

Quinine—Mixing a Drink

The Bitter Taste of Colonization*

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Nach Abschluss der Krankengeschichten erhalten sämtliche Fieberkranke noch ein ungefähr 200 grammes fassendes Glas Cocktail, eine der Stokes'schen Mixtur nicht unähnliche Mischung aus Milch, Ei und Cognac oder Genever unter Zusatz von Zucker; auch diese Ordination hat coram medico zu erfolgen, weil die Kranken ohne Zusicht den heilsamen Trank einfach verweigern [...] Jene Kranken, welche nicht im Stande waren, auf eigenen Füßen zur Temperaturmessung zu kommen, werden nun noch an ihren Betten besucht und erhalten dort Chinin und Cocktail. [...] Sofort auf den Verbandwechsel folgt die zweite, tägliche Temperaturaufnahme mit abermaliger Verordnung von Chininlösung und Cocktail. (Martin 1897, 118)¹

This excerpt from a German-language colonial publication from the late 19th century presents the medical prescription of *quinine* as a remedy for *malaria*

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1 Nicolai Duken, who worked as a student researcher for our project on colonial commodities, has drew my attention to this passage. "After completing their medical histories, all patients with fever receive a glass of cocktail containing approximately 200 grams, a mixture not unsimilar to Stokes' mixture of milk, egg and cognac or gin with added sugar; this prescription must also be administered coram medico, because the patients simply refuse the healing drink without supervision [...] Those patients who were unable to stand on their own feet to have their temperature taken are now visited at their bedsides and given quinine and cocktail there. [...] Immediately after the bandage is changed, the second daily temperature reading is taken, with quinine solution and cocktail prescribed again." (Martin 1897, 118, transl. CH)

in combination with a cocktail containing milk, egg, sugar, and alcohol in the form of cognac or gin.

In this text, “Hofrath Dr. Ludwig Martin” reports on his practice as a senior colonial doctor in hospitals at the north-east coast of Sumatra, where he treated Chinese forced plantation laborers on behalf of the private Dutch tobacco plantation companies, *Tabakmaatschappij Arendsburg* and *Deli-Maatschappij*. In addition to his activities as a physician, Martin left his traces on the butterflies of Sumatra: He made numerous taxonomic determinations (some of which were later corrected), published 42 lepidopterological texts, and donated (at least) one “very valuable large collection of local insects [from Sumatra] of all groups” [“eine sehr werthvolle grosse Sammlung dortiger Insecten aller Gruppen”] to the *Königliche Museum für Naturkunde* [Royal Museum of Natural History] Berlin (Karsch 1891, 207).

Martin’s quoted text appears in the first volume of the newly founded *Archiv für Schiffs- und Tropenhygiene* [Archive for Ship and Tropical Hygiene] in 1897, a journal that would become central to the institutionalization of so-called “tropical hygiene” and “tropical medicine” in the German colonial Empire.²

In the footsteps of Robert Koch’s medical research and practices (some of which were published in the *Archiv* and received extensive coverage there), this field of knowledge went hand in hand with the emergence of public health as a new discipline at the intersection of medical science and social policy. As Manuela Bauche shows in her seminal volume on the relational practices of Koch’s malaria research and control in Cameroon, East Africa, and East Frisia (Lower Saxonia, Germany), the practices surrounding *malaria* have been constitutive for the new field of public health emerging around 1900. Tropical hygiene and medicine can be considered its fundamental components. Carl Anton Mense’s introduction formulates the objectives of the *Archiv für Schiffs- und Tropenhygiene* and reveals this new formation of knowledge, conceived as adventure and thriller, as a field deeply entangled with colonialism:

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- 2 The European imagination of the “tropics” is deeply entangled in exoticism, racism, and colonialism. However, the term is still used in relation to medicine, see for example the *German Society for Tropical Medicine, Travel Medicine and Global Health* (DTG) and numerous medical departments, and clinics for “Tropenmedizin” [tropical medicine] in Germany and beyond. In the wake of German National Socialism, the word combination “tropical hygiene” is avoided nowadays—nevertheless, “hygiene” remains a central component of the field.

Noch manches Rätsel aber muss aufgeklärt, noch manche wichtige Streitfrage entschieden werden, ehe das Ziel, welches Hygiene und Medizin gemeinsam erstreben, der weissen Rasse auch in den Tropen ein Heim zu bereiten, erreicht ist, ehe das Schiff, welches die unternehmenden Reisenden hinausträgt in die Ferne und die von klimatischen Krankheiten Geschwächten auf den Ozean und in das Vaterland zurückbringt, ein gesundes schwimmendes Haus und nie mehr ein Träger gegenseitiger Ansteckung von Erdteil zu Erdteil sein wird. (Mense 1897, 4)³

This conflation of ship and “fatherland” as a “healthy floating home” stands in bitter contrast to “the wake” of thousands of ships that abducted and deported millions of enslaved people from Africa to the Americas (Sharpe 2016; Hartman 2007). The exclusivity of Mense’s focus on the care for the German *white* “Volk-skörper” and the vision to build a home in “the tropics” stands clearly out here, while its relationality to “Black life and death” in colonialism is deliberately ignored.

Thus, the substance *quinine*,⁴ which in the initial quotation is joined by a cocktail, is closely related to colonialism. Martin’s paper is one of hundreds of colonial publications that speak of *quinine* as a cure and prophylaxis against *malaria*. As *malaria* is identified as the main reason for high death rates among European military personnel during colonization, *quinine* can be understood as cure and prophylaxis against the “white man’s grave,” as colonialists have often titled the African continent irrespective of white colonizers being the harbingers of death to Indigenous people (Curtin 1961, 1990). Daniel R. Headrick (1981) names the substance alongside the steamboat as a condition

3 “However, many mysteries still need to be solved and many important issues resolved before the goal that hygiene and medicine are striving for together – to make the tropics a home for the white race – can be achieved, before the ship that carries the adventurous travellers out into the distance and brings those weakened by climatic diseases back to the ocean and to their homeland will be a healthy floating home and no longer a carrier of mutual infection from one continent to another.” (Mense 1897, 4; transl. CH)

4 I use the term “quinine” here, and in the following, as a generic term for all substances (mainly alkaloids extracted through quite complex processes) obtained from the bark of the *cinchona* tree (and its many species) that were used preventively and curatively against *malaria*. The differences between the alkaloid variants are irrelevant to my argument here.

enabling the colonial “penetration” of African land— accordingly, *quinine* has served as a crucial “tool of empire.”

Quinine is an alkaloid, that since 1820 can be extracted from the bark of a genus of trees named *Cinchona* by Carl von Linné in 1724. In current botany, *cinchona* is assigned to the *Rubiaceae* family and consists of more than 20 species. The tree is endemic to the Andes region in South America (Peru, Bolivia, Ecuador, and Colombia). A couple of stories surround its name: Linné had linked the plant's name to a Spanish Countess of Chinchón,⁵ but by slightly misspelling her name. Legend has it that the countess had been healed from a fever with powder from the grinded bark in the 1630s, but then died on a ship back to Spain, on which allegedly the first barks had been transported to Europe. Another designation, however—*Jesuit bark*—credits European monks with bringing the bark to Europe for the first time. In the 19th century the terms *Chinatree* or *China bark trees*, probably due to another typo, relate the plant vaguely to China—where it had only been planted in the 1930s (Shen 2019). German *Wikipedia* still uses the term *Chinarinden-Bäume* [*China bark trees*] in 2025. In some archival texts, the plant is also called *Peruvian bark* or *fever tree*—the latter name being reactivated in the early 2000s by a brand of tonic water. The name *cinchona*, however, might also be linked to an indigenous name of the bark, as Woodland / Chibale (2022, 112) state:

Its name is derived from quina-quina, as Native South Americans called the woody material they used to alleviate shivering, fever and pain; it can be roughly translated as 'bark of barks' or 'medicine of medicines'.

In the 19th century, in the course of colonial political, medical, botanical, and geographical debates, substances derived from *cinchona* bark came into close relationality with the epidemiologically new disease *malaria*. *Quinine* was used as a drug and at the same time as a test substance for the subsequent diagnosis of *malaria* as a “disease in the making.” *Malaria* and *quinine* co-constitute each other, as Rohan Deb Roy shows in his seminal book *Malarial Subjects*, taking

5 Ana Countess of Chinchón is not the person with the same name as in the famous painting of Francisco Goya.

British India as an example. Such relationalities can also be observed throughout discussions in the above-mentioned *Archiv für Schiffs- und Tropenhygiene*. Papers not only debate which derivatives of *quinine*, which doses and in which companionship the substance should be used as a remedy—but symptom-improving reactions to *quinine* in human bodies are at the same time regarded as respective evidence for the newly constituted epidemic of *malaria*. In extensive and distributed experiments, the disease's elements—its “symptoms”—have been listed, “itemized,” thus formed into objects of medical knowledge that appear “as predictable, manageable and curable categories” (Deb Roy 2017, 124).

Both *quinine* as well as *malaria* operate furthermore as material-semiotic actors in the sense of Donna Haraway:

[B]odies as objects of knowledge are material-semiotic nodes. Their boundaries materialize in social interaction. Boundaries are drawn by mapping practices; “objects” do not pre-exist as such. Objects are boundary projects. But boundaries shift from within; boundaries are very tricky. What boundaries provisionally contain remains generative, productive of meanings and bodies. (Haraway 1988, 595)

Drawing on a concept of science historian Hans-Jörg Rheinberger (1992, 1997), one could say that *quinine* and *malaria* are, alternately, *epistemic* and *technical objects* for each other: While *quinine* is used as a test substance (*technical object*) in order to stabilize the *epistemic object malaria*, the disease at the same time serves as a *technical object* to gain knowledge around the *epistemic object quinine* (e.g. “does it work as a remedy?”).

Deb Roy—referencing Haraway's *When Species Meet* (2008)—demonstrates at hand of the two objects *quinine* and *malaria* how imperialism, racism, colonial power relations, economic, infrastructural, and media history have been articulated in close relationality:

Nonhuman objects and organisms (like cinchonas, quinine, mosquitoes, malarial objects), medical knowledge about them and Empire were not only entangled, but to quote Donna Haraway, were also ‘becoming with’ one another. (Deb Roy 2017, 12)

Empire itself, following an expression of Donna Haraway, was ‘becoming with’ cinchonas. It is possible to suggest that various organisms, materials and institutions which shaped the history of cinchonas in the late 1850s and 1860s (for example, plants, barks, trees, bottles, photographs, sketches,

bureaucratic correspondence, travel narratives, wardian cases, steamers, herbariums, nurseries or plantations) were as much tools of a preordained Empire as they were ingredients of an imperial apparatus in the making. (Deb Roy 2017, 67)

In this becoming-with, *cinchona* bark and *quinine* become colonial commodities in demand and enter into the capitalist production and circulation processes of European colonialism and industrialism, as can be discussed in a relatable way as colonial histories of sugar, cotton, cocoa, drugs, and other “fruits of empire” (Walvin 1997; Mintz 1986; Schiebinger 2004; Moss and Badenoch 2009; Bergermann 2020; Klein 2023). After *cinchona* bark as raw material was first imported from the Spanish colonies to Europe, colonial administrations see their access to the resource threatened by anti-colonial liberation movements. After the independence from Spanish colonialism, the postcolonial states in South America regulated the export of plants and seedling. By circumventing the export prohibition, European botanists and “adventurers,” commissioned by Dutch and British colonial administrations organized to steal *cinchona* plants, seeds, and smuggled them out of the country. Such practices of plant extraction have often been legitimized with humanitarian claims as well as to ensure “the survival of the plant species”—barely concealing colonial and imperial economic interests. *Cinchona* thus became extracted, transferred, and re-implanted from South America into other parts of the world—as part of the *Columbian exchange* (Crosby [1972]), the plant became the “New World’s ‘Gift’ to Europe’s Old World Colonies” (Nunn and Qian 2010, 179).

Diverse German actors were involved in British and mainly in Dutch botanical expeditions as well as in plantations dealing with *cinchona*: Justus Karl Haßkarl (1811–1894) smuggled *cinchona* plants and seeds from South America to Java and took over the supervision of the Dutch *cinchona* plantations from another German scientist. Franz Wilhelm Junghuhn (1809–1864), “the Humboldt of Java” (Goss 2014, 10), started the plantation of the tree but had to leave the Dutch colony in the 1850s. Gustav Mann (1836–1916) had been a botanist and gardener at the influential Kew Gardens in London. And last but not least, Philipp Phoebus (1804–1880), Professor at University of Gießen since 1843, founded the first German Institute of Pharmacology and was in

close contact with the Dutch empire with respect to botanical research on *cinchona*.⁶

In the second half of the 19th century, the Dutch and the British Empire experimented with illegally extracted specimen and tried to transplant *cinchona* seedlings that had survived the passage or to sow new seedlings into environments under their colonial rule. While some regions in British India were also quite successful in growing *cinchonas*, the Dutch plantations in Indonesia—where the botanical garden of Buitenzorg had been established already in 1817 (Headrick 1988, 212)—overtook for almost a century the role of the world-wide biggest provider of *cinchona* bark:

By the early 1860s over a million *cinchona* trees grew in Java. (Headrick 1988, 232)

[T]he amount of *cinchona* bark being shipped to Europe from Java increased from 124.000 kg in 1880 to 2.901.000 kg in 1890. (Goss 2014, 11)

In den 1930er Jahren war der Chinarindenanbau auf Java so weit optimiert, dass 97 % des weltweit verwendeten Chinins aus den ca. 10 Millionen Kilogramm der dort gewonnenen Chinarinde stammten. (Streller and Roth 2012, 235)⁷

Between 1890 and 1940, the *cinchona* bark market was dominated by the Dutch colonial state that introduced the *Quinine Agreement* in 1913, which led to the worldwide first pharmaceutical cartel that regulated the prices of *cinchona* bark as well as those of *quinine* (Goss 2014).

With respect to *cinchona* plantations, botanists and botanical gardens, colonial officials and administrators, physicians, geographers, but also private individuals were involved in distributed networks proliferating the *plantationoscene* (Haraway et al. 2016)—where scientific, colonial-administrative, and

6 Elia Schure drew my attention to a publication on Phoebus and his botanical identifications of *cinchona* bark for the Dutch empire (cf. Lambers 2019).

7 "In the 1930s, *cinchona* cultivation on Java had been optimized to such an extent that 97% of the quinine used worldwide came from the approximately 10 million kilograms of *cinchona* bark harvested there." (Streller and Roth 2012, 235; transl. CH)

economic interests and practices were closely interwoven. The role of botany in colonialism has already been discussed by diverse authors: Headrick (1988) shows that botany is more than just a scientific discipline, but a highly relevant *technology of empire*. He presents “Economic Botany and Tropical Plantations” (ch. 7) as one of the “tentacles of progress” that characterize imperialism and colonialism—besides infrastructures of shipping, railways, telecommunications, mining, and others.⁸ Londa Schiebinger and Claudia Swan’s collected volume, *Colonial Botany*, presents seminal insights into colonial governance, appropriation, and translation of indigenous knowledges, as well as into ‘cash crops’ and technologies of accumulation with respect to botany. Andrew Goss (2011) coins the term “floracrats” and points to the state relationalities of colonial botany. Katja Kaiser’s comprehensive research (2021) writes the history of the *Botanische Zentralstelle für die deutschen Kolonien* [Botanical Research Centre for the German Colonies] that was established and funded in 1891 by the Foreign Office together with the Prussian Ministry of Education of the German Reich and affiliated to the Botanical Garden and Museum in Berlin. The volume discusses meticulously the conceptual debates and the practices of collecting and sowing, of plant transfers from and towards the colonies as well as the activities of knowledge generation, education, and dissemination. It clearly demonstrates the colonial involvement of these centralized German botanical institutions.

Extensive research precedes and accompanies *cinchona* plantations: Experiments are carried out with respect to planting, breeding, hybridization, grafting (with the aim to increase the bark’s *quinine* content), as well as to bark harvesting, extracting *quinine* and other alkaloids, and evaluating *quinine* concentration of different *cinchona* species. Environmental discussions and scientific speculations revolve around living conditions of this plant by addressing questions of climate, geology, soils, temperature, rainfall, altitude, etc. Besides botanical questions in the narrow sense, other environmental dimensions play a role in the decision where to start a *cinchona* plantation. As further co-operation partners, we have to count in technologies and infrastructures like the steam machine, the steam ship, trains, and railway systems: The location of plantations is interrelated to infrastructures that enable to reach the plantations and to transport the barks—sometimes the *cinchonas* follow the infrastructures, sometimes new railways are built to

8 With respect to “Africa as a Living Laboratory” for scientific disciplines beyond botany, their colonial genealogies and legacies, see Tilley 2011 as well as Hanke 2024.

follow and to reach *cinchona* plantations. *Cinchona* plants, barks, and bark extracts are circulated in a heterogeneous network with very different actors, as e.g. colonial administrations, industry, and private sponsors; we meet scientific actors from botany, chemistry, pharmacy, medicine, public health, and tropical hygiene. While listing different scientific fields, we have to take into account that these scientific branches are not yet clearly differentiated from each other, as they evolve in collaboration-with, in co-production: They are becoming-together with new substances as *quinine* among others. More actors are to be named: We could meet gardeners, as well as forced laborers on plantations and “doubly free wage laborers” in the beginnings of the chemical-pharmaceutical industries (although it is quite difficult to meet these workers as they are visible in the colonial material only through the lens of the archival power grain (Stoler 2009; Foucault [1979]; Hartmann 2007)). Colonial botany is furthermore an inter-imperial network of collaboration and exchange: Besides acting in national interest, botanical institutions exchange plants and seedlings internationally, send specimen to institutions of other Empires to identify their genus or—as in our case—the *quinine* content of the barks of different *cinchona* species, they send out and receive publications, they visit plantations of different colonial regimes, taking example, learning from each other, etc.

Although the knowledge alone will not make a successful plantation—because all this also depends on whether the *cinchonas* can be ‘interested’, ‘enrolled,’ and ‘mobilized’ to grow and to build up as much *quinine* as possible in its bark in the conditions where they are planted (Callon 1984).

In its phase of formal colonialism from 1884 to 1919, the German Reich enacted its imperial aspirations also through the installation of plantations of different plants including *cinchonas*.⁹ Inspired by other colonial plantations and within nationalist and capitalist competition dynamics, German colonial actors aimed at cultivating their ‘own’ *quinine* source and began experimenting with plantations of *cinchona* trees in Africa. The above-mentioned newly established *Botanische Zentralstelle* acts as intermediary in this context by sending

9 The German Empire's involvement with colonial plantations did neither start 1884, nor end with WWI. However, a full discussion of this would go beyond the scope of this article and must be postponed.

out seeds, seedlings as well as gardeners for these endeavors. Adolfo Frederico Moller reported in 1898 in the journal *Der Tropenpflanzer. Zeitschrift für Tropische Landwirtschaft* [The Tropical Planter. Journal for Tropical Agriculture] about the *cinchona* plantations on the Portuguese colony of São Thomé, where 1,6 million trees had been planted between 1880 and 1887 (150f, cf. Cabral and Pita 2015), before the focus shifted to coffee, rubber trees, and cacao because of the falling prizes for *cinchona* barks. Walter Busse, Member of the *Kaiserlich Biologische Anstalt für Land- und Forstwirtschaft* [Imperial Biological Institute for Agriculture and Forestry] in Berlin, visited Java in 1902/1903 to examine the practices of the botanical garden Buitenzorg and of the *cinchona* plantations of the Dutch Empire. He published an extended paper (1906) in the same journal with explicit recommendations for planting *cinchona* in colonial Cameroon and East-Afrika. The Dutch plantations on Java serve him as models for such plantation.

With respect to this, some smaller experimental efforts have been made around Mount Cameroon supported by the *Botanische Garten und Versuchsanstalt Landeskultur* [Botanical Garden] Victoria and experimental station] since 1902, but bigger and more successful *cinchona* plantations were realized in the Amani region in today's Tanzania, where the *Kaiserliche Biologisch-Landwirtschaftliche Institut* [Imperial Biological-Agricultural Institute] Amani, a comprehensive research station on botanical and agricultural questions, was established in 1902 (Chachage et al. 2025; cf. Geißler et al. 2020):

The Imperial Biological-Agricultural Institute Amani (*Kaiserlich Biologisch-Landwirtschaftliches Institut Amani*) was one of the largest and most influential botanical institutes of the German Empire (*Deutsches Reich*), which promoted the research and cultivation of crops in the former colony of "German East Africa" (*"Deutsch-Ostafrika"*). In the spirit of imperial competitive thinking, the declared aim was to build up the largest botanical garden in the world, following the example of the Botanical Garden of the Netherlands Buitenzorg/Bogor on Java (today: Bogor Botanical Gardens). It was built in the eastern Usambara Mountains near strategically important trade routes, in a climate that was pleasant for Europeans and in a promising vegetation zone. Formally, it was subordinate to the Botanical Central Office for the German Colonies (*Botanische Zentralstelle für die deutschen Kolonien*). The founding of the Amani Institute can be traced back to an interplay between private economic interests and those of the German Empire (*Deutsches Reich*), as well as the initiative of the first director Franz Stuhlmann (1863–1928) – which clearly shows the close intertwining of scientific and economic objectives of the Institute. The establishment of the

institute and the planting of experimental plantations – without taking into account the already existing traditional forms of farming and agriculture – was associated with serious interventions in the existing ecological and economic systems, landscapes, property relations as well as social structures. (Amani Institute)

Cinchonas have been planted by the institute itself as well as in the region by private plantation associations that had been supplied with plants by the institute. Compared to the plantations on Java with millions of trees, these plantations were quite small, but still productive.

Adolf Engler, director of the central Botanical Garden in Berlin, reports the planting of 2.500 trees in 1903 (65). In the following years, the director of the institute, Franz Stuhlmann, and his vice-director Albrecht Zimmermann, regularly report results of the breeding and farming of *cinchonas* in the *Berichte über Land- und Forstwirtschaft in Deutsch-Ostafrika*. *Cinchona* quickly becomes recognized as the most important medicinal plant that is cultivated in Amani (Zimmermann 1904, 218). Stuhlmann (1906, 483f) reports the planting of 2.700 *Cinchona robusta* and the existence of “*Cinchona Ledgeriana* (6587 Pfl.), *Cinchona succirubra* (9049 Pfl.) und Hybriden (3658 Pfl.)” for the year 1905/06.¹⁰ For the year 1909/10, he states:

Die ältesten Hybriden wurden zum erstenmal ganz durchgelichtet; die hierbei geerntete Rinde (403 kg) wurde von der Firma Zimmer & Co. in Frankfurt verarbeitet. Der Chiningehalt derselben betrug 5,5 %, war also durchaus befriedigend. (Stuhlmann 1911, 270)¹¹

The bark amount—according to Willy Dethloff’s book *Chinin* [Quinine], that has been published during German fascism in 1944—rises up to 3.566 kilogram of bark in 1913 (Dethloff 1944, 107–108). The situation with colonial *cinchona* plantations of the German Reich and the *quinine* supply significantly changes during WWI, which has to be discussed in another paper. Compared with the

10 The exactness of counting hints to the Prussian meticulous bureaucracy, that can be observed in all the administrative archival material within the German colonies – it performs the specific bureaucratic dimensions in German colonial rule, which has to be discussed elsewhere.

11 “The oldest hybrids were thoroughly thinned out for the first time; the bark harvested (403 kg) was processed by Zimmer & Co. in Frankfurt. Its quinine content was 5.5%, which was quite satisfactory.” (Stuhlmann 1911 270, transl. CH)

amounts of bark on the world market (2.901 tons of bark had been exported from Java to Europe already in 1890, according to Goss 2014, 11), the amount of bark of German colonial plantations are just a very small part of the world's bark production.

Stuhlmann's quotation reveals the transport of 403 kg of *cinchona* bark from Amani to *Firma Zimmer & Co.* in Frankfurt for processing, which is one of the influential *quinine* fabrications in the German Reich. Since the 1820s, manufacturing respectively extracting *quinine* and other alkaloids from *cinchona* bark became more and more industrialized. History of industrialization can be told through the production of *quinine*: New technologies and energy suppliers as steam machines are used in grinding the bark, new factories are founded that solely focus on the production of *quinine*, and the substance becomes an industrial mass commodity. Processing *cinchona* barks in order to extract *quinine* becomes an important factor in the genealogy of chemical and pharmaceutical industry in the Global North. *Quinine* extracting factories have been built in the Netherlands, in Italy, in Portugal, in the US, in the UK, and in Germany and: "The Dutch consolidation over the Cinchona supply was furthered by the creation of the first successful quinine factory outside of Europe or North America" (Goss 2014, 13), namely in Bandung, West Java in 1896.

Several German *quinine* fabrications can be identified: *Friedrich Koch*, as a pharmacist in Oppenheim, started to produce *quinine* in the 1820s but sold his production to *Materialwarenhandel* [material trade] *Jobst*, who then established an own *quinine* production as *Chininfabrik Jobst* (Ziegler 2003). Involving a steam machine to grind the barks in the 1850s, the company later became *Zimmer & Co.*, and was then bought by *Boehringer* in 1926. *Hermann Buchlers Chininfabrik Braunschweig* (since 1858), *C.F. Boehringer & Söhne* (Christian Friedrich Boehringer & Sons, since 1859), as well as *Chininfabrik Auerbach* (founded by August Seyferth in 1892) have been other *quinine* production facilities in the German Reich. The synthetical production of *quinine* was only possible from 1944 (Goss 2014, 18).

It is not least against this backdrop that the close relationality between colonialism and the chemical and pharmaceutical industries in the Global North, especially for Germany, becomes apparent.

Cinchonas, their bark, and *quinine* thus become colonial commodities in which plantation economy and industrialization are closely related. In the late 19th

and early 20th centuries, the plantations are run by enforced and enslaved labor and the *quinine* obtained became a significant economic factor that drove European colonization and industrialization and, in both cases, “infrastructurelization.”

More brutal measures against malaria than *quinine* prescription have been taken by the German imperial government in Cameroon: Hans Ziemann, colonial physician in Cameroon recommended to create a “cordon sanitaire” more than 1 km wide in Douala—to spatially separate the *white* colonists from the Black city residents—referring to the ubiquitous racist narrative of “*malaria* carriers” (Eckart 1988, 364).

The imperial infrastructure plan was envisioned by the German colonial administration as a reconstruction of Douala into a “moderne Stadt [...], als Aushängeschild deutschen kolonialen Unterfangens, zudem als Großhafen und damit Angelpunkt wilhelminischer Weltpolitik” [“modern city [...], as a flagship of German colonial endeavors, as well as a major port and thus a hub of Wilhelminian [German imperial] world politics”] (Wirz 1980, 227). Anti-colonial resistance rises against the violent resettlements by the imperial administration. The uprisings against the dispossessions and evictions and their brutal suppression, as well as the execution of the resistance leaders Rudolf Manga Bell and Adolpho Ngoso Din by the German colonial authorities, have received some media attention in Germany only since some years (Weber 2019; Dziedzic 2022). Manga Bell has a German-language Wikipedia entry since November 2019, but none has been published for Adolpho Ngoso Din so far. From April 2021 to April 2024, the *Museum am Rothenbaum – Kulturen und Künste der Welt* (MARKK)’s exhibition “Hey Hamburg, do you know Duala Manga Bell?” brought the brutality of German colonial history back to public memory. And the *German National Archive* (Bundesarchiv 2024, 64–95) published documents from their collection concerning Duala Bell’s anti-colonial resistance. A full rehabilitation of the two by the state of Germany as a successor state of the German Empire has not been implemented to date and is still pending.

We nowadays know *quinine* primarily as the bitter ingredient in tonic water and its favorite use in *Gin & Tonic*. The substance is, as I have shown, closely related to colonialism. Not only has *quinine* been used as a tool of empire in constituting as well as fighting *malaria* in order to empower imperial soldiers, farmers, administrators, etc., in their colonization efforts. Moreover, have these impe-

rial powers strived to grow *cinchona* trees as a resource for their *quinine* production—thereby installing colonial plantations with enforced labor and enforced plant growth—mostly taking more care for the plants than for the workers (cf. Rudge 2022).

The medical prescription of *quinine* had, among many other variants, included mixing the very bitter substance with sugar as well as with alcohol—often the at that time popular spirit Gin was used., as the opening quotation proposes. Against this background and the botanical, pharmaceutical, and public health practices discussed in this paper, the contemporary popular drink *Gin & Tonic* has bitter relationalities to colonialism (cf. Sourial 2019).

Despite the deep colonial history of *quinine* and *malaria*, it is unabashedly and with pride, that its colonial genealogy of tonic water and the drink *Gin & Tonic* is celebrated to this day. Pop culture and food chemistry often recount the story with a sense of delight. The *Bayerische Landesamt für Gesundheit und Lebensmittelsicherheit* (LGL) [Bavarian Office for Health and Food Safety] for example, articulates a remarkably pro-colonial euphoria about *quinine* on their website:

Chinin wird heutzutage wegen seines stark bitteren Geschmacks Bitter-spirituosen und einigen alkoholfreien Erfrischungsgetränken wie Tonic Water und den fruchtsafthaltigen Limonaden Bitter-Orange und Bitter-Lemon als Aromakomponente zugesetzt. Zu Kolonialzeiten spielten die letztgenannten Getränke eine viel wichtigere Rolle als heutzutage, denn die Entwicklung von Indian Tonic Water stellte eine geniale Idee dar, die zur Malariaphylaxe notwendige – aber lästige – Chinindosis in Form von Limonade aufzunehmen. Die in den Malariagebieten stationierten Kolonialoffiziere des British Empire nahmen das Getränk wohlwollend an und verhalfen damit zu seinem weltweiten Siegeszug. (Lassek and Klasna o.J.)¹²

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- 12 "Nowadays, quinine is added as a flavoring component to bitter spirits and some non-alcoholic soft drinks such as tonic water and the fruit juice-containing lemonades bitter orange and bitter lemon because of its strongly bitter taste. In colonial times, the latter drinks played a much more important role than they do today, because the development of Indian tonic water represented an ingenious idea for taking the – but troublesome – dose of quinine needed for malaria prophylaxis in the form of lemonade. The British Empire's colonial officers stationed in malaria-endemic areas embraced the drink, helping to launch its global triumph." (Lassek and Klasna, transl. CH)

“Apart from the point that tonic water is unlikely to contain enough *quinine* to prevent *malaria*, to put it as an “ingenious idea” to mix *quinine* with lemonade, is a rather questionable celebration of the colonial legacy of tonic water. So, not only has *quinine* proliferated colonialism by being promoted and distributed as an anti-malarial medical drug, but also the other way around: colonialism has popularized *Gin & Tonic* as a long drink cocktail.

Local “micro-breweries” of tonic water as well as industrially produced tonic water in different aromas, containing the bitter substance from *cinchona* trees, became popular in Germany in the last years. I myself have fallen for the bitter-sweet taste of tonic water and *Gin & Tonic*, and have even started brewing tonic syrup myself with *cinchona* bark that I purchased from a specialized pharmacy.¹³ Thus, a new taste trend of tonic water is emerging—or is this a re-enactment of a colonial legacy? The relationality of *Gin & Tonic* to other racialized, gendered, and classist “taste tanks,” as for example cocoa (Bergermann 2025), needs to be analyzed in more detail.

With this bitter taste of *quinine* mixed with soda and Gin on my tongue: To your health!

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13 A shout-out to Nanna Heidenreich, who introduced me to this practice of micro-brewing.

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