree that it was preferable to have

[1084] H. Vanderyst, 'Les grandes missions prophylactiques contre la trypanosomiase en Afrique centrale. Leurs rapports avec la morale médicale', s.d., MAEAA, Hygiène, 4407.334 (III).

[1085] Dr R. Warlomont, 'Les méthodes pratiquées par certaines missions prophylactiques contre la trypanosomiase, en Afrique centrale', 1924, MAEAA, Hygiène, 4406.332; H. Vanderyst, 'Les grandes missions prophylactiques contre la trypanosomiase en Afrique centrale. Leurs rapports avec la morale médicale', s.d., MAEAA, Hygiène, 4407.334 (III).

prophylactic sleeping sickness missions directed by Belgian doctors, but claimed that simply none had been available for the one in Kwango.[1086]

Another strategy adopted by the Jesuits was to seek help from Catholic political circles in Belgium to get Schwetz punished for what had happened in Lukula. Faced with indigenous non-compliance, the medical mission had ordered 'mass arrests', and the forceful 'déplacement' of prisoners had apparently resulted in a number of deaths along the route. The superior of Gingungi had signalled this to the authorities and a judicial enquiry was opened. When prosecutors in the Congo eventually dropped the case, Father Legrand, with the support of Catholic senator Leyniers, appealed in February 1924 to the Colonial Minister to re-open the enquiry. They were not very successful: Minister Franck, a Liberal party politician, wanted to avoid a scandal - an 'affaire' - and seemed reluctant to grant their request unless new elements came to light. Legrand and Leyniers suspected that the Minister had no intention whatsoever to punish those involved in the incident, and accused him of 'parti-pris'.[1087]

A few months later, an article appeared in the Catholic newspaper 'La Libre Belgique' denouncing the Schwetz mission for its denial of 'principes d'humanité'. Although they denied having anything to do with the publication itself, it is clear that the Jesuits were intent on exposing what they saw as Schwetz's use of 'illegal and arbitrary means of constraint, applied in barbaric fashion' and were manoeuvring Belgian Catholic circles to get it done.[1088] The article prompted questions about the Schwetz mission (and about what was true about the allegations in the 'Libre Belgique' article) in parliament on June 6th and 10th 1924. Louis Franck, who was by then no longer Minister of Colonies, insisted that authorities in the colony had established that, while deaths had occurred in Lukula, the medical mission was not guilty of any crime, and had merely exercised its right to coerce people into treatment for the sake of public health, which was all the more justified given the hostility of Lukula's indigenous people. Franck claimed that the affair was nothing more than the echo of a longstanding conflict between (Jesuit) missionaries and the Kwango medical mission, which he did not want to transport to Belgium.[1089] The new Minister of Colonies Carton de Wiart, who by virtue of his membership of the

[1086] Ministère des Colonies (7e Direction, 2e Section), 'Note concernant la communication du R. Père Vanderyst à la Société Médicale de St-Luc. Objet; Prophylaxie de la maladie du sommeil en Afrique Centrale', 28.2.1924, MAEAA, Hygiène, 4407.334 (III).

[1087] Letter from Father Legrand, 15.2.1924, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 49-50.

[1088] Letter to Minister of Colonies concerning an article in the 'Libre Belgique' on the 'Schwetz affair', 11.6.1924, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 54.

[1089] 'Chambre des Représentants - Annales Parlementaires. Séance du vendredi 6 juin 1924', pp. 1431-1432, Plenum.be, Belgian Chamber of Representatives. Proceedings of the plenary sessions, https://sites.google.com/site/bplenum/proceedings/1924/k00342144/k00342144_00 (Last accessed 27 March 2014); 'Chambre des Représentants - Annales Parlementaires. Séance du mardi 10 juin 1924', pp. 1438-1439, Plenum.be, Belgian Chamber of Representatives. Proceedings of the plenary sessions, https://sites.google.com/site/bplenum/proceedings/1924/k00342162/k00342162_00 (Last accessed 27 March 2014).

Catholic party was more sympathetic to anti-Schwetz sentiments, acknowledged the criticisms on the methods of the Schwetz mission. While he found the palpation controversy a purely medical discussion, he agreed that the allegations about coercion needed looking into, so as to establish whether the methods used had indeed not been excessively coercive. He claimed that even when working in difficult circumstances, certain limits could not be transgressed, and that Belgium had the right to check what was going on in the Congo. Therefore, he had asked the Governor General for the relevant documents and in the mean time asked to stop the polemic.[1090]

On furlough in Europe, Schwetz expected - in the aftermath of the discussion in parliament - that his colonial career was over when the Minister suggested to him delaying his return to the Congo. The state doctor even asked Broden to look out for a position in a private 'Société'.[1091] Meanwhile, the authorities in the Congo sent the file on the Lukula incidents to the Minister of Colonies with the message that while the 'mass arrests' and the lack of prudence in their execution were regrettable, the medical mission and the territorial administrator had acted within the law. Moreover, there were mitigating circumstances in that there had been much indigenous hostility and territorial agents and medical mission members had been attacked. Also, the excellent results achieved attenuated the mistakes made by state agents. This echoed the assessment of the colonial medical service: while accidents were regrettable, it were the results that counted.[1092] Subsequently, the Minister apparently told the anti-Schwetz campaigners that the enquiry would not amount to much. However, faced with persistent Catholic opposition to Schwetz's return to the Congo, he sought a compromise. He did not want to risk an anticlerical attack on the Congo's Catholic mission societies by prohibiting the state doctor from returning, but proposed to send him to a region without missionaries, more specifically to the Stanleyville medical laboratory - which came down, he claimed, to a 'rétrogradation'.[1093] In 1927, Schwetz indeed became laboratory director in Stanleyville, after first being sent to Katanga and South Africa for two years to study tsetse fly control.[1094] His career as an itinerant sleeping sickness doctor had clearly ended in 1923, but the same could not be said of

[1090] 'Chambre des Représentants - Annales Parlementaires. Séance du mardi 10 juin 1924', pp. 1448, Plenum.be, Belgian Chamber of Representatives. Proceedings of the plenary sessions, https://sites.google.com/site/bplenum/proceedings/1924/k00342162/k00342162_00 (Last accessed 27 March 2014).

[1091] J. Schwetz to E. Van Campenhout, 18.6.1924, MAEAA, Hygiène, 4407.334 (III); J. Schwetz to Secrétaire Général, 29.12.1923, MAEAA, Hygiène, 4403.301.

[1092] Secrétaire Général Postiaux to Minister of Colonies, 20.6.1924, MAEAA, GG, 16461 (GG).

[1093] Handwritten notes about Father Legrand's meeting with Minister, 12.11.1924, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 56; Handwritten notes about a meeting with the Minister of Colonies, 20.11.1924, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 62; Excerpt from La Libre Belgique: 'Après les cruautés du Kwango', 5.12.1924, KADOC, Archives de la Province Belge Méridionale et du Luxembourg de la Compagnie de Jésus, XII Mission Congo, XII M-60, Boîte 1, Enveloppe B, 63.

[1094] J. Schwetz, Autobiographical note, 7.1950, ITG, FD7.

Kwango's special medical mission (as will be discussed in chapter 10), and mass trypanocide therapy in the Belgian Congo more generally.

9.7 In summary

Taking a closer look at the origins and implementation of mass Atoxyl treatment in Kwango in the early 1920s sheds additional light on the local factors that helped shape the trypanocide's career cycle in the Belgian Congo. It points to the circumstances leading Schwetz to advocate comprehensive sleeping sickness screening and treatment by mobile teams headed by state doctors, a strategy that was subsequently endorsed, promoted and supported by central medical and political authorities, resulting in Atoxyl's wider dissemination throughout the colony. It also shows how Schwetz initiated a phase of growing criticism of Belgian-manufactured Atoxyl, by reporting cases of (deadly) intoxication that did little to improve negative African perceptions and experiences of sleeping sickness medicine. Crucially, by attributing toxicity incidents with 'Atoxyl Meurice' to poor product quality, he pointed authorities to pharmaceutical regulation as a way of dealing with the risks of arsenic therapy, rather than to a questioning of his drastic methods. Finally, this chapter uncovers how the Schwetz team's actions fuelled conflicts with local Jesuit missionaries that spilled over into (metropolitan) political debates about the powers and ethics of prophylactic sleeping sickness missions. Events in Kwango thus contributed to a climate of significant European opposition to pharmaceutical sleeping sickness control, which colonial medical authorities would eventually largely seek to overcome by imposing more stringent quality criteria on manufacturers and via efforts to control lower-ranking staff's clinical use of the trypanocide. Political tensions about mass treatment in the early 1920s took on a particular shape in the Belgian Congo, in the sense that they entailed an important public vs. private, Catholic vs. anticlerical dimension and less of a rift between colonial medical service and sleeping sickness missions. But to deflect external attacks, the medicinal prophylaxis campaign's proponents used (self-)regulatory strategies that were not dissimilar to those of their French counterparts.[1095] This ultimately helped to sustain the mass-scale use of Atoxyl in the Congo, albeit of the German rather than the Belgian and French brands.

[1095] Tousignant, 'Politics of mass therapy', 630, 638.

Chapter 10
Tryponarsyl and social medicine in Kwango

Following on chapter 9, this section charts the further evolution of pharmaceutical sleeping sickness control in the Kwango district after Schwetz's departure in 1923. It examines the implementation of mass treatment, especially with Tryponarsyl, to illustrate some of the local developments that played a role in the evolution of the trypanocide's career cycle in the Belgian Congo. It highlights, for example, how local circumstances led itinerant sleeping sickness staff to adopt diagnostic procedures amounting to high levels of trypanocide consumption, and standardised treatments that central medical authorities eventually held responsible for the emergence of drug-resistant trypanosomes. It also notably points out how the elusiveness of pharmaceutical sleeping sickness eradication in Kwango contributed to tensions between state and private health providers about the 'value' and 'expediency' of mass Tryponarsyl-based treatment.[1096] These frictions played a role in the 1930s reorganisation of indigenous health provision that aimed to unite public and private sector in the practice of regular and comprehensive surveying, screening and treatment. Yet such locally originating debates about the effectiveness and appropriateness of a specialised pharmaceutical campaign were also linked to medical authorities' insistence on a rational and economical use of trypanocides, and their adoption of a more holistic perspective on sleeping sickness control and public health in the 1930s, which ultimately contributed to a generally contracting use of Tryponarsyl.

After Schwetz, mass treatment in Kwango expanded as the official sleeping sickness mission continued its operations and private sector health providers also became increasingly involved in the campaign. This soon translated into an increased use of Tryponarsyl, as the medical mission's field trials confirmed the compound's effectiveness and especially its positive effects on indigenous compliance with trypanocide therapy, thus boosting local demand for the drug. Tryponarsyl consumption also reached high levels because of the official mission's simplified diagnostic and therapeutic procedures. Despite increased hierarchical oversight, chronic staff shortages hampered a swift adoption of the full range of microscopic methods decreed and required to identify trypanosomiasis victims, establish the stage of the disease and monitor treatment outcomes, resulting in patients receiving needlessly long, or even unnecessary, standardised regimens.

By the late 1920s, medical mission doctors started expressing some doubts about the effectiveness of mass treatment, remarking how, after years of extensive efforts and

[1096] Tousignant, 'Politics of mass therapy', 629, 635.

despite high numbers of Africans receiving trypanocide therapy, the complete eradication of sleeping sickness in Kwango proved continually elusive. They did not so much question the validity of the pharmaceutical approach, however, but largely attributed disappointing progress to a lack of administrative support and especially to private sector health providers' failure to adhere to the principles of comprehensive and systematic screening and treatment. Missionaries and company medical staff for their part questioned the primacy of a specialised, coercive and itinerant campaign, finding the provision of general health care in clinics and dispensaries more compatible with their interests or views.

The Congo's medical authorities on the one hand responded to Kwango's official sleeping sickness staff with instructions to rationalise the clinical use of trypanocides, and reduce consumption and associated costs. On the other hand, the local tensions between public and private sector inspired organisational reforms in the early 1930s that sought to better integrate the official medical mission and the district's private AMI network in the fight against sleeping sickness. However, the attempts to more closely align public and private sector efforts in endemic disease control under state coordination eventually led a (former) private company doctor to seriously question the value of mass Tryponarsyl treatment. In the wake of professional frustrations during a stint as an itinerant sleeping sickness doctor, he started campaigning in the metropole against the Belgian Congo's 'illiberal' medical regime, in which he saw the cause of an undue medical reductionism and collectivism contributing to demographic decline. It instigated a discussion in the Belgian parliament about the colony's medical record and organisation, which coincided with fears about a resurgence of sleeping sickness in Kwango and calls for a FOREAMI 'occupation' of the district. The latter, while strongly advocating an expansion of social medicine with a vital mobile component, confirmed the need to embed mass trypanocide therapy in the district in a much broader public health strategy that also addressed (certain) socio-economic determinants of disease, notably malnutrition. Its efforts to fully implement a more horizontal program before the Second World War nevertheless remained largely unsuccessful due to practical constraints. In Kwango, therefore, the colonial medical service's plans to adopt a more locally diversified approach to sleeping sickness control in the 1930s largely translated into a continuation of mass treatment.

10.1 Mass treatment after Schwetz: new procedures and increased private sector participation

After Schwetz's departure in June 1923, the program of mass sleeping sickness treatment in Kwango was continued by Jacques David.[1097] By 1925, the latter found himself directing what was considered the most important of the colony's five sleeping sickness missions.[1098] His Kwango-Kasai mission, however, was no longer an autonomous body. In the wake of the establishment of the colonial medical service in 1922 and the questions surrounding Schwetz's medical procedures, it was fully incorporated in the colonial medical hierarchy after June 1923. This meant that staff members now fell under the direct authority and supervision of Congo-Kasai's provincial doctor, who himself received orders from the colony's chief medical officer.[1099] Unlike Schwetz, therefore, David had to balance guidelines and instructions from higher-ranked medical officials more carefully with local realities and a desire to 'realis(e) his personal views' as to the most appropriate methods of mass treatment.[1100]

For example, there were increasing pressures on David and his successors to abandon Schwetz's screening methods and proceed with microscopic examinations of bodily fluids to identify sleeping sickness victims and evaluate treatment outcomes. At the end of 1923, chief medical officer Rodhain issued a circular aimed at colonial doctors outlining best practices regarding sleeping sickness diagnosis and treatment. Because it was an unscientific and error-prone method, he only endorsed relying exclusively on lymph node palpation for case detection in exceptional circumstances. Moreover, Rodhain advocated performing lumbar punctures on individuals undergoing treatment, so that an analysis of the extracted cerebrospinal fluid could establish whether a cure had been produced.[1101] His successor Trolli explicitly instructed Kwango-Kasai mission

[1097] J. David, 'Mission médicale du Kwango-Kasai. 4ième Rapport Annuel. 2e semestre Juillet Décembre 1923', 15.2.1924, MAEAA, Hygiène, 4407.334 (III); 'Rapport annuel 1923. Province du Congo-Kasai. Service Médical', s.d., MAEAA, RA-CB, 112.1.

[1098] J. Rodhain, 'Rapport général sur le fonctionnement du service de l'Hygiène durant l'exercice 1924', 2.9.1925, MAEAA, RA-CB, 81.12.

[1099] J. David, 'Mission médicale du Kwango-Kasai. 4ième Rapport Annuel. 2e semestre Juillet-Décembre 1923', 15.2.1924, MAEAA, Hygiène, 4407.334 (III); 'Rapport annuel 1923. Province du Congo-Kasai. Service Médical', s.d., MAEAA, RA-CB, 112.1.

[1100] J. David, 'Mission médicale du Kwango-Kasai. 4ième Rapport Annuel. 2e semestre Juillet-Décembre 1923', 15.2.1924, MAEAA, Hygiène, 4407.334 (III).

[1101] J. Rodhain, 'Lettre-circulaire "Considérations pratiques sur la prophylaxie de la maladie du sommeil"', 20.11.1923, ITG, Onderzoek, 5.2.7, pp. 5-6.

staff to abandon the single palpation method - a mere temporary solution to overcome difficult working conditions - as soon as possible.[1102]

David was not impervious to such directives. Even as a member of the Schwetz mission he had always been more nuanced about the diagnostic value of palpation than his director. He conceded, for example, that people with atypical swollen lymph nodes could not be 'categorically' declared ill without a microscopic exam of the lymph juice.[1103] Nevertheless, he insisted that while the 'true microscopic method' was preferable, its implementation in the Kwango-Kasai medical mission could not be 'decreed' and depended on local circumstances of 'place, time and means'. Using the microscope was a more time-consuming procedure that hampered the execution of comprehensive screening and treatment in Kwango.[1104] It also risked overstretching a medical staff that was already in very short supply because few European doctors, David warned, aspired to an itinerant career and the mission's African auxiliaries were being lured away by private sector employers in the region offering higher salaries.[1105] Moreover, microscopic procedures specifically required a sufficient amount of trained African microscopists and microscopes, both of which the medical mission lacked.[1106]

Therefore, after Schwetz's departure, the use of the microscope in the Kwango-Kasai mission increased only gradually and in as far as the staff and equipment available allowed it. By 1927, microscopic diagnosis was integrally adopted for the detection of new trypanosome carriers, a task that was becoming less enormous as territories within the mission's sphere of action saw successive medical visits.[1107] It meant that new cases of swollen lymph nodes were punctured so that the presence of trypanosomes in the lymph juice could be microscopically confirmed. This did not yet constitute a 'travail scientifique complet', however. Previously treated sleeping sickness victims were not punctured, and other components of the full microscopic method, i.e. blood and cerebrospinal fluid exams, were even less of an option.[1108] In 1928, David's successor

[1102] Médecin en Chef adjoint, 'Congo Belge. Rapport du service médical 1926', 24.8.1927, MAEAA, RA-CB, 82.2; G. Trolli, 'Note au sujet de l'intervention du Gouvernement de la Colonie dans la lutte antitrypanosomique dans le Kasai', s.d., MAEAA, GG, 15144 (GG, Congo-Kasai).

[1103] Schwetz, *Travaux de la mission médicale antitrypanosomique du Kwango-Kasaï 1920-1923*, pp. 21-22; J. David, 'Mission médicale du Kwango-Kasai. 4ième Rapport Annuel. 2e semestre Juillet-Décembre 1923', 15.2.1924, MAEAA, Hygiène, 4407.334 (III).

[1104] J. David, 'Mission médicale du Kwango-Kasai. Exercice 1926. Premier Semestre', s.d., MAEAA, Hygiène, 4408.335.

[1105] J. David, 'Mission médicale du Kwango-Kasai. 4ième Rapport Annuel. 2e semestre Juillet-Décembre 1923', 15.2.1924, MAEAA, Hygiène, 4407.334 (III); 'Mission médicale du Kwango-Kasai. Exercice 1926. Deuxième Semestre', s.d., MAEAA, RA-CB, 87.4.

[1106] J. David, 'Mission médicale du Kwango-Kasai. Exercice 1926. Premier Semestre', s.d., MAEAA, Hygiène, 4408.335.

[1107] Médecin Provincial, 'Province du Congo-Kasai. Service Médical. Rapport Annuel 1927', s.d., MAEAA, RA-CB, 87.5.

[1108] J. David, 'Mission médicale du Kwango-Kasai. Exercice 1926. Deuxième semestre', s.d., MAEAA, Hygiène, 4408.335.

Sulsenti repeated that systematic lumbar punctures were not possible in the medical practice of the 'brousse'.[1109]

A corollary of the incomplete microscopic methods adopted by the Kwango-Kasai mission was that trypanocide treatment remained somewhat indiscriminate and entailed high levels of drug consumption. Suspected trypanosome carriers, i.e. Africans with swollen lymph nodes but negative lymph juice exam results, received an 'injection de sûreté'.[1110] In addition, sleeping sickness victims who found themselves in a clinically good condition after a treatment regimen nevertheless continued to be injected with a 'cure d'entretien', because without the microscopic analysis of bodily fluids it could not be confirmed whether they had indeed been definitively cured.[1111]

Therapeutic protocols were adapted to local circumstances and the arrival of new trypanocides. Initially, treatment remained based on a combination of Atoxyl and tartar emetic, with a normal course consisting of ten injections.[1112] This was shorter than the regimen recommended by Rodhain's 1923 guidelines, and can be explained by David's intentions to simplify or shorten trypanocidal cures to avert the medical mission's staff crisis.[1113] By 1925, the director had started field trials of Tryparsamide, and the 'excellent results' observed prompted him to request quantities of the compound for his medical mission.[1114] Acknowledging that it was too expensive to administer to all trypanosome carriers in his care, he initially reserved Tryparsamide treatment for advanced cases[1115]. It amounted to reports of 'dormeurs' voluntarily presenting themselves to former lazarets for treatment.[1116] When in late 1926 he was provided with a large quantity of the new trypanocide, however, David devised a new treatment regimen that favoured intensive, as short as possible Tryponarsyl cures for itinerant practice.[1117] While suspected trypanosome carriers were given an Atoxyl-based 'cure de sûreté', confirmed

[1109] Dr Sulsenti, 'Mission médicale Kwango Kasai. Rapport annuel. Exercice 1928', s.d., MAEAA, RA-CB, 87.8.

[1110] J. David, 'Mission médicale du Kwango-Kasai. Exercice 1926. Premier Semestre', s.d., MAEAA, Hygiène, 4408.335.

[1111] 'Mission médicale du Kwango-Kasai. Exercice 1926. Deuxième Semestre', s.d., MAEAA, RA-CB, 87.4; E. Van Campenhout, Summary of and comments on the Report of the Mission médicale de prophylaxie du Kwango from the 2nd semester 1926, 26.10.1927, MAEAA, RA-CB, 87.2.

[1112] J. David, 'Mission médicale du Kwango-Kasai. 4ième Rapport Annuel. 2e semestre Juillet-Décembre 1923', 15.2.1924, MAEAA, Hygiène, 4407.334 (III).

[1113] J. Rodhain, 'Lettre-circulaire "Considérations pratiques sur la prophylaxie de la maladie du sommeil"', 20.11.1923, ITG, Onderzoek, 5.2.7, pp. 9-10; 'Mission médicale du Kwango-Kasai. Exercice 1926. Deuxième Semestre', s.d., MAEAA, RA-CB, 87.4; Governor General Rutten to Minister of Colonies, 25.3.1924, MAEAA, Hygiène, 4407.334 (III).

[1114] J. David to G. Van Campenhout, 2.9.1925, MAEAA, Hygiène, 4407.334 (III); J. David, 'Mission Médicale du Kwango-Kasai. Exercice 1926. Premier semestre', s.d., MAEAA, Hygiène, 4408.337.

[1115] J. David, 'Mission Médicale du Kwango-Kasai. Exercice 1926. Premier semestre', s.d., MAEAA, Hygiène, 4408.337.

[1116] 'Mission médicale du Kwango-Kasai. Exercice 1926. Deuxième Semestre', s.d., MAEAA, RA-CB, 87.4.

[1117] J. David, 'Mission médicale du Kwango-Kasai. Exercice 1926. Deuxième semestre', s.d., MAEAA, Hygiène, 4408.335; David, 'Traitement de la trypanosomiase humaine par la tryparsamide', 309.

cases received a three-year course of Tryponarsyl treatment consisting of six injections of 2g (administered in the space of a few weeks) each year, after which a 'cure d'entretien' was instituted comprising a total of three to six grammes, depending on patients' clinical condition. The significant 'moral' effect of Tryponarsyl on Congolese patients, who reportedly willingly complied with treatment, was confirmed by the provincial doctor.[1118] Small children, for whom intravenous injections were more problematic, were given intramuscular injections of the Bayer 205 compound.[1119] By 1928, the latter was also administered to sleeping sickness victims who did not tolerate arsenicals well, and preventively, to people not yet infected but living in heavily afflicted villages.[1120]

Besides modifications in diagnostic and therapeutic procedures, what also changed after Schwetz's departure was an increased participation of Kwango's private sector in pharmaceutical sleeping sickness control. Jesuit missionaries in particular collaborated more closely with the official medical mission. New director David appeared to be on better terms with the Kikwit Jesuits.[1121] Moreover, the Catholic order in general wanted to step up its role in the provision of rural medical care in the district to curb not only depopulation, but also the growing influence over indigenous populations of Protestant missionary doctors and (potentially anticlerical) state physicians.[1122] As AMIB members, Jesuits and other missionaries - the former often with the help of medically trained nuns - set up and began to run more medical centres and dispensaries in Kwango.[1123] To further assist them with the provision of indigenous medical assistance, Jesuits also successfully called for a new category of state-subsidised doctors to be attached to Catholic mission posts, and in 1925 inspired the 'Société médicale belge de Saint-Luc' to create an organisation called 'Aide médicale aux Missions' to help them recruit such

[1118] Médecin Provincial, 'Province du Congo-Kasai. Service Médical. Rapport Annuel 1927', s.d., MAEAA, RA-CB, 87.5.

[1119] 'Mission médicale du Kwango-Kasai. Exercice 1926. Deuxième Semestre', s.d., MAEAA, RA-CB, 87.4; E. Van Campenhout, Summary of and comments on the Report of the Mission médicale de prophylaxie du Kwango from the 2nd semester 1926, 26.10.1927, MAEAA, RA-CB, 87.2; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 10; Médecin Provincial, 'Province du Congo-Kasai. Service Médical. Rapport Annuel 1927', s.d., MAEAA, RA-CB, 87.5.

[1120] Dr Sulsenti, 'Mission médicale Kwango Kasai. Rapport annuel. Exercice 1928', s.d., MAEAA, RA-CB, 87.8.

[1121] Governor General Rutten to Minister of Colonies, 25.3.1924, MAEAA, Hygiène, 4407.334 (III); J. David, 'Mission médicale du Kwango-Kasai. 4ième Rapport Annuel. 2e semestre Juillet-Décembre 1923', 15.2.1924, MAEAA, Hygiène, 4407.334 (III).

[1122] G. Greggio, 'Yasa après deux ans', *Revue Missionnaire des Jésuites belges* 1 (1927), 6-9; R. Devisé, 'Une mission prospère: Yasa', R*evue Missionnaire des Jésuites belges* 12 (1930), 448-449; Société Médicale Belge de Saint-Luc, 'Une Oeuvre de Salut. L'Aide médicale aux Missions du Congo', s.d., KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10511, 4, pp. 5-7, 25-27.

[1123] See for example: Greggio, 'Yasa après deux ans', 7; J. De Decker, 'Kikwit. Moretus van de Werve', *Revue Missionnaire des Jésuites belges 4* (1928), 160-161; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, pp. 10, 26; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1928*, p. 19.

doctors.[1124] AMIB members in Kwango contributed to sleeping sickness control in their evangelical spheres of action by treating trypanosome carriers - sometimes those detected by official medical mission members - in their medical centres, or by touring themselves to screen and treat victims.[1125] By 1926-1927, Jesuit missionaries in Yasa, Djuma and Bas-Kwilu in particular actively collaborated with the Kwango-Kasai sleeping sickness mission as 'examinateurs' of their zones of influence.[1126]

In addition, private companies, and notably the HCB, were pressured by the colonial government to contribute to sleeping sickness control in their concession territories given their perceived role in the spread of the epidemic and their immediate interest in a large and healthy labour force.[1127] Consequently, the HCB's medical service in the Lusanga concession, and especially the clinical infrastructure in Leverville, became more involved in medical assistance to indigenous people. This first of all included the treatment of sleeping sickness cases in the Leverville lazaret.[1128] From about 1925 onwards and in as far as resources allowed, the HCB also employed an itinerant doctor and sanitary agent to proceed with sleeping sickness screening and treatment in Lusanga.[1129]

10.2 Obstacles, frictions and SAMI reforms

Despite the continued expansion of mass treatment in Kwango throughout the 1920s, medical mission doctors eventually came to realise that the complete eradication of sleeping sickness would be a much more difficult task than anticipated. In 1927, for example, David reported that certain trypanosomiasis foci persisted despite the long-

[1124] Société Médicale Belge de Saint-Luc, 'Une Oeuvre de Salut. L'Aide médicale aux Missions du Congo', s.d., KADOC, Archief van de Belgische en van de Vlaamse provincie van de Sociëteit van Jezus, 4.2.1.14.5. Missie Kongo, 10511, 4, pp. 8-10, 26-27; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 26.

[1125] Greggio, 'Yasa après deux ans', 9; De Decker, 'Kikwit', 161; G. Greggio, 'Les missionnaires-médecins', *Revue Missionnaire des Jésuites belges* 2 (1929), 73-75; G. Dumont, 'Les missionnaires médecins. Tournée médicale sur la rive droite du Kwango (Popokabaka- Kingashi), *Revue Missionnaire des Jésuites belges* 4 (1929), 163-165; *Rapport sur l'Hygiène Publique pendant l'Année 1925*, pp. 3, 21-22.

[1126] J. David, 'Mission médicale du Kwango-Kasai. Exercice 1926. Premier Semestre', s.d., MAEAA, Hygiène, 4408.335; Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 10.

[1127] Governor General to Minister of Colonies, 7.9.1923, MAEAA, Hygiène, 4407.334 (II); Governor General to Administrateur-Délégué des Huileries du Congo Belge à Kinshasa, 7.9.1923, MAEAA, Hygiène, 4407.334 (II); Governor General Rutten to Minister of Colonies, 25.3.1924, MAEAA, Hygiène, 4407.334 (III); Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, pp. 9-10.

[1128] Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1928*, pp. 5, 18; Seidelin, 'Une année de fonctionnement', 68-69.

[1129] Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 9; Seidelin, 'Une année de fonctionnement', 70-71.

standing campaign in the district, and that ten years would not suffice to stamp out the disease there.[1130] By 1929, Kikwit territory was no longer the sleeping sickness centre it had previously been, but its surveillance was still deemed necessary and the problem seemed to be shifting, moreover, to new zones east- and westwards.[1131]

With the Kwango-Kasai mission treating among the highest numbers of Congolese without the eradication of human trypanosomiasis in sight after ten years of activity, higher-ranking medical officers increased pressures on local staff to perform lumbar punctures and stick to therapeutic guidelines so as to rationalise mass treatment. Examining patients' cerebrospinal fluid was the only way, the head of Congo-Kasai Province's medical service argued, to distinguish true sleeping sickness cases from merely suspected and cured ones, and exclude the latter categories from long and costly treatments that were unnecessary.[1132] Moreover, as stipulated by Van den Branden's 1929 guidelines, pre-treatment lumbar punctures were required to select the most appropriate therapeutic protocols, with early cases requiring fifteen weekly injections of two grammes of the Tryparsamide compound and advanced patients needing much longer courses. By 1930, the Kwango-Kasai mission had finally introduced lumbar punctures to eliminate suspected and cured cases from treatment, which eventually resulted in time savings and reduced levels of trypanocide consumption.[1133] But treatment nevertheless remained standardised across different stages of the disease, with shorter regimens of twelve weekly Tryponarsyl injections administered to all confirmed cases.[1134] Provincial doctor Victor Daco judged that such a 'strongly standardised treatment', ill-adapted to different sorts of cases, was not ideal, but argued that it was difficult to ask more from itinerant medical staff than it was already doing.[1135]

Local sleeping sickness doctors themselves to some extent blamed slower than expected progress on insufficient administrative support. David highlighted critical staff shortages and the dangers of having to cover too large a geographic area in those circumstances, for example.[1136] Sulsenti complained about the territorial service's inactivity as far as mechanical prophylaxis was concerned, which made it difficult to obtain 'durable' results with medicines. Moreover, although by 1927 Tryponarsyl

[1130] Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 11.

[1131] Dr Sulsenti, 'Congo Belge. Mission médicale Kwango Kasai. Rapport premier semestre 1929', 31.7.1929, MAEAA, GG, 16849 (Congo-Kasai).

[1132] Médecin Provincial, 'Province du Congo-Kasai. Service Médical. Rapport annuel 1928', s.d., MAEAA, RA-CB, 87.8.

[1133] G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis; L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1933', s.d., MAEAA, RA-CB, RA/MED-1; Dr Zannetti, 'Mission médicale du Kwango. Rapport annuel 1933', 27.1.1934, MAEAA, RA-CB, RA/MED 18.

[1134] G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis.

[1135] Dr Daco, 'Province du Congo-Kasai. Service de l'Hygiène. Rapport Annuel 1929', s.d., MAEAA, RA-CB, 88.1.

[1136] J. David, 'Mission médicale du Kwango-Kasai. 4ième Rapport Annuel. 2e semestre Juillet-Décembre 1923', s.d., 15.2.1924, MAEAA, Hygiène, 4407.334 (III); Governor General Rutten to Minister of Colonies, 25.3.1924, MAEAA, Hygiène, 4407.334 (III); 'Mission médicale du Kwango-Kasai. Exercice 1926. Deuxième Semestre', s.d., MAEAA, RA-CB, 87.4.

treatment had replaced the routine use of Atoxyl and tartar emetic in Kwango, delayed trypanocide supplies sometimes forced mission members to temporarily use Atoxyl again on a larger scale, Sulsenti reported in 1928. Given the latter's therapeutic inferiority and the ensuing impracticalities (the drug required longer courses of treatment and risked deterring an indigenous population grown used to the more potent Tryponarsyl) this was considered an unwelcome setback.[1137]

Sharp criticisms were notably also aimed at private AMI providers. David complained that some (Catholic) AMIB collaborators acted like 'quacks', practicing 'la médecine d'occasion' by handing out expensive and not always useful medicines to Africans for free.[1138] Sulsenti, moreover, appreciated but did not seem overly impressed with Jesuit efforts to survey parts of the district on behalf of his medical mission, stating that their contribution was only voluntary, but 'at least something'.[1139] Such observations were part of a broader commentary on AMIB members' contribution to sleeping sickness control among state doctors in the Congo-Kasai Province. Provincial doctor Emile Lejeune, for example, expressed significant doubts as to whether missionaries, including those in Kwango, offered the desired results in return for the state subsidies granted. He claimed that most did not like taking part in the systematic screening and treatment of trypanosome carriers, but instead preferred to practice 'la polyclinique' - often without proper expertise - because it was much more popular among the 'natives' and thus more favourable to their evangelical interests.[1140] His successors Romolo Repetto and Daco shared the view that AMIB members rarely performed systematic census and case detection work (properly), and had a tendency to 'play doctor' in their dispensaries without necessarily adhering to rational therapeutic principles, especially where they were not supervised by a medical professional.[1141]

For their part Jesuit missionaries involved in itinerant sleeping sickness control in Kwango sometimes conceded that they omitted properly reporting on their activities, or that indigenous non-compliance could make medicinal sleeping sickness prophylaxis a difficult task for them.[1142] Moreover, Jesuits did not hide that distributing free medicines

[1137] Médecin Provincial, 'Province du Congo-Kasai. Service Médical. Rapport Annuel 1927', s.d., MAEAA, RA-CB, 87.5; Dr Sulsenti, 'Mission médicale Kwango Kasai. Rapport annuel. Exercice 1928', s.d., MAEAA, RA-CB, 87.8.

[1138] J. David, 'Mission médicale du Kwango-Kasai. Exercice 1926. Deuxième semestre', s.d., MAEAA, Hygiène, 4408.337; E. Van Campenhout, Summary of and comments on the Report of the Mission médicale de prophylaxie du Kwango from the 2nd semester 1926, 26.10.1927, MAEAA, RA-CB, 87.2.

[1139] Dr Sulsenti, 'Mission médicale Kwango Kasai. Rapport annuel. Exercice 1928', s.d., MAEAA, RA-CB, 87.8.

[1140] 'Rapport annuel 1923. Province du Congo-Kasai. Service Médical', s.d., MAEAA, RA-CB, 112.1.

[1141] Médecin Provincial, 'Province du Congo-Kasai. Service Médical. Rapport annuel 1928', s.d., MAEAA, RA-CB, 87.8; Dr Daco, 'Province du Congo-Kasai. Service de l'Hygiène. Rapport Annuel 1929', s.d., MAEAA, RA-CB, 88.1; A. Dubois, 'R. Repetto (1878-1960)', *Annales de la Société Belge de Médecine Tropicale* 40 (1960), 712; A. Dubois, 'Victor Joseph DACO' dans Académie Royale des Sciences d'Outre-Mer, *Biographie Belge d'Outre-Mer* (Bruxelles, 1973), t. VII-A, col. 153.

[1142] Dumont, 'Tournée médicale sur la rive droite du Kwango', 165; G. Dumont, 'Les missionnaires-médecins (Popokabaka-Kingashi). Suite du rapport du P. Dumont', *Revue Missionnaire des Jésuites belges* 5 (1929), 209-211; Greggio, 'Les missionnaires-médecins', 73.

for a whole range of conditions was part of a strategy to 'save the (black) race' and at the same time win indigenous 'sympathies', and the reported popularity of their dispensaries only further encouraged this approach.[1143] It appears, therefore, that missionaries were not always willing to yield to the imperatives of a vertical sleeping sickness campaign when this conflicted or was not entirely compatible with their own interests.

Kwango's Jesuits were not alone, however, in tailoring their medical interventions to the reality of Africans' broader health needs and selective acceptance of biomedicine as well as to their own preferences. To state doctors' frustration, private company doctors were not always too keen on the specialised, coercive sleeping sickness campaign either. Harald Seidelin, the head of the HCB's medical service, for example, argued for an AMI based on 'resident doctors' tending to Africans who came of their own accord for help with certain medical conditions, i.e. ailments for which they valued biomedicine's superior efficacy, rather than on a system of ambulatory and obligatory screening and treatment. Seidelin found the latter too costly, too time-consuming, and in particular too coercive: 'if one wants to practice medicine, one should avoid compulsion, except in very rare cases of public benefit, he explained.[1144] Moreover, while the HCB's itinerant doctor in Lusanga was involved in medicinal prophylaxis, his activities were not confined to sleeping sickness control, and Seidelin asserted that providing general medical care and improving hygiene were 'among the most effective means of combatting sleeping sickness because of their favourable influence on individuals' general resistance'.[1145]

HCB's stance on sleeping sickness control in any case left Sulsenti rather unimpressed. Companies like the HCB had a 'moral duty' to intervene, the medical mission director complained, but they lacked the necessary authority over the indigenous population and escaped state supervision.[1146] Sulsenti and other state doctors' reports about the obstacles to sleeping sickness control in Kwango contributed considerably to the development of Trolli's SAMI program at the end of the decade. Efforts to implement the latter in the early 1930s introduced important modifications to the district's sleeping sickness mission as conceived and initiated by Schwetz ten years earlier. First of all, steps were taken to improve the coordination of itinerant state doctors and private AMI providers' activities through a closer integration of both spheres and a better division of labour. The territory covered by the Kwango-Kasai medical mission was divided in a Kwango and a Kasai sector, each comprising several sub-sectors to be surveyed and screened for sleeping sickness, and assigned to either

[1143] Greggio, 'Yasa après deux ans', 8.

[1144] H. Seidelin, 'Le travail médical des Huileries du Congo Belge pendant cinq ans', *Annales de la Société Belge de Médecine Tropicale* 9 (1929), 286-287.

[1145] Seidelin, 'Une année de fonctionnement', 70-71.

[1146] Dr Sulsenti, 'Mission médicale Kwango Kasai. Rapport annuel. Exercice 1928', s.d., MAEAA, RA-CB, 87.8.

official medical staff or the private sector.[1147] In Kwango, for example, one such region was entrusted in 1930 to Father René Devisé, a doctor in natural sciences from the Jesuit Yasa mission specifically charged with 'medical surveillance'.[1148] Moreover, an agreement on trypanosomiasis control between the HCB and the colonial state saw the company set up a dedicated itinerant sleeping sickness service within its Lusanga concession in 1931 under the supervision of the official Kwango-Kasai medical mission.[1149]

In addition, the SAMI agenda stimulated the integration of mobile medicine and fixed health centres, and gradually transformed the specialised Kwango-Kasai mission into a broader endemic disease control operation, although human trypanosomiasis continued to be the overall priority. While itinerant practice remained vital to comprehensive population surveying and screening, therapy itself increasingly took place within private AMI centres, but also in official medical posts. The latter were originally established in Kwango for the inpatient treatment of advanced trypanosomiasis cases, who were more difficult to tend to ambulatorily, an issue that became more pressing with the generalised use of the Tryparsamide compound.[1150] By the early 1930s, and echoing the popularity of private AMI facilities, the state posts had evolved into 'true brousse dispensaries', providing medical assistance not only to trypanosome carriers but also to victims of other endemic infections like yaws and syphilis voluntarily presenting themselves. According to the head of Congo-Kasai's provincial medical service, the Kwango-Kasai sleeping sickness mission had in that sense become more like a SAMI service, although it continued to be referred to as a medical mission.[1151]

[1147] Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis.

[1148] G. Greggio, 'Missionnaires-médecins, région de Yasa', *Revue Missionnaire des Jésuites belges* 4 (1930), 165-166; Devisé, 'Une mission prospère: Yasa', 449; R. Devisé, 'Maladie du sommeil. Collaboration des missionnaires à la lutte contre la maladie du sommeil dans la Mission du Kwango', *Revue Missionnaire des Jésuites belges* (1934), 61.

[1149] R. Dumont to Senator Leyniers, 3.3.1934, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194; General Manager Barella (Lusanga area) to R. Dumont, 13.6.1931, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194; R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, pp. 16, 18.

[1150] Dr Tavernari, 'Province du Congo-Kasai. Rapport annuel du service de l'Hygiène 1931', 19.4.1932, MAEAA, RA-CB, 88.3; R. Mouchet, 'Maladie du sommeil au Kasai. Note pour Monsieur le Médecin en Chef', 5.11.1928, MAEAA, GG, 16849 (Congo-Kasai); Trolli, *Rapport sur l'Hygiène Publique pendant l'année 1927*, p. 14; Dr Sulsenti, 'Mission médicale Kwango Kasai. Rapport annuel. Exercice 1928', s.d., MAEAA, RA-CB, 87.8.

[1151] Dr Tavernari, 'Province du Congo-Kasai. Rapport annuel du service de l'Hygiène 1931', 19.4.1932, MAEAA, RA-CB, 88.3; R. Mouchet, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1932', s.d., MAEAA, RA-CB, 83.6; Dr Tavernari, 'Province du Congo-Kasai. Service de l'Hygiène. Rapport Annuel 1932', 15.4.1933, MAEAA, RA-CB, 89.1; G. Trolli, 'Rapport sur l'Hygiène Publique pendant l'année 1930', s.d., MAEAA, RA-CB, 83.3bis; 'Province du Congo-Kasai. Rapport annuel du service de l'hygiène 1930', s.d., MAEAA, RA-CB, 88.2.

10.3 Contesting mass treatment effectiveness and social medicine

Despite efforts to rationalise and better coordinate the mass treatment campaign, eradicating sleeping sickness in Kwango proved no less challenging in the 1930s. To the familiar obstacles deriving from the need to cover large areas with relatively small staff numbers were added a number of particularly disrupting events at the beginning of the decade. In 1931, the Kwango-Kasai medical mission's activities were severely hampered by an epidemic of bacterial dysentery, diverting medical attention from trypanosomiasis control, as well as an African uprising known as the '(Ba)pende revolt', the worst rebellion in the Belgian Congo before the struggle for independence in 1960.[1152] At the heart of the troubles was 'socio-economic unrest' among the Pende people, many of whom had been forcibly recruited to work for the HCB. The lowly paid work was hard, and when the 1929 economic crash led the company to reduce payment while the colonial administration increased taxes, African frustrations reached a boiling point. Protest took the form of a 'popular religion', and when its leader's refusal to pay tax resulted in the murder of a state official, violent Belgian reprisals followed to break the insurrection.[1153] Although not so much an act of resistance against the sleeping sickness campaign per se, the political unrest made mass screening and treatment in the affected area impossible for months.

In addition, the economic crisis of the 1930s also prompted private companies, including the HCB, to withdraw from sleeping sickness prophylaxis in Kwango, forcing the state to take over the sectors previously under private medical 'surveillance' by 1932-1933.[1154] The Kwango medical mission lost its sphere of action in the Kasai district due to a redrawing of the colony's provincial borders in 1933, but now had to take over the prophylactic zones of almost all AMIB posts, except that of the Jesuit mission at Yasa, where Devisé continued surveying.[1155] Around the same time, medical officials

[1152] Dr Tavernari, 'Province du Congo-Kasai. Rapport annuel du service de l'Hygiène 1931', 19.4.1932, MAEAA, RA-CB, 88.3; R. Mouchet, 'Rapport sur l'hygiène publique 1931', s.d. MAEAA, RA-CB, 83.5; Van Reybrouck, *Congo: een geschiedenis*, p. 175

[1153] Van Reybrouck, *Congo: een geschiedenis*, pp. 175-178; L.-F. On the events in 1931, see also Vanderstraeten, *La répression de la révolte des Pende du Kwango en 1931* (Bruxelles, 2001).

[1154] R. Mouchet, 'Rapport du Service de L'Hygiène. Année 1932', 5.1933, MAEAA, RA-CB, 83.6; 'Province de Léopoldvile. Services de l'Hygiène et du Laboratoire de Bactériologie. Rapport Annuel 1933', s.d., MAEAA, RA-CB, 252.7.

[1155] Dr Tavernari, 'Province de Léopoldville. Rapport Annuel du service de l'Hygiène 1933', 3.4.1934, MAEAA, RA-CB, 135.3; Dr Zannetti, 'Mission médicale du Kwango. Rapport annuel 1933', 27.1.1934, MAEAA, RA-CB, RA/MED 18; 'Province de Léopoldvile. Services de l'Hygiène et du Laboratoire de Bactériologie. Rapport Annuel 1933', s.d., MAEAA, RA-CB, 252.7. The administrative reorganisation of the provinces in the Belgian Congo saw Congo-Kasai Province become Leopoldville Province.

were suspecting that the problem of arsenic resistance was spreading in the Province, and reports started to emerge about increases in the number of new sleeping sickness cases in Kwango - especially in sectors where 'political or other vicissitudes' had disrupted medical action - and the appearance of new foci in southern parts of the district previously deemed unaffected.[1156]

The epidemic, political and economic crises and reported setbacks led some to question the effectiveness of mass sleeping sickness treatment. More specifically, in 1934 a metropolitan campaign condemning the organisation of sleeping sickness control in the Belgian Congo was once again instigated by a (former) member of the colony's private AMI providers. This time, the 'culprit' was Robert Dumont, a former HCB doctor who had been involved in the company's itinerant medical service in Kwango in the early 1930s. In 1931, Dumont was charged with human trypanosomiasis control in the Lusanga concession's Haut-Kwilu sector under the direction of the HCB's new sleeping sickness service, which itself operated under the supervision of the Kwango-Kasai medical mission. During the dysentery epidemic in Kwango, Dumont became 'titulaire' of a 'mixed' sector, comprising state as well as company territory, where he had to help get the disease under control. He stayed on as an HCB doctor until his contract was terminated in June 1932.[1157]

Dumont's experiences as a company sleeping sickness doctor in Kwango made him very skeptical of the mass Tryponarsyl treatment campaign. A lack of medical and road infrastructure first of all created difficult working circumstances. More importantly, Dumont did not understand why he had to focus on pharmaceutical sleeping sickness control when in his sector the disease was clearly in regression, and the root cause of African ill health appeared to be malnutrition above all else. Dumont especially emphasised the role of mineral deficiencies in lowering individuals' resistance to infectious disease in Kwango, and argued that medical drugs needed to act on properly boosted bodily 'terrain(s)' to be truly effective.[1158] This reflected his adherence to a long-standing 'French clinical tradition' that emphasised the importance of the 'terrain - the physiological makeup of the individual patient'.[1159] Dumont also felt that his position as a company employee who received directives from his immediate superior at the HCB, but

[1156] R. Mouchet, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1932', s.d., MAEAA, RA-CB, 83.6; 'Province de Léopoldvile. Services de l'Hygiène et du Laboratoire de Bactériologie. Rapport Annuel 1933', s.d., MAEAA, RA-CB, 252.7; Dr Tavernari, 'Province de Léopoldville. Rapport Annuel du service de l'Hygiène 1933', 3.4.1934, MAEAA, RA-CB, 135.3; Dr Zannetti, 'Mission médicale du Kwango. Rapport annuel 1933', 27.1.1934, MAEAA, RA-CB, RA/MED 18.

[1157] R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, pp. 35-37.

[1158] R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, pp. 6-7, 12, 22.

[1159] I. Löwy, '"The terrain is all": Metchnikoff's heritage at the Pasteur Institute, from Besredka's "antivirus" to Bardach's "orthobiotic serum"' in Lawrence and Weisz (eds.), *Greater than the Parts*, p. 257.

also had to take those of the state medical service into account, led to the imposition of a 'standard medicine' with uniform procedures that hampered his clinical autonomy and reduced him to little more than an 'agent sanitaire'.[1160] The result on the ground was a neglect of local circumstances and Africans' bodily 'terrain', amounting to an unwarranted focus on sleeping sickness control by means of ineffective, standardised drug treatments.[1161]

In Dumont's view, the outbreak of the dysentery epidemic in 1931, which he considered a more dangerous demographic threat than human trypanosomiasis, proved that the prioritisation of pharmaceutical sleeping sickness control in Kwango had been the wrong approach.[1162] Moreover, the HCB doctor's experiences in charge of a 'secteur antidysentérique' strengthened his conviction that the hierarchical organisation of the colony's medical service produced poor results.[1163] For example, Dumont was supplied with vaccines by the official medical service, but an incident where local state staff insisted on obeying the misguided instructions of higher-ranking medical officers led to the HCB doctor's drugs being sent to the wrong place. The apparent inability of lower-level medical personnel to defy nonsensical orders underscored the need for organisational reform, Dumont argued.[1164] Moreover, the company doctor had developed his own dysentery treatment, combining serum therapy with a 'traitement calcique', and claimed it resulted in much better mortality figures than the methods employed by the Kwango-Kasai mission's state staff.[1165] When he was informed in May 1932 that the state would take over his dysentery sector following a new agreement with the HCB and that he was to revert to sleeping sickness control in Haut-Kwilu, Dumont refused to comply with what he considered an absurd demand. Shortly afterwards, he was dismissed by the 'Huileries', which was probably glad to get rid of an employee who had

[1160] R. Dumont to Senator Leyniers, 3.3.1934, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194.

[1161] R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, pp. 15-18.

[1162] R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, pp. 18, 27.

[1163] R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, p. 26.

[1164] R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, pp. 47-50.

[1165] R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, pp. 33-34; Robert Dumont, 'Considérations diverses au sujet de l'épidémie de dysenterie bacillaire, 1931-1932, dans le Kwango (Huileries du Congo belge) et modalités de traitements', *Annales de la Société Belge de Médecine Tropicale* 13 (1933), 261-266.

occasionally criticised its pursuit of economic above public health interests.[1166] Dumont's pride was in any case hurt, and he felt that his reputation had been damaged by both the HCB and the state medical service. The latter failed to acknowledge his superior results against dysentery, he speculated, out of fear that it would make state doctors look bad.[1167]

Back in Belgium, the former company doctor began to openly criticise the Congo's medical service and its public health record. Seemingly out of frustration, he started sending letters to Ghent university rector Albert Bessemans, for example, to highlight the lack of clinical freedom in Africa and thus dissuade medical graduates from embarking upon a colonial career.[1168] Moreover, he drafted reports and wrote to Catholic politician Daniel Leyniers, member of the Belgian Senate's colonial commission, to expose the colony's demographic decline despite high levels of medical expenditure.[1169] The problem, Dumont argued, was that millions were spent on special missions and pharmaceuticals, while the indigenous population's nutritional needs were neglected. As well-nourished bodies were a precondition for therapeutic success, this situation amounted to a waste of national resources.[1170]

What exacerbating the sad state of affairs, Dumont argued in a published report, was the 'statist', 'mass' character of medicine in the Belgian Congo, exemplified in particular by the sleeping sickness missions. The mass or 'social medicine' promoted by the colonial state, was aimed at collectives rather than individual patients, and amounted to a centralisation and standardisation that threatened the medical individualism associated with medical professionals' clinical freedom and patients' specificity.[1171] In the Belgian Congo, clinical practitioners in the field had become mere 'passive instruments', forced to implement the pre-fixed (therapeutic) procedures decreed by official medical

[1166] R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, pp. 16-17, 53-54.

[1167] R. Dumont, 'Dans la Lusanga area et le secteur du Haut-Kwilu. Récit d'un médecin qui y a rempli les fonctions de Médecin itinérant et y fut plus tard Médecin d'un secteur Mixte ETAT-SOCIETE', 23.3.1933, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194, pp. 58-61.

[1168] R. Dumont to Rector Bessemans, 20.7.1934, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194; R. Dumont to Rector Bessemans, 12.9.1934, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194.

[1169] R. Dumont to Senator Leyniers, 3.3.1934, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194; R. Dumont, 'Cause de la mauvaise situation sanitaire de la colonie', s.d., Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194. In 1934, Leyniers was responsible for a parliamentary report criticising the influence of 'financial holdings' in the Belgian Congo, in a context of metropolitan debates about the plight of Congolese labourers. See Vanthemsche, *Impact van een kolonie*, p. 64.

[1170] R. Dumont to Senator Leyniers, 3.3.1934, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194; R. Dumont, 'Cause de la mauvaise situation sanitaire de la colonie', s.d., Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194; R. Dumont, 'Quelques idées maitresses de mon mémoire du 25 mars 1933. Résumé succinct', 20.1.1934, ITG, Onderzoek, 5.3.1.

[1171] R. Dumont, 'Le conflit des conceptions médicales au Congo. Conséquences néfastes pour notre Colonie de la "Médecine Sociale" à tendances étatistes', 10.10.1934, ITG, Onderzoek, 5.3.1.

authorities on the basis of laboratory research, and without the autonomy to adapt them to local circumstances and individual cases.[1172]

Capitalising on the Schwetz mission controversy, Dumont used the reliance on lymph node palpation in the Belgian Congo as an example of how its hierarchically organised system of sleeping sickness control could lead whole medical teams astray. A more liberal regime would have prevented local staff from repeating its chiefs' diagnostic mistakes. It was the 'dictatorial' nature of social medicine, therefore, that prevented individual doctors from defying bad practices, and this to the detriment of the Congolese population.[1173] In Dumont's view, the same mechanism was behind the continued, yet unjustified focus on sleeping sickness and its purely pharmaceutical control, and the neglect of nutrition in the colony, as he had experienced himself.[1174]

Importantly, Dumont's criticisms quickly became the object of discussion in the Belgian parliament. During the Chamber of Representative's plenary session on 2 May 1934, the medical doctor and Liberal party politician Charles De Jaegher raised the issue of the Congo's less than brilliant demographic situation.[1175] He talked of a 'progressive depopulation' despite an intensification of medical efforts and monetary 'sacrifices' over the last years, and echoed Dumont in attributing the problem to a failure to address Africans' nutritional deficiencies and the colonial medical service's organisational shortcomings, notably the lack of autonomy for medical practitioners.[1176] Another member of the Chamber, the Flemish nationalist Emile Butaye, joined in questioning the colony's medical record based on Dumont's reports.[1177] The next day, Paul Tschoffen, Catholic Minister of Colonies in a Catholic-Liberal government, acknowledged that a large part of the colonial budget was spent on public health and that the usually routine character of 'brousse' doctors' work was indeed a thorny issue that hampered medical

[1172] R. Dumont, 'Quelques idées maitresses de mon mémoire du 25 mars 1933. Résumé succinct', 20.1.1934, ITG, Onderzoek, 5.3.1; R. Dumont, 'Le conflit des conceptions médicales au Congo. Conséquences néfastes pour notre Colonie de la "Médecine Sociale" à tendances étatistes', 10.10.1934, ITG, Onderzoek, 5.3.1.

[1173] R. Dumont, 'Le conflit des conceptions médicales au Congo. Conséquences néfastes pour notre Colonie de la "Médecine Sociale" à tendances étatistes', 10.10.1934, ITG, Onderzoek, 5.3.1; R. Dumont, 'A propos d'un interview récent', 6.7.1934, Archief Universiteit Gent, Rectoraal archief, 4A2/4, doos 242, map 194.

[1174] R. Dumont, 'Le conflit des conceptions médicales au Congo. Conséquences néfastes pour notre Colonie de la "Médecine Sociale" à tendances étatistes', 10.10.1934, ITG, Onderzoek, 5.3.1.

[1175] 'De Jaegher, Charles Amand Paul Maria', Liberaal Archief, De Blauwe Wie is Wie, http://www.liberaalarchief.be/D.html (Last accessed 27 March 2014).

[1176] 'Chambre des Représentants - Annales Parlementaires. Séance du mercredi 2 mai 1934', pp. 1369-1372, Plenum.be, Belgian Chamber of Representatives. Proceedings of the plenary sessions, https://sites.google.com/site/bplenum/proceedings/1934/k00411740/k00411740_00 (Last accessed 27 March 2014).

[1177] 'Emil Butaye (1881-1953)', ODIS - Database Intermediary Structures Flanders (online), Record no. 6904, http://www.odis.be (Last accessed 27 March 2014); 'Chambre des Représentants - Annales Parlementaires. Séance du mercredi 2 mai 1934', p. 1372, Plenum.be, Belgian Chamber of Representatives. Proceedings of the plenary sessions, https://sites.google.com/site/bplenum/proceedings/1934/k00411740/k00411740_00 (Last accessed 27 March 2014).

recruitment.[1178] He denied the depopulation claim, however, arguing that sleeping sickness was largely under control, and citing demographic growth in the Bas-Congo district through a concerted effort of the state, private companies and FOREAMI and the development of an agricultural policy. With time and sufficient resources, he concluded, there was no reason that what was happing in Bas-Congo could not be emulated elsewhere.[1179] The suggested solution, therefore, did not so much seem to lie in abandoning 'social medicine' as in extending FOREAMI's particular version of it.

10.4 FOREAMI in Kwango

In the Congo itself, the medical service in the early 1930s also pinned its hopes on FOREAMI expanding its influence into the Kwango district, so that mission staff would be availably to move to newly affected territories without leaving older sectors empty.[1180] By 1934, the colonial government insisted on a swift FOREAMI occupation of the district because of the claims of a violent upsurge of sleeping sickness there.[1181] The organisation agreed to speed up the transfer of its activities from Bas-Congo to Kwango, and from July 1935 onwards, it took over an increasing number of sub-sectors from the Kwango medical mission, gradually expanding its 'zone of occupation' eastwards, until it covered all territories west of the Kwilu river.[1182] In the new FOREAMI sub-sectors, a significant part of the medical mission's personnel and equipment was put at the organisation's disposal, and it also received free supplies of the 'grands produits spécifiques' (i.e. drugs for the specific treatment of the most important endemic diseases, including sleeping sickness) from the colonial administration.[1183] Like the official medical mission, FOREAMI's state staff also closely collaborated with private AMI doctors and medical auxiliaries.[1184]

[1178] 'Paul Tschoffen (1878-1961)', ODIS - Database Intermediary Structures Flanders (online), Record no. 8267, http://www.odis.be (Last accessed 27 March 2014).

[1179] 'Chambre des Représentants - Annales Parlementaires. Séance du jeudi 3 mai 1934', p. 1393, Plenum.be, Belgian Chamber of Representatives. Proceedings of the plenary sessions, https://sites.google.com/site/bplenum/proceedings/1934/k00411758/k00411758_00 (Last accessed 27 March 2014).

[1180] Dr Tavernari, 'Province de Léopoldville. Rapport Annuel du service de l'Hygiène 1933', 3.4.1934, MAEAA, RA-CB, 135.3.

[1181] Trolli, 'Méthode originale d'assistance médicale', 155.

[1182] Trolli, 'Méthode originale d'assistance médicale', 174; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935*, pp. 7, 30, 56-57; 'Province de Léopoldville. Rapport Annuel. 1936', s.d., MAEAA, RA-CB, 135.9; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1936*, pp. 32, 59.

[1183] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935*, pp. 31-32.

[1184] Ibid., p. 57; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1936*, p. 59.

Although a detailed history of FOREAMI in the Belgian Congo is yet to be written, what is clear is that the organisation encountered great difficulties to implement its program of 'integral medical assistance' in Kwango before the Second World War.[1185] Pressures from the local government to extend its sphere of action as quickly as possible, combined with incomplete staff cadres and budgetary difficulties caused by the economic crisis, as well as a much less developed road network and missionary clinical infrastructure in comparison with the Bas-Congo district led to a reluctant 'retour pur et simple à la formule de la mission médicale'.[1186] Moreover, by 1937 FOREAMI saw itself forced to hand four of its Kwango sub-sectors back to the official medical service, a transfer that took effect in January 1939.[1187] The result was that attempts to carry out the SAMI scheme in both FOREAMI and the official medical mission's zone of occupation to a significant extent remained confined to sleeping sickness control, especially mass screening and treatment.

In the wake of concerns about arsenic resistance, overly standardised treatments and trypanocide overconsumption, however, diagnostic and therapeutic procedures in Kwango continued to evolve throughout the 1930s. Facilitated by a growing confidence in biomedicine among local inhabitants and a greater reliance on fixed health centres, both medical mission and FOREAMI staff members stepped up the use of lumbar punctures at different stages in the trypanosomiasis screening and treatment process.[1188] As mission director Zanetti explained in 1933, the 'systematic practice of lumbar punctures' allowed evaluating treatment outcomes and adapting therapeutic regimens to the state of patients' cerebrospinal fluid, in other words, it allowed breaking away from an expensive 'therapeutic standardisation'.[1189] Trypanocide therapy in the medical mission remained largely based on weekly injections of two grammes of Tryponarsyl, but clinicians could adopt varying regimens (e.g. longer or shorter treatment courses,

[1185] Kivits, 'Fonds Reine Elisabeth pour l'Assistance Médicale', 398-399; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1935*, p. 57.

[1186] Trolli, 'Méthode originale d'assistance médicale', 153-155; Kivits, 'Fonds Reine Elisabeth pour l'Assistance Médicale', 398; 'Procès-verbal de la séance tenue par le conseil d'administration le 26 septembre 1935', s.d., ITG, Onderzoek, 5.3.18.2.1. As a member of Foreami's Administrative Council, it was the Governor General who proposed a plan of action, determining priorities, to the Minister of Colonies who in turn consulted the Council about it. Once approved, it was the Executive Bureau who had to ensure its execution by Foreami's staff in Africa. See 'Fonds Reine Elisabeth pour l'Assistance médicale aux Indigènes. Statut organique', 17.3.1937, ITG, Onderzoek, 5.3.18.2.1, pp. 3, 5-6.

[1187] L. Van Hoof, 'Rapport sur l'Hygiène Publique au Congo Belge pendant l'année 1938', s.d., MAEAA, RA-CB, 85.1; Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, p. 64; 'Province de Léopoldville. Service de l'Hygiène. Rapport Annuel 1939', s.d., MAEAA, RA-CB, 252.10; Kivits, 'Fonds Reine Elisabeth pour l'Assistance Médicale', 398-399.

[1188] Dr Zannetti, 'Mission médicale du Kwango. Rapport annuel 1933', 27.1.1934, MAEAA, RA-CB, RA/MED 18; 'Province de Léopoldville. Rapport Annuel 1936', s.d., MAEAA, RA-CB, 135.9; L. Dupuy, 'Etat de la maladie du sommeil en 1935, dans les régions du Bas-Congo et du Kwango, occupées par le Foreami', *Annales de la Société Belge de Médecine Tropicale* 17 (1937), 177-182, 206-217; Trolli, 'Méthode originale d'assistance médicale', 221.

[1189] Dr Zannetti, 'Mission médicale du Kwango. Rapport annuel 1933', 27.1.1934, MAEAA, RA-CB, RA/MED 18

larger initial doses, or combinations with Bayer 205 and/or tartar emetic injections) depending on cerebrospinal fluid results and the presence of arsenic-resistant trypanosomes.[1190] Sleeping sickness treatment also became much more context- and case-specific in FOREAMI's sphere of action. Depending on individual lumbar puncture results as well as a territory's stage of medical occupation and degree of arsenic resistance, FOREAMI clinicians practiced a 'therapeutic eclecticism' to obtain the best prophylactic and curative results possible.[1191] Different typical regimens were adopted in different situations, and comprised various courses and combinations of Tryponarsyl (which remained the basis of therapy), Moranyl and/or tartar emetic injections. Guidelines from the Leopoldville laboratory were taken into account to prevent toxicity, and although doctors were given considerable therapeutic autonomy, prompting some to experiment, most reportedly adhered to these 'classic techniques'.[1192]

Despite FOREAMI's heavy involvement in mass screening and treatment, its founder and metropolitan director, Giovanni Trolli, was not very happy about the circumstances in Kwango forcing the organisation to limit its objectives and 'specialise' in (pharmaceutical) sleeping sickness control over a considerable area. Governmental pressures to expand in terms of surface rather than depth were misguided, according to Trolli. By 1936, local FOREAMI staff had concluded that the sleeping sickness situation in Kwango was not as grave as reported by the colony's medical service, and that it was in particular the 'population's undernourishment that required urgent intervention'.[1193] The causes of Kwango's demographic problems, moreover, were foremost of a political-economic rather than a medical nature, he argued.[1194] Tackling the district's chronic poverty and malnutrition through economic and agricultural policies was a necessary precondition for any successful medical assistance, including sleeping sickness control, in Trolli's view.[1195]

Although such policies naturally fell outside FOREAMI's remit, its presence in Kwango helped highlight the problem of malnutrition and to some extent spurred local administrators into agricultural action.[1196] Moreover, FOREAMI attempted to embed mass sleeping sickness screening and treatment in a somewhat broader public health strategy, aimed at improving rural 'hygiene' via education and implementing sanitary

[1190] Dr Zannetti, 'Mission médicale du Kwango. Rapport annuel 1933', 27.1.1934, MAEAA, RA-CB, RA/MED 18; Dr Tavernari, 'Province de Léopoldville. Rapport Annuel du Service de l'Hygiène', 6.4.1935, MAEAA, RA-CB, 135.5; 'Province de Léopoldville. Rapport Annuel 1936', s.d., MAEAA, RA-CB, 135.9.

[1191] Dupuy, 'Etat de la maladie du sommeil en 1935', 188; Trolli, 'Méthode originale d'assistance médicale', 223.

[1192] Trolli, 'Méthode originale d'assistance médicale', 222-223; Dupuy, 'Etat de la maladie du sommeil en 1935', 185-188; J. Rodhain, 'Pourquoi les médecins Belges appréhendent de faire carrière dans la Colonie', 1937, ITG, Onderzoek, 5.3.1.

[1193] Trolli, 'Méthode originale d'assistance médicale', 239; *FOREAMI. Rapport Annuel 1936* (Bruxelles, s.d.), pp. 5-6.

[1194] Trolli, 'Méthode originale d'assistance médicale', 155.

[1195] Ibid., 165-167, 239-240.

[1196] Van Hoof, *Rapport sur l'Hygiène Publique au Congo belge pendant l'année 1937*, p. 64; Trolli, 'Méthode originale d'assistance médicale', 297.

legislation (in the case of sleeping sickness also designated as 'prophylaxie administrative et agronomique' and involving brush clearing, for example), as well as promoting better nutrition from a quantitative and qualitative point of view.[1197] Thus the organisation in some respects presented an answer to Robert Dumont's criticisms of mass treatment reductionism, although progress in these areas was slow and FOREAMI's bureaucratic nature and focus on social medicine were a far cry from what the former HCB doctor had in mind.[1198] In 1939, Trolli concluded that despite shortcomings, FOREAMI's 'nosological' campaign in Kwango was not without result, and that the situation was 'en définitive favorable' considering the overall reductions in sleeping sickness incidence and the persistence of only less important foci.[1199]

10.5 In summary

Studying the evolution of pharmaceutical sleeping sickness control in Kwango after Schwetz's departure highlights how local developments were intertwined with higher-level medical policies and helped shape Tryponarsyl's general trajectory in the Belgian Congo, in particular the overlapping phases of large-scale use and growing doubts about effectiveness. Local evaluations of the Tryparsamide compound in Kwango spurred optimism and helped boost demand for the drug by the second half of the 1920s. In addition, the special medical mission's particular diagnostic and therapeutic practices, for which field conditions and chronic staff shortages were invoked as a justification, amounted to high levels of trypanocide consumption and highly standardised treatments. Reports signalling the elusiveness of a pharmaceutical eradication of sleeping sickness in the district therefore met with instructions to comply with central clinical guidelines so as to reduce the quantities of Tryponarsyl used and increase treatment effectiveness. As Kwango's sleeping sickness doctors largely attributed limited progress to private sector failures in infectious disease control, they also contributed significantly to chief medical officer Trolli's SAMI reforms. The attempted reorganisation of endemic disease control in the district encountered important obstacles, however, and did not dispel tensions over the sleeping sickness campaign with the private sector. In fact, in the early 1930s, a combination of a political, economic and epidemic crisis in Kwango and the experiences of a former company doctor helped trigger (metropolitan) debates about the value of mass trypanocide treatment, and sped up the expansion of an 'improved', more horizontal version of social medicine in the

[1197] Trolli, 'Méthode originale d'assistance médicale', 218, 294-295, 297.

[1198] Ibid., 295-296.

[1199] Ibid., 240-241.

colony. Even if, as in Kwango, the latter's local implementation proved difficult, it reflected and contributed to a growing recognition in the 1930s of the limits of a specialised and pharmaceuticalised approach to public health in the Belgian Congo. Together with a decline in sleeping sickness incidence, this contributed to Tryponarsyl's dwindling career as a tool of disease eradication by the Second World War.

PART V.

CONCLUSION

Chapter 11
Conclusion

11.1 A 'new pharmaceutical history' of sleeping sickness control

This dissertation has aimed to examine to what extent and how sleeping sickness control in the Belgian Congo was pharmaceuticalised before the Second World War. Placing pharmaceuticals at the heart of an inquiry into the colonial history of human African trypanosomiasis, it has sought to add an extra-European dimension to the historiography of twentieth-century therapeutics. At the same time, it has aimed to contribute to the historical literature on sleeping sickness by expanding our understanding of how trypanosome-killing chemical compounds or trypanocides came to occupy a prominent position in the fight against this infectious disease in the Congo, beyond simple references to therapeutic efficacy and Belgian colonial rule. This approach has been largely inspired by the emergence of a 'new pharmaceutical history'. Informed by a biographical conception of medical drugs, the latter examines the wider societal context and processes in and through which pharmaceuticals have become prevalent as solutions to medical and even social problems since the twentieth century. Conceived as material objects that move - although not linearly - through different life stages, such as invention, evaluation, production, distribution, prescription and consumption, pharmaceuticals' rise to prominence involves interactions between a range of social groups, including scientists, drug manufacturers, doctors and patients, and thus cannot simply be accounted for by their inherent pharmacological properties alone.

As a corollary, new pharmaceutical historians have argued that following medical drugs as they 'circulate between and within the heterogeneous worlds of science, industry and medicine' in the course of their lives can be a useful strategy to study pharmaceuticalisation.[1200] In this dissertation as well, the question of the pharmaceuticalisation of sleeping sickness control has been operationalised by tracing (parts of) drug trajectories, not only across social, but also geographic, boundaries. More

[1200] Gaudillière, 'Introduction: drug trajectories', 605.

specifically, it has charted the beginnings and further fates of two arsenicals, Atoxyl and Tryparsamide, as sleeping sickness drugs in the Congo in the first decades of the twentieth century. These are the compounds most commonly associated with the Belgian sleeping sickness campaign before the Second World War, and thus the ones that appeared particularly successful as trypanocides.

However, as this study has set out to show, their 'success' as sleeping sickness drugs in the Congo was not self-evident or straightforward. Atoxyl and Tryparsamide's presence and widespread use in the colony was not simply the result of a linear, top-down transfer of western industrial-scientific objects to Africa under the influence of colonialism, but involved a much more contingent, interactive and fluctuating process. This is evident in a number of ways. For example, both Atoxyl and Tryparsamide were drugs with 'parallel' lives, in the sense that they were not only applied in the specific treatment of sleeping sickness in the Congo. Atoxyl had a career as an arsenical remedy for a wide range of indications in Europe, while Tryparsamide also gained prominence as a treatment for neurosyphilis in the 1920s. Moreover, the arsenicals were part of a much broader range of remedies and trypanocidal compounds introduced as sleeping sickness drugs in colonial Africa at the beginning of the twentieth century, so their careers have to be viewed within a context of competing medicines.[1201] Atoxyl and Tryparsamide's trajectories in the Congo, in other words, reflect how trypanocides were not simply exported to colonial Africa as ready-made sleeping sickness drugs, but involved a process of local 'grounding', i.e. a local evaluation and shaping of therapeutic application, within a much wider network of pharmaceutical circulation.[1202] This point is further underscored by the fact that their 'colonial lives' were not identical across tsetse-belt Africa.

Another important factor complicating the notion of undeviating drug trajectories was the fact that the Atoxyl and Tryparsamide compounds had multiple 'brand identit(ies)'.[1203] In a context where pharmaceuticals could not be patented and imitation was a crucial part of product development in the European drug industry, several companies re-appropriated existing trypanocides that were in demand on colonial drug markets by copying them and marketing them under their own trade name. In this way, the originally German-manufactured Atoxyl vied with 'Trypoxyl' and 'Atoxyl Meurice', for example, while Tryparsamide was commercialised alongside 'Tryponarsyl' and 'Novatoxyl'. Significantly, different brands of the same trypanocides were not all equally salient as sleeping sickness drugs in the Congo. Moreover, their fortunes changed over time, highlighting how transformations in original brand identity (and associated

[1201] On the need to understand drug careers within the context of 'existing and changing armories of available drugs', see Snelders, Kaplan and Pieters, 'On Cannabis', 98, 113.

[1202] Raj, *Relocating Modern Science*, p. 21.

[1203] J. Greene, 'Pharmaceutical brands and drug standardisation in the twentieth century' in Bonah, Masutti, Rasmussen and Simon (eds.), *Harmonizing Drugs*, p. 101.

'cultural status') characterised the trajectories of Atoxyl and Tryparsamide in the colony.[1204]

Above all, this dissertation has sought to challenge a too linear understanding of pharmaceuticalisation by pointing to the cyclical nature of Atoxyl and Tryparsamide's career paths in the Congo. As highlighted by a number of Dutch historians in particular, the successes (and failures) of medical drugs since the nineteenth century tend to follow cyclical patterns, where highs alternate with lows in their appreciation and use. These drug career cycles typically consist of three main phases: a first phase of 'initial enthusiasm' and 'expanding use', a second stage characterised by 'rising criticism and disappointment', and finally a period of 'contracting use'. Importantly, these phases 'need not be sequential', but can 'overlap' and thus temporarily coexist.[1205] Moreover, this 'common cycle of events' is not a 'universal law', but a historically contingent pattern, in the sense that specific cycle 'dynamics' can vary between different drugs and across contexts.[1206] Also, drugs can make a comeback and 'start a new career cycle' with a different application for their use.[1207]

As far as Atoxyl and Tryparsamide's Congolese careers as sleeping sickness drugs are concerned, this dissertation has suggested that we can distinguish three successive, but partially overlapping cycles roughly between 1905 and 1939. The first two cycles involved Atoxyl and the other one Tryparsamide. Atoxyl first lived through a short cycle as a sleeping sickness cure in the Congo Free State. After the German-manufactured medicinal chemical's introduction and initial dissemination as an experimental sleeping sickness drug in 1905, its use quickly expanded as it became a compulsory treatment for African lazaret patients at the instigation of a metropolitan administration with high expectations regarding its healing powers. Almost immediately, however, the trypanocide entered a phase of more critical assessments, as clinicians started reporting limited therapeutic efficacy, especially in advanced cases of trypanosomiasis, and serious adverse reactions including blindness, which also made it unpopular among African trypanosome carriers. As a result, Atoxyl disappeared from the spotlight as a true cure for sleeping sickness (although it remained in use by lazaret doctors) and attention shifted to finding alternative remedies in the Congo.

However, the drug soon made a centre stage reappearance - and thus started a new career cycle - when laboratory doctors reinvented it as a locally useful tool of disease prevention rather than a curative agent. Enthusiasm about its potential and suitability as an instrument of sleeping sickness control grew steadily after the Belgian takeover of the Free State, and became even stronger after the interruption of the First World War. This optimism was translated into large-scale use, in particular of the new French and Belgian brands, by itinerant medical staff screening and administering prophylactic

[1204] Huisman, 'Struggling for the market', p. 66.

[1205] Snelders, Kaplan and Pieters, 'On cannabis', 95, 97.

[1206] Pieters, *Interferon*, p. xviii; Snelders, Kaplan and Pieters, 'On cannabis', 97, 113-114.

[1207] Snelders, Kaplan and Pieters, 'On cannabis', 97.

treatment to African trypanosome carriers in rural areas. Yet once again, the phase of Atoxyl's dramatic expansion as a sleeping sickness control drug soon overlapped with a wave of disenchantment. There were reports of 'abnormal' drug toxicity, which, together with the trypanocide's limited curative power, diminished medical professionals' expectations of its effectiveness in the everyday practice of an itinerant medicinal prophylaxis that encountered significant African and European opposition. Toxic incidents eventually resulted, through more stringent quality controls, in an erosion of the use of French- and Belgian-manufactured Atoxyl and a concomitant return to the superior German original. The sustaining of high levels of Atoxyl consumption, albeit of the German brand, was nevertheless temporary, as the arrival of the alternative and more powerful trypanocide Tryparsamide ultimately ended its career.

Tryparsamide had been introduced in the Congo in 1920, and by 1925 evoked enormous optimism as a sleeping sickness drug in the colony. By virtue of its superior therapeutic efficacy, it was hailed as a medicine that could potentially not just control, but even eradicate sleeping sickness. The use of the compound, and especially of the Belgian brand 'Tryponarsyl', subsequently started to surge, until it completely replaced Atoxyl in routine treatment by the end of the 1920s. Administered on an even more vast scale, the second, overlapping career phase of the trypanocide soon took off, however, when evidence started accumulating that it failed to meet high expectations. Reports of drug toxicity and especially of drug resistance notably undermined initial enthusiasm about Tryponarsyl's effectiveness in stamping out human African trypanosomiasis. Although its mass deployment was initially sustained (and credited with significant reductions in sleeping sickness incidence and prevalence), by the second half of the 1930s Tryponarsyl and more generally Tryparsamide's career in the Congo entered a final phase of decline as a tool of sleeping sickness eradication.

If we compare the three successive cycles of the Atoxyl and Tryparsamide compound, they show general similarities in the alternation of promise and disappointment, but also differences. For example, the duration of the first Atoxyl cycle was of course much shorter than that of the other two. Moreover, the scale of enthusiasm and the level of consumption at the height of the trypanocide careers dramatically increased between the first and the third cycles. Atoxyl's career as a tool of sleeping sickness control ended most abruptly given its replacement with a new drug, while Tryparsamide's downturn was more gradual - but also of greater 'magnitude' as it descended from a higher 'peak'. In any case, such variations in the three career cycles point to changes over time in the way trypanocides were 'regarded' and used in the Congo.[1208] Together with the observation that Atoxyl and Tryparsamide's fates in the Belgian colony were not linear but characterised by reversals and transformations (for example, in the drugs' original use and brand identities) this makes for a much more dynamic picture of pharmaceuticalisation in the early twentieth century.

[1208] Snelders, Kaplan and Pieters, 'On cannabis', 97, 113.

Furthermore, the three drug cycles signal that more was at work in pharmaceutical sleeping sickness control in the Belgian Congo than a straightforward deployment of effective trypanocidal compounds to advance colonial interests. In fact, this dissertation indicates that Atoxyl and Tryparsamide's cyclical careers as sleeping sickness drugs were shaped by, and shaped, complex interactions between various groups 'within and beyond (the) colonial administration(...)', operating in different geographic locations and at different levels.[1209] They notably united scientific researchers, pharmaceutical companies, political and medical authorities, public and private health care providers, and patients in a process of fluctuating appreciation and use. For these groups, Atoxyl and Tryparsamide took on different and shifting meanings, including as economic commodities, beacons of scientific medicine, markers of 'ethical variability', signs of inter-imperial exchange and national prowess, magic-bullet solutions to depopulation, objects of regulation and rationalisation, symptoms of biomedical reductionism, tools of civilisation, symbols of colonial oppression and effective western technology. In that way, trypanocide cycles clearly entailed an interplay between different interests and perspectives. In addition, they linked agents at local and higher levels, and actors in the Congo, Belgium, as well as other metropoles and colonies. The pharmaceuticalisation of sleeping sickness control, in sum, took shape at the intersection of multiple localities, scales and social spheres, and points us to a 'crossed' rather than a simply or exclusively 'colonial' history of public health in Belgian Africa.

11.2 Towards a 'crossed history' of public health in colonial Africa

This dissertation has indeed sought to study the pharmaceuticalisation of sleeping sickness control as a point of departure for a 'crossed history' of public health in colonial Africa. The various 'intercrossings' or 'intersections' inherent in Atoxyl and Tryparsamide's careers, as they journeyed from experimental compounds to acclaimed and widely used sleeping sickness drugs, objects of criticism and eventual decline through multiple interactions, suggest that colonial dimensions were intertwined with other social and spatial dynamics in early twentieth-century biomedical interventions in the Congo. The focus in this dissertation has in particular been on the evolving alliance between laboratory science, pharmaceutical industry and collective medicine in the succession of trypanocide cycles as a reflection of how the realities of colonial

[1209] Tousignant, 'Politics of mass therapy', 626.

borders and asymmetries were entangled with other elements in the colony's sleeping sickness campaign.

The context of colonial domination was of course crucial to the introduction and spread of trypanocides in the Congo. This notably spoke to the close ties between biomedicine and colonialism in the pharmaceuticalisation of sleeping sickness control. The tropical medicine community and colonial administration were complicit in the organisation of drug experiments and a public health campaign that put collective scientific and political-economic interests before indigenous patients' individual wellbeing, notably by harshly imposing (experimental) treatments of limited or uncertain personal benefit. This was largely justified by a racialised medical discourse that constructed and singled out Africans as sources of infection rather than patients in need of medical care, as was the case for Europeans. In the early twentieth century, the violation of individual rights in the name of science and infectious disease control was of course a phenomenon not unknown in metropolitan contexts, but the systematic 'ethical variability' along racial lines reveals the particular structural inequalities of colonial settings.[1210] This asymmetry is further underscored by the fact that pharmaceutical experimentation on African trypanosome carriers also very much served to advance metropolitan science. Moreover, the medicinal strategies of sleeping sickness control these clinical trials inspired reflected the early twentieth-century tropical medicine community's reductionist, microbiological view of epidemiology that, as Lyons has demonstrated, allowed the Congo administration to pursue its economic aims of securing an African labour force while sidestepping the broader social context of disease and in particular the health costs of colonialism.[1211] In addition, as pharmaceuticals were used to extend influence over local communities and mass trypanocide treatment was accompanied by enumeration, documentation and agglomeration, medical action very much became another form of colonial administration in the Congo.

When considering the spread of trypanocides in the colony, we not only have to consider the co-constitution of tropical medicine and colonialism, however, but also bring the pharmaceutical industry into the equation. Medicinal prophylaxis in the Congo relied on the mass production and commercial distribution of chemical compounds. Through the organisation of a collective medicine predicated on treatment with European-manufactured medicines, colonial 'domination' thus created an important export market for an expansionist metropolitan drug trade, and supported its 'implantation' in the Congo.[1212] That Europe's pharmaceutical industry became one of the major beneficiaries of sleeping sickness control in the colony at the expense of an indigenous population whose very condition deteriorated under colonialism and whose

[1210] Petryna, 'Ethical variability'.

[1211] Lyons, *Colonial Disease*, pp. 226-230.

[1212] Monnais has highlighted the role of colonial 'domination' in the 'implantation' of the French pharmaceutical industry in French Vietnam. See Monnais, 'Colonial medicines to global pharmaceuticals', 282.

broader health needs were ignored further underscores the campaign's problematic nature.

Yet pharmaceutical sleeping control in the Congo was not only or not simply about the mutual reinforcing of medicine and Empire, or the 'pharmaceutical invasion' of Africa via Belgian colonialism. In fact, the trajectories of Atoxyl and Tryparsamide cannot be captured entirely by a reference to the 'colonial' character of public health interventions in the African territory. First of all, biomedical developments in the colony did not take place in a self-contained territorial unit but evolved through an interplay of local circumstances - including the particular ecology of trypanosomiasis in the Congo and the colony's political-economic outlook - and cross-border exchanges of ideas, people and objects. Moreover, trypanocide careers involved a wider spectrum of social interactions than the unequal power relations between European colonisers and colonised African peoples. This dissertation has focused in particular on exploring dynamics at work within the former group to undermine the notion of a coloniser monolithically or single-mindedly pursuing the immediate interests of colonialism.

Perhaps the major theme of this study has been the emergence of a crucial interdependence between tropical medicine elite and ethical drug industry in the early twentieth century, a process that unfolded in a geographic context transcending the colony's borders and that cannot easily be reduced to the political nature of medicine in colonial settings. This medico-industrial relationship is not only remarkable given that African trypanosomiasis and other tropical diseases, as political economists point out, are typically associated with pharmaceutical neglect due to the 'limited market' they represent(ed), but also because the medical profession was traditionally suspicious of commercial influences in medicine.[1213] In the pharmaceuticalisation of sleeping sickness control, tropical medicine and drug industry nevertheless found each other in a collaboration that fundamentally rested on a mutual interest in scientific medicine and reflected pharmaceuticals' inherently dual nature as commodities and public health goods.

Crucial in this story, this dissertation suggests, was the Belgian tropical medicine elite's involvement in advancing scientific medicine in the Congo via therapeutic reform. At the beginning of the twentieth century, various medicines and therapeutic approaches vied for cultural or commercial success on what was in fact an unregulated Congolese market for sleeping sickness remedies. The significance of this elite's rise to power was not simply that it sustained this market by successfully promoting a pharmaceutical strategy of sleeping sickness control, but also structured it in favour of 'scientific' medicines of assured quality and rational treatment regimens. To protect public health against undue commercial influences and clinical empiricism, Belgian laboratory doctors in colony and metropole became involved in 'scientific' clinical trials and later also postmarketing toxicity tests of sleeping sickness drugs. These drug evaluations constituted 'regulatory mechanisms' restricting market access to

[1213] Malowany, 'Unfinished agendas', 332; Lyons, *Colonial Disease*, p. 230.

trypanocides, such as Atoxyl and Tryparsamide, that were deemed acceptably and consistently safe as well as (cost-)effective in the local context of medicinal prophylaxis.[1214] In addition, experimental drug research yielded therapeutic guidelines, issued to bring medical practice in line with laboratory evidence and thus reduce clinical autonomy. Therefore, while participating in exploitative human subjects research on African trypanosome carriers, Belgian tropical medicine experts at the top of the colonial medical hierarchy at the same time helped to develop rational drug policies regulating the supply and use of sleeping sickness medicines in the Congo.

Their efforts at therapeutic reform helped exclude unscrupulous firms' proprietary medicines from the Congolese drug market. But the Belgian laboratory doctors' commitment to scientific medicine in the colony at the same time strengthened the position and influence of the 'ethical' segment of the pharmaceutical industry. Seeking to distinguish itself by enhancing its scientific status, the latter sought to increase the safety, efficacy and quality standards of its products and increasingly aligned itself with medical scientists to achieve this goal. By collaborating with trypanocide developers through (pre-)clinical trials and bioassays, sleeping sickness therapy researchers in Leopoldville and Brussels did not simply contribute to pharmaceutical innovation and the emergence of a more science-based drug industry, but also helped make a market for their medicines. In that way, the Belgian tropical medicine elite was vital in forging an alliance between laboratory science, ethical drug firms and collective medicine in the Congo. Advancing scientific medicines, in other words, did not result in the banning of all commercial influences from therapeutic research and practice in the colony.

The networks of pharmaceutical development, marketing and regulation in which the Belgian trypanosomiasis experts took part entailed important interactions between metropole and colony. While clearly involving colonial asymmetries, these ties point to a two-way traffic rather than a simple pharmaceutical diffusion from the west to the 'rest' and also challenge too stark historiographical distinctions between metropolitan and colonial medicine. Touching on issues such as market competition, mass production and consumption, therapeutic innovation and reform, the history of sleeping sickness control in the Congo was not disconnected from, but an integral part of crucial transformations in twentieth-century therapeutics that have primarily been studied from a metropolitan perspective so far. The Congo's contribution to the development of specific chemotherapy, the building of a synthetic prescription pharmaceuticals industry - notably in Belgium, and the evolution of quality control mechanisms for chemical drugs nevertheless point to the need for a less Eurocentric approach to pharmaceutical history.

Importantly, trypanocide cycles in the Congo developed within a broader relational geography that not only linked it to Belgium, but also to other colonies and metropoles. In different ways, inter-imperial exchanges - reflecting the importance of internationalism in early twentieth-century tropical medicine - were vital in shaping

[1214] Gaudillière, 'Introduction: drug trajectories', 604.

the fates of sleeping sickness drugs there. For example, they inserted the colony in global networks of pharmaceutical development that introduced new compounds subsequently shaped into locally useful trypanocides. They helped establish the Belgian laboratory doctors' authority as trypanosomiasis therapy experts in the eyes of the Congo administration, thus cementing their influence on sleeping sickness policy and pharmaceutical regulation. Moreover, interactions and comparisons across imperial borders informed and reinforced the Congolese authorities' views on the appropriateness of pharmaceutical strategies of sleeping sickness control. After the First World War, such exchanges and comparisons became increasingly intertwined with a medico-pharmaceutical nationalism that largely manifested itself in a desire to claim national success in and ownership of sleeping sickness medicine(s) in the Congo. Continued cross-border influences became the subject of national re-appropriations. In combination with the development of particularly close ties between Belgium's tropical medicine elite and its nascent synthetic pharmaceuticals industry, this facilitated the large-scale spread of Belgian-manufactured trypanocides in the Congo. The structuring of the Congolese trypanocide market was thus increasingly shaped in favour of national interests. The association between colonialism and nationalism was not a given, however, but developed through an interplay with inter-imperial interactions.

With its scientific medicine agenda, links with international sleeping sickness researchers and (Belgian) manufacturers of synthetic prescription pharmaceuticals, as well as its considerable influence on the colonial administration, the Belgian tropical medicine elite was vital in promoting medicinal prophylaxis and pharmaceutical gatekeeping. It thus had a crucial role in shaping the Atoxyl and Tryparsamide compounds' successful careers in the Congo. However, the alliance between laboratory science, ethical industry and collective medicine they promoted in the colony was not unchallenged, and this in turn also had an impact on trypanocide cycles. Considerable African opposition to mass Atoxyl treatment, for example, helped pave the way for Tryparsamide with its more favourable 'moral effects' on the indigenous population. Pharmaceutical sleeping sickness control also generated important discussions and tensions among Europeans that influenced the fates of sleeping sickness drugs. After the First World War, for instance, the significance of drug toxicity incidents was amplified by disagreements, notably between public and private sector, about the ethics of collective medicine and in particular the powers of local sleeping sickness doctors. This contributed to a strengthening of pharmaceutical regulation that ended the career of Belgian- and French-manufactured Atoxyl while sustaining support for mass treatment via increased hierarchical oversight and central therapeutic guidelines. From the late 1920s, itinerant sleeping sickness doctors helped open up debates about the value and effectiveness of mass treatment with their 'unscientific' treatment practices and insistence on clinical autonomy, reports of drug resistance and reluctance to specialise in one disease. This not only prompted increased rationalisation and an end to Tryponarsyl monotherapy, but eventually also challenged the primacy of

pharmaceutical sleeping sickness eradication. As broader public health strategies were gradually rolled out and coincided with reductions in human trypanosomiasis incidence and prevalence in the 1930s, a substantial downward trend in Tryparsamide use was clearly on the way.

With trypanocide cycles in the Congo significantly shaped by both a strengthening and questioning of ties between laboratory science, ethical industry and public health through interactions between multiple actors, it is clear that the pharmaceuticalisation of sleeping sickness control cannot be fully explained by pointing to a conflation of medicine and colonialism. This is even more true when taking into account how Atoxyl and Tryparsamide's careers, moreover, were fed through and reflected an interplay between metropole and colony, lower and higher levels in the colonial hierarchy, nationalism and internationalism, and the global and the local. Following the non-linear fates of trypanocides in the colony therefore points us to an entanglement of 'colonial' and other social and spatial dynamics, in other words, to a 'crossed history' of public health in Belgian Africa.

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1.6.1.2.1.3: Briefwisseling inzake verordeningen van het Ministerie van Koloniën over tropische ziekten 1929
1.7.3.1.2: Dossier inzake algemeen personeelsbeleid 1914-1930
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Onderzoek

Onder J. E. Van Campenhout (1906-1911)

5.1.1: Briefwisseling van het Ministerie van Koloniën in verband met veterinair onderzoek van specimen uit Congo 1908-1910
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5.1.11: Dossier inzake het bestrijden van slaapziekte in Katanga 1911
5.1.12: Nota over het behandelen van slaapziekte, z.d.

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5.2.1: Dossier inzake wetenschappelijk onderzoek in Congo 1912-1913
5.2.2: Dossier inzake onderzoek van Afrikaanse specimen 1912-1913
5.2.3: Dossier inzake onderzoek van Europese specimen 1912-1919
5.2.5: Dossier inzake materiaal in de laboratoria 1919-1926
5.2.7: Dossier inzake slaapziekte 1923
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5.2.12: Dossier inzake onderzoek van specimen 1928-1930
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Onder J. Rodhain (1929-1948)

5.3.1: Dossiers met briefwisseling van Rodhain met wetenschappers, personeel en patiënten
5.3.3: Dossiers met briefwisseling met artsen 1929-1943
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