‘Combating’ tropical diseases in the German colonial press*

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Abstract

This article shows how much certain German language newspapers were a vehicule for reporting to the lay public on ‘combating’ tropical diseases. Through the press, immigrants and their descendents in Brazil were informed not only about the diseases which afflicted German colonists in Africa, but also about measures concerning sanitation, prophylaxis and experiments with tropical medicine, etc. Based on hemerographic sources, it shows how successful the overseas German communities were in sharing their experiences regarding health in tropical and/or sub-tropical regions.

Keywords: Africa and Brazil; tropical diseases; German colonialism; newspapers; German immigration.

A few weeks after the end of the Berlin Conference, doctor Rudolf Virchow (1821-1902) made a speech in the Reichstag (16 mar. 1885) that had a big impact on the parliamentarians favorable to colonial expansion. The doctor, who was also a deputy, doubted the possibility of Germans acclimatizing to tropical regions (Lorenz, 2008, p.34). Other German doctors believed that the mesological conditions of the tropics contributed to degeneration of the German race. Nevertheless, the Berlin Conference had assured advantages to the participation of Germany in the Scramble for Africa.[1] In this regard, the German experience in South Brazil could be useful for the expansionist intentions of the Second Reich (1870-1918). It should be noted that many German doctors, such as Ernst Below (1845-1910) and Robert Koch (1843-1910), subscribed to the Second Reich's colonial project and defended Germanic expansion in tropical zones.

In February 1886, under the auspices of the Deutschen Kolonialverein (DKV), doctor Wilhelm Breitenbach (1856-1937) initiated a series of conferences on the opportunities in Brazil for German immigration (Breitenbach, 2 mar. 1886). The series was part of the discussion promoted that year by the DKV regarding the possibilities for Germans settling in America, Africa, Asia and Oceania. The organization formed a commission of specialists to deal with the subject; its opinion recommended watching out for the health of German immigrants in a tropical climate. In 1889, another commission, under the direction of doctor Virchow, with Robert Koch and others, also prepared a similar opinion (Lorenz, 2008, p.34). Another preeminent defender of German immigration in the tropics was a sanitary doctor, Karl Däubler (1894).

A series of factors, moreover, favored colonial expansion of the German Empire. (Eckart, 1990). To do so, tropical medicine became an instrumental science for colonialism. From 1883 to 1914, Robert Koch and other German doctors participated in various expeditions to Africa to study tropical diseases such as cholera, malaria and the so-called sleeping sickness. It will be seen below how the German colonial press handled the subject of acclimatization of the Germans in the tropics; namely as a variable dependent on the success of tropical medicine in its 'combat' against cholera, leprosy, malaria and African trypanosomiasis etc.

The German colonial press and 'combating' tropical diseases

The German colonial press is understood to be a group of German language periodicals published in areas colonized by Germans, such as São Leopoldo and Santa Cruz (RS), Blumenau and Brusque (SC) in South Brazil or places under German rule, such as Swakopmund, Windhoek or Dar es Salaam in Africa. The main characteristic of this press was the defense of 'colonial interests' in Africa. Its target public was the reader in German colonies, i.e., a white minority whose future seemed to blend with the future of the colony itself. The documentary *corpus* that served as the historical analysis for this work was comprised of the newspapers *Kolonie*; *Deutsche Zeitung*; *Der Urwaldsbote* and *Gazeta de Joinville* – all printed in the southern provinces of Brazil – and *Windhoeker Anzeiger*, *Lüderitzbuchter Zeitung* and *Deutsch-Südwestafrikanische Zeitung*, all from the former German colony of South West Africa (now Namibia). Also part of the documentary *corpus* was the weekly *Deutsch-Ostafrikanische Zeitung,* published in Dar es Salaam in German East Africa (now Tanzania), the Berlin periodicals *Kolonie und Heimat im Wort und Bild*, and *Deutsche*

Kolonialzeitung, from Freiburg. German periodicals consulted in the printed version, on microfilm or digitalized belong to the permanent collection of university libraries in Brazil and Germany.

In general, the German colonial press identified with the pan-Germanism of the Second Reich era. The personal influence of the owner and/or editor of the newspapers published in the German colonies was influential in the ideological bent of the periodicals. The foreign agencies and metropolitan newspapers that supplied news by telegram to these periodicals contributed indirectly to forming reader opinion. Despite some ideological differences these German language newspapers had concerning the topic in question, there was a consensus regarding the problem of tropical diseases and their relationship to development of the colonies.

A chronological slice (1884-1919) was made to analyze the circulation of information on tropical diseases in the German colonial press. It roughly corresponds to the duration of the German colonies in Africa. Based on this temporal slice, an analysis was made of the colonial press' disclosure to the laymen reader public on the advances of tropical medicine. In addition, the extent to which the 'Brazilian experience' served German colonialism in Africa and, in turn, to which the 'African experience' was shared by readers of German origin in Brazil can also be seen.

One of the 'colonial interests' to which the colonial press dedicated many pages was 'the combat' of tropical diseases. The term combat (*Bekämpfung*) shows how much the colonial press appropriated the belligerent language already used by tropical medicine itself; one shared, in fact, by various discourses produced by colonialism, in which almost everything became an enemy to be combated. Thus, viruses and bacteria became 'invisible' enemies to colonialism.

German acclimatization to the tropics seemed in fact to depend on eradication of many of these diseases. On June 21, 1895, for example, in material published by the *Deutsche Zeitung*, entitled "Süd-Amerika und die deutsche Auswanderung" (South America and German emigration)[2], the south of Brazil, Chile and Argentina were considered healthy and fertile regions (*gesund und fruchtbar*), in contrast to tropical Brazil. Even though the tropical region of Latin America was not advisable for German immigration, the vast territories of Africa were targeted by the Second Reich's colonial policy. Thus, German immigration would have to take the climate and tropical diseases into account. German acclimatization to the tropics was heavily debated in the German colonial press.[3]

As a result, tropical medicine and hygiene became important instruments for domesticating nature in the colonies. The metropolitan areas were not long in being provided with tropical medicine centers, institutes and laboratories, even more so since certain port cities in Europe, such as Hamburg and Marseille, were devastated by cholera at the end of the 19th century.

Germans in the tropics before tropical medicine

When tropical medicine was institutionalized in Germany, most of the hydrophilic forest valleys in South Brazil had already been colonized by German immigrants. In

addition to tropical diseases, other sicknesses afflicted these colonists. In a visit to the German colony in the interior of Rio Grande do Sul, doctor Robert Avé-Lallemant (1812-1884) commented as follows: "I also encountered sick people, helping them as much as I could and I promised to visit some of them when I walked down the narrow trails. These poor people live so far from any medical attention that we have to help them in any way we can, however little can be accomplished in just one visit" (Avé-Lallemant, 1980, p.174). The German visitor also asserted: "As for medical assistance, these colonists have been completely abandoned" (p.186).

It should be pointed out that the areas of German colonization, in general, were not located in zones endemic to tropical diseases. Nevertheless, there were cases of malaria and yellow fever. The chigoe flea caused an infectious disease (*Wurmkrankheit*) found very often among the colonists and was reported by the many travelers visiting the German colonies. Doctor Konrad Sehrwald, a German living in Joinville (SC), was one of the first to treat tungiasis, the disease caused by the chigoe flea, based on incipient tropical hygiene (Gofferjé, 1929, p.139). Regarding tropical diseases, the local German language press was an important vehicle for divulging hygiene maxims, as well as preventive and curative methods, through articles by specialists, such as doctor Belisário Penna (28 maio 1922). In addition to newspapers and magazines, yearbooks (*Kalender*) were relevant sources of information for the lay public on tropical diseases, their prophylaxis etc.

During the pioneering phase of German colonization in meridional Brazil, nevertheless, the immigrants and their descendents could only rely on popular medicine; thus, a series of curative prescriptions using medicinal herbs was being appropriated by the colonial pharmacopeia. An infusion of cabbage tree branches was indicated for malaria, since it contained quinine. Branches of the *peroba* tree were recommended for preparing tea to counter fevers (*einen fieberheilenden Tee*) (Deeke, 1929, p.131-132).

In addition to the lay public, comprised mostly of colonists of German origin, the German language newspapers included among its readers some immigrants trained in medicine in Germany. Some of them, in fact, had literally already fought in 'German Africa', such as doctor Heinz von Ortenberg and Karl Wilhelm Schinke; both immigrated to Rio Grande do Sul in 1907 and 1913, respectively. In fact, when German doctor Karl W. Schinke entered the *Schutztruppe,* he already had experience with tropical medicine. Based on letters sent to his wife in Berlin, a posthumous book was published relating his medical and military experience in Southwest German Africa (Schinke, 2009). In turn, Heinz von Ortenberg (1908) published a book on his 'African experience'. Almost three decades later, he published an article on tropical hygiene based on his 'Brazilian experience' (1936). It would, therefore, be in centers such as Rio de Janeiro and São Paulo that tropical medicine would be consolidated in Brazil, one of its main scientists being Adolpho Lutz (Benchimol, 2003).

Tropical medicine in the interdisciplinary field of 'colonial science' (*Kolonialwissenschaft*)

During German colonialism in Africa (1884-1919), there were expectations on the horizon for construction of a 'colonial science' (*Kolonialwissenschaft*). It consisted of a body of

knowledge that scientifically sought to resolve the problems identified as inhibitors to the development of the Second Reich's overseas colonies. Among the principal stumbling blocks to the colonial project, tropical diseases were prominent. As a result, investments, both in tropical medicine and hygiene, were indispensable to colonialism. It goes without saying that the preeminent institutionalization of tropical medicine in Europe was related to a number of epidemics that devastated port cities such as Hamburg, Liverpool and Marseille.

In the summer of 1892, Hamburg reported its first cases of cholera. The Berlin bacteriologist Robert Koch visited the hanseatic city and was shocked by the filth and pestilence in certain dwellings, considered at that time as true contamination foci. The Hamburg water supply and sewage system fell short of hygiene standards for a large population concentrated in Germany's main maritime port. Since the neighboring city, Altona, was spared by the epidemic due to its modern water treatment, including sand filters, the relationship between precarious hygiene conditions and propagation of the disease was irrefutable. The sanitary authorities in Hamburg were obliged to take radical action. Cleaning up of the slums and controlling sanitary norms for new construction were some of the measures adopted. That year, more than eight thousand people died of cholera. This epidemic was the first to be treated scientifically in Germany. In the end, the discovery that the disease was transmitted by water was decisive for solving the problem.

In 1900, the Maritime and Tropical Disease Institute (Hamburger Institut für Schiffs- und Tropenkrankheiten) was founded in Hamburg, under the direction of Bernhard Nocht. Tropical medicine in Germany would become consolidated in the first decade of the 20th century, with the German colonies being true laboratories. It should be remembered that the colonies also served for the development of ethnography, anthropology, geography and other subjects of the 'colonial science' interdisciplinary field.[4]

Publication/circulation of information on tropical diseases

News of the deaths of Europeans in Africa, especially those caused by tropical diseases, appear in the pages of German language newspapers in Rio Grande do Sul or Santa Catarina. In an article dated July 18, 1891, for example, the newspaper *Kolonie* reported on the failure of a German expedition in the interior of the colony of Cameroon. The losses occurred in combat against the natives and as a result of fever. On October 3, 1891, the same journal published sections of a report of another German expedition in Africa, which recorded 83 casualties, between combat and fever. The report was published in a Bagamoyo newspaper in German East Africa. On March 21, 1894, the newspaper *Kolonie* notified on its front page the sending of 120 marines to Cameroon. According to the article, they would probably remain there only for a short time due to the unhealthy climate (*da das Klima eine längere Verwendung nicht gestattet*). On February 8, 1896, the same newspaper informed that Prince Heinrich Moritz von Battenberg (1858-1896) had died due to fever on the West African coast. In these few news items about Africa, it can be seen that German mortality due to fevers was known to the "German-Brazilian" communities.

Typhoid fever and scurvy were also responsible for the deaths of hundreds of German soldiers during the colonial war (1904-1908) in Namibia. With consolidation of German colonial rule in Africa, it became even more necessary to increase production, which meant, in the logic of the colonizer, increasing the productivity of African workers. This capitalist view of Africans as bodies, or rather, the native labor force, was what largely led German colonialism to invest in tropical medicine.

In Africa, there were several epidemics during colonialism. In Egypt, for example, a large cholera epidemic occurred in 1888, and news of the first signs of a decline in its intensity was reported by the *Gazeta de Joinville* on August 22 of that year. On July 18, 1896, the newspaper *Kolonie* commented on the cholera epidemic in Alexandria, also carrying news of the death of Baroness Richthofen, sister of the German Consul in Cairo. The large number of English soldiers killed by cholera in Egypt was news in the *Kolonie* on August 12, 1886. The famous expedition by the German bacteriologist Robert Koch in 1883 to research cholera in Egypt also deserves mention.[5]

From the very first years of German colonialism in Africa, cholera, malaria, yellow fever, leprosy and African trypanosomiasis were some of the tropical diseases that worried the colonial authorities, soldiers, merchants, missionaries and colonists. Sanitation campaigns, publishing information on tropical hygiene and scientific expeditions to study tropical diseases occurred in the German colonies. The colonial press covered all of these subjects.

The lack of doctors in the colonies was also a newspaper theme. In German East Africa, for example, the official entry of German doctors occurred with the expedition of the Imperial Commissioner Hermann von Wissmann in 1889. In principle, the doctors' mission was to care for the health of Germans, rather than the natives. There were, nevertheless, missionary hospitals and quarantines that included the health of local inhabitants among their concerns. In Dar es Salaam, the colonial authorities tried to clean up the city following a cholera epidemic at the end of the 19th century. In response to malaria and dysentery, endemic to Dar es Salaam, tropical hygiene measures were also decreed and the colonial authorities planted coconut trees to drain the soil (Seidel, 1898, p.19-20). Faced with epidemics, many port cities underwent urban reforms oriented by scientific hygiene precepts. The ever expanding transportation network, however, left the port cities more exposed to tropical diseases. From the end of the 19th century to the first decades of the 20th, the opening of the railroads went hand-in-hand with tropical medicine. In an article entitled "Eine englische Konferenz zur Bekämpfung der Schlafkrankheit" (An English conference on combating sleeping sickness), in its March 7, 1911 edition, the Swakopmund newspaper reported on a conference in London that dealt with problems related to opening railroads in British East Africa. The conference discussed methods for fighting sleeping sickness and other research developed to avoid spreading the disease by African railroads. On December 19, 1912, the same newspaper informed that the recruitment of labor and traffic on a section of railroad in the district of Lindi in German East Africa was prohibited, because doctor Beck had found a new focus of sleeping sickness in that region. Apropos, historian John Illiffe (1979, p.163) correlated the migration of workers to the ecological crisis in Tanganyika.

Recruiting labor, however, was necessary for constructing the railroads. An article in the illustrated magazine *Kolonie und Heimat* informed that there were few local volunteers to work on opening the railroads – thus the need to recruit workers from other regions. Diseases, the adverse climate and mortality were some of the reasons for worker flight and, consequently, the slow pace of construction work. Engineer Carl Hebold stated that better housing and medical care were necessary for work to proceed (Hebold, 27 fev. 1910, p.5).

On July 18, 1913, the *Lüderitzbuchter Zeitung,* in its section 'Aus anderen Kolonien', reported a budget of millions of Marks for port and railroad infrastructure in Togo, in addition to one hundred thousand Marks for 'combating' sleeping sickness. On 7 January 1914, the *Deutsch-Südwestafrikanische Zeitung*, in a similar section, reported on a supplementary budget of 13 million Marks. The money was expected to be used not only for the construction of a railroad in the colony of Cameroon, but also for sanitation works, such as the fight against sleeping sickness. If, therefore, the railroads represented a risk of increasing the dispersion of certain tropical diseases, they also equally served to transport researchers to gather data and conduct new research *in loco* in the interior of colonial Africa.

Since the end of the 19th century, the German colonial press had published a variety of information on the latest discoveries in the field of tropical medicine. On May 20, 1899, the *Deutsch-Ostafrikanische Zeitung* published material entitled "*Eine neue Malaria-Theorie*" (A new theory on malaria), in which it presented some results of doctor Hugo Hartung. At the end of that year, the same newspaper reported new locales in which the tsetse fly was present. On May 19, 1900, the Dar es Salaam newspaper informed that the highland regions of German East Africa were better for population by Europeans because they were free of the fevers. On December 15, 1900, the *Deutsch-Ostafrikanische Zeitung* published a small article entitled "Neues von der Malaria-Forschung" (News on malaria research). Koch's theory on the mosquito as a transmitter of malaria received further support from the recent observations of a doctor on study trip to Italy. With the advances of bacteriology and medical entomology at the beginning of the 20th century, the theory of miasmas was being abandoned. Successful colonization of the tropics depended on tropical medicine and hygiene.

On March 14, 1990, the Windhoek newspaper congratulated doctor Kuhn on the results obtained in his research on malaria. On March 23, 1901, it was the Dar es Salaam newspaper's turn to refer to the experimental medicine of doctor Kuhn, who had succeeded in immunizing several white people against malaria in the German colony of South West Africa.

On August 17, 1901, the *Deutsch-Ostafrikanische Zeitung* published on its front page material entitled "Zum Kampfe gegen die Malaria" (To combat malaria), treating the disease as one of the worst enemies of German East Africa. The newspaper informed about the medical experience of doctor Ollwig, doctor Robert Koch's former assistant, and his research and treatment activities in 'combating' malaria in Dar es Salaam. Between 1901 and 1904, Heinrich Ollwig was the leader responsible for an expedition against malaria (*Malariabekämpfungsexpedition*) in Dar es Salaam.[6]

Several sanitary campaigns were conducted in colonial Africa under German rule, mainly in the coastal cities such as Lomé (Togo) and Dar es Salaam (Tanzania). The environmental

diversity of the African German colonies was also taken into account by the colonial administration's sanitary and hygiene authorities. Forests, savannas, deserts, valleys or highlands tested the health of Europeans differently. In the case of the German colony of South West Africa, material in the newspaper *Kolonie und Heimat* (13 fev. 1910, p.10) considered the climate to be good, but the rarified air had its drawbacks for German immigrants. Malaria was endemic in the north of Deutsch-Südwestafrika (German Southwest Africa), where prophylaxis using quinine was recommended. The Swakopmund newspaper also published extensive material in its November 10, 1903 supplement on malaria and its treatment.

On April 28, 1911, in an article entitled "Vorschlag zu einer neuen Methode der Malariabekämpfung" (Proposal for a new model to combat malaria), doctor Emil Steudel, a German, revealed to readers of the *Deutsch-Südwestafrikanische Zeitung* a treatment for malaria based on Ronald Ross' method.

On November 19, 1912, the Swakopmund newspaper published a note on the book by doctor Ludwig Külz, the Imperial government's medical doctor in the colony of Cameroon. The book's subject was malaria, forms of prevention and treatment. On December 26, 1913, the readers of Lüderitzbucht's newspaper were informed about the new health care measures (*Gesundheitspflege*) in effect based on the Imperial government's regulations on contagious diseases etc.

'Combating' sleeping sickness

On January 28, 1905, the newspaper *Der Urwaldsbote,* printed in Blumenau, contained material on sleeping sickness in tropical Africa that was transmitted by an insect called the tsetse – the newspaper text did not make it clear whether it was a mosquito or fly. The article also informed that the first symptoms of the sickness were only manifested after some time had passed and succinctly described the phases of the illness leading to death. No medicine had yet been manufactured for that disease, the newspaper informed (*Ein wirksames Mittel ist noch nicht erfunden worden*) (Über die furchtbare..., 28 jan. 1905).

But the March 2, 1907 edition of the *Deutsche Ostafrikanische Zeitung* did report on a combination of medicines produced in Germany for the treatment of sleeping sickness: Atoxyl and Trypanrot. The material showed how the experimental medicine of doctor Robert Koch used the islander inhabitants of Lake Victoria-Nyassa as human guinea pigs in treatment using Atoxyl and Trypanrot. In the report on the German scientific expedition, the Dar es Salaam newspaper further reported that doctor Koch had detected the trypanosoma in the blood of crocodiles (Über den bisherigen Verlauf..., 2 mar. 1907). On March 9, the same newspaper published a continuation of the report on doctor Koch's scientific expedition in British Africa (Über den bisherigen Verlauf..., 9 mar. 1907).

Of the tropical diseases in Africa, sleeping sickness had, perhaps, the greatest impact on the German colonial press, whose newspapers published tens of articles or news items on the *Schlafkranheit*. In sampling terms, the German language newspapers of German Southwest Africa alone registered sixty references to sleeping sickness between 1903 and

1922. In general, the newspaper material published alluded to studies conducted in the field of tropical medicine. Thus, the lay public of the German colonies were made aware of certain scientific research and/or their results, as well as various scientific expeditions in the 'combat' against cholera, malaria and sleeping sickness. The death of eminent German scientists also hit the pages of the colonial press. On June 15, 1910, the newspaper *Der Urwaldsbote* announced the death of doctor Robert Koch and informed that the eminent bacteriologist researching sleeping sickness when he died.

In its February 25, 1911 edition, the Dar es Salaam newspaper announced the German government's expenditure of more than one million Marks to combat sleeping sickness, as well as the treatment of 25 thousand natives in recent years. On March 1, the same newspaper informed that doctor Ollwig would be responsible for combating sleeping sickness and would conduct research in Lake Victoria and Lake Tanganyika.

On July 8, 1911, for example, the *Lüderitzbuchter Zeitung* published a summary of the speeches given at the German Colonial Congress (Deutscher Kolonialkongreß). Doctor Steudel spoke about the spread of sleeping sickness, which presented the greatest incidence on the river banks, large seacoasts and settlements of tropical Africa. Doctor Ulenhut appraised the topic "Die Behandlung der Schlafkrankheit" (Treatment of sleeping sickness). He highlighted the merit of Robert Koch's work and the importance of Atoxyl as a 'weapon in the war' against the disastrous consequences of sleeping sickness. In the same number, a brief note on British East Africa mentioned a lake archipelago where sleeping sickness had yet to be recorded. On September 2, 1911 the Dar es Salaam newspaper informed the itinerary of a scientific expedition commanded by doctor Steudel, which was expected to last five months. The expedition would go through various places where sleeping sickness was endemic. On October 14, 1911, the Swakopmund newspaper reported on the 'terrible epidemic' that threatened the German colony of Cameroon. According to the Schlafkrankheitsstudienkomission (1908), despite the epidemic nature of the disease, it had only gradually become an epidemic and, in the surrounding neighbor regions under French rule, it had been responsible for the death of 1/3 of the population during the previous four or five years.

In German East Africa, the disease had spread to the lake region of Tanganyika. The tsetse fly seemed to have taken advantage of the ecological crisis to proliferate. It was calculated that 1/3 of the German colony's territory was infested by it in 1910 (Iliffe, 1979, p.164). On November 21, 1911, the Swakopmund newspaper published an article entitled "Bekämpfung der Schlafkrankheit in Togo" (Combating sleeping sickness in Togo), reporting on an agreement between the imperial governments of Great Britain and Germany. The agreement's intent was to bring doctors to the areas affected by the epidemic to combat its expansion. On the same day, the Dar es Salaam newspaper informed that an institute (Ostafrikanisches Seucheninstitut) was expected to be founded in that city in 1912. To lead it, doctor Wölfel was already taking a course with Paul Ehrlich, at the Institute for Infectious Diseases (Institut für Infektionskrankheiten) in Frankfurt and afterwards would go to Pretoria, where he would work with doctor Teiler at Veterinarian-Bacteriological Institute in the Union of South Africa.

On December 2, 1911, the *Lüderitzbuchter Zeitung* reported material devoted to sleeping sickness (*Schlafkrankheit*). In addition to a brief explanation on how the disease was transmitted and the means of contamination, the article referred to an experiment on the Island of Príncipe, where the owner of a plantation had created an effective method for protecting his workers. Noticing that the tsetse fly flied over the bent over backs of his workers who were performing their agricultural tasks, the planter began to dress his employees with cloaks impregnated with a sticky substance; the insects got stuck in the substance and did not bite the workers. According to the newspaper, another planter in German East Africa successfully applied this method. Missionaries also authorized workers on the banks of the Lopori River in the Congo to baste their bodies with an unguent to protect themselves against the tsetse fly. A newspaper informed that their neighbors who did not use it died. That same week, the same news was published in the *Swakopmunder Zeitung*.

Readers of the Lüderitz Bay newspaper were also informed that, in the tropical hygiene section of the International Hygiene and Demography Exposition in Dresden, different types of the tsetse fly were on exhibit in all larva states, as well as other information on *Schlafkrankheit*, its development and all of its known stages. A map of Victoria-Nyassa showing the spread of the disease and its transmitters, as well as the expansion of deforestation, was also on exhibit. It goes without saying that Chagas disease was also prominent in the Brazilian pavilion at the same Dresden exposition.

On December 6, 1911, the Dar es Salaam newspaper, under the title 'Combating sleeping sickness', reported on doctor Kleine's trip to London, where he disclosed the recent results of his research to English scientists. The material also referred to the scientific expeditions undertaken by doctors Koch, Steudel and Ollwig in German East Africa. Days later, the same newspaper reported on a scientific expedition in the French Congo to study the *maladie du sommeil*. In its December 8 edition, the Swakopmund newspaper published material entitled "Eine neue Schlafkrankheitexpedition" (A new expedition [to investigate] sleeping sickness). The article informed about the next English expedition to be sent to Nyasaland, led by David Bruce (1855-1931). Professor Robert Newstead (1859-1947) from the Liverpool School of Tropical Medicine also participated in this expedition.

On December 16, 1911, the *Lüderitzbuchter Zeitung* reported on a talk by doctor von Wassermann, in which, among other topics, sleeping sickness was addressed. With the help of pictures, the speaker covered the evolution of the disease, its pathological agents in the blood etc. He also made preventive and prophylactic recommendations. The same day, the Dar es Salaam newspaper reported on doctor Kleine's next scientific expedition to German East Africa.

On December 23, 1911, the Lüderitzbucht newspaper covered the need to continue research on sleeping sickness. On January 23, 1912, the Swakopmund newspaper, in turn, published another article on combating sleeping sickness ("Bekämpfung gegen Schlafkranheit"), in which the reading public was informed about the work of doctor von Wassermann. News arrived from Berlin on the results of the research by Brieger and Krause on sleeping sickness, published in the Lüderitzbucht newspaper on February 17, 1912.

On March 9, the Lüderitzbucht newspaper reported on creation of a three thousand Mark prize for the best work on the topic Die Schlafkrankheit und ihre Bekämpfung (Combating sleeping sickness). Evaluation of the work would be conducted by the Institute for Maritime and Tropical Diseases of Hamburg. On March 30, another article in the same newspaper reported on the expansion of endemic zones in central Africa and the sanitary and hygiene measures that a scientific commission was expected to prepare shortly. It commented on the involvement of eminent German scientists, doctors Nocht and Steudel, as well as doctor Eugen Olbresch. The latter reportedly had invented a way to eliminate the tsetse fly. The article also discussed other tropical diseases, such as malaria and leprosy, including prophylaxis using Nastin, developed by a German professor, Georg Deycke.

In the July 13, 1912 edition, the correspondent for the *Lüderitzbuchter Zeitung* in South Africa covered the promising research of a young German scientist, doctor Frederick Mehnarto, in an article entitled "Auf dem Wege zur Heilung Schlafkrankheit" (On the road to curing sleeping sickness). The article referred to a serum that doctor Menharto was developing, now in the experimental phase, that could be more effective than Atoxyl, but whose side effects still had to be observed. The serum had yet to be tested on humans, only monkeys and rabbits. Curiously, the Swakopmund newspaper had published material accusing doctor Menharto of being an imposter on February 21, 1912, since the Johannesburg researcher allegedly had not been doctor Koch's assistant, nor had he studied with that eminent and now deceased German bacteriologist.

In its August 8, 1912 edition, the Swakopmund journal confirmed that, according to research undertaken by a scientific commission in British East Africa, the tsetse fly was the transmitter of sleeping sickness. The article further informed that the German scientific expedition under the leadership of doctor Friedrich Karl Klein (1869-1951) had already arrived at this conclusion. Two days later, the Lüderitzbucht paper reported on sleeping sickness, now present on the 'German shore' of Lake Nyassa and the border with Portuguese East Africa. On November 19, 1912, the Swakopmund newspaper reported in its section "Aus aller Welt" (World News) on new transmitters of sleeping sickness, based on recent discoveries of a team of English scientists led by Sir Ronald Ross (Neue Forschungsergebnisse..., 19 nov. 1912). On December 19, 1912, doctor Beck found another zone affected by the epidemic, located in a district of German East Africa, according to the Swakopmund journal.

In Brazil, the newspaper *Kolonie,* in its September 16, 1912 edition, informed readers of the publication of a book in Germany that dealt with the 'German Congo'. The article referred to sleeping sickness in that region and its relationship to the humid tropical climate.

On April 4, 1913, the *Lüderitzbuchter Zeitungf:* published an article on the success of doctor Menharto's research in South Africa. To the great surprise of the scientific world, the German researcher affirmed that this same serum successfully applied to cure sleeping sickness could also be employed in the treatment of tuberculosis. Such a discovery interested bacteriologists, stated the Journal. On September 12, 1913, the Lüderitzbucht paper published material entitled "Bericht des Medizinalreferenten von Kamerun, Oberstabsarzt doctor Kuhn, über die Schlafkrankheit in Neukamerun", in its section "Aus anderen Kolonien" (From the other colonies), and in which doctor Kuhn reported the worrisome situation in

the German colony after observations made *in loco*. In this regard, some people complained about the Sisyphean task that modernization of transportation in epidemic zones eventually represented. Brazil was not the only place at the end of the 19th and beginning of the 20th century where expansion of the railroad network worked together with the efforts of scientists to weaken epidemic outbreaks (Benchimol, Silva, 2008, p.719-762). In an article entitled "Eisenbahn- und Schifffahrts-Plan für Kamerun" (Railroad and waterway projects for the Cameroon) (24 jul. 1914), the risks of constructing a new railroad line were questioned, since the region that would benefit was infested by the tsetse fly.

On the eve of the First World War, the readers of *Deutsche Sudwestafrikanische Zeitung* were informed about new remedies for sleeping sickness. Under the title "Aufsehenerregende Erfolge" (Sensational results), the newspaper discussed the invention Tryposafrol, a derivative of Safranin. The article detailed how the drug worked and which bacteria it attacked, as well as the areas affected that would benefit from the invention of the researchers, doctors L. Brieger and M. Krause.

In the first *post-bellum* years, some newspapers of the then former German colonies reported on sleeping sickness in European countries. Some cases were associated with African soldiers that had fought in Europe during the world conflict (Die italienische…, 12 abr. 1920; Schlafkrankheit…, 7 fev. 1921).

In addition to tropical diseases, the so-called pests and plagues that affected livestock activities in the colonies were also subjects in the pages of the German colonial press. Other problems that affected the German colonists in a tropical environment were also covered, such as venomous snakes bites. In 1858, doctor Robert Avé-Lallemant (1980, p.188) related that the German colonists already knew how to treat them. After making a cut to let the wound bleed, it was covered with ashes and those bitten were given an infusion to drink, made from a plant root. The Dar es Salaam paper (Heilmittel..., 3 ago. 1901) published material with a similar procedure for rattlesnake bites. The article also referred to procedures used by natives. It added that the Boers paid a very high price for a small reptile from which they made a powdered remedy to place on the wound of a snake bite. In a German language newspaper in the interior of Brazil, the death of an African swallowed by an enormous snake in German East Africa was news (Kolonie, 4 maio 1909). The article was taken from the Dar es Salaam newspaper.

The April 6, 1912 edition of the Lüderitzbucht paper had an article on the 'fight' against snake venom. Under the leadership of Vital Brazil, the Instituto Butantã reportedly had succeeded in producing an anti-snake serum. The newspaper further informed that, in Rio Grande do Sul, there were two snake (the *jararaca* viper and the rattlesnake) for whose venom the Instituto Butantã already produced serums, as well as a third serum in which the origin of the snake bite was unknown.

The snake examples in articles or news items of the German colonial press shows that, in addition to tropical diseases, other information circulated about the colonists' health problems in a tropical environment, connecting the ethnomedicinal experiences of various places (Brazil, South Africa, East Africa...) with scientific research conducted here and there.

Deforestation and animal extinction as sanitation measures

German colonialism provoked an ecological crisis in various African regions. Mineral extraction (diamonds, copper etc.), agricultural exports from the plantations (cocoa, sisal, cotton etc.) and extensive livestock raising caused environmental impacts, among them, the emergence of new epidemic zones and an increase in epidemics. The increased circulation of people and merchandise through colonial ports and penetration of colonialism due to expansion of the railroad network through various biomas and ecosystems favored the dispersion of tropical diseases, such as malaria and sleeping sickness.

Still influenced by the theory of miasmas, colonialism fomented deforestation, considered a sanitary measure, especially for eradication of sleeping sickness. With advances in bacteriology and entomology, tropical medicine wound up reinforcing the discourse in favor of deforestation.

In the Dar es Salaam Journal, material published on February 18, 1911 in the section "Aus unserer Kolonie" (In our colony), deforestation was highlighted as a measure to combat the tsetse fly (Abholzungsversuche..., 18 fev. 1911). The news refers to the experiment of doctor Wölfel, who ordered the deforestation of one, two and three hundred meters wide on both sides of a railroad in the district of Udjidji. Also mentioned was the pioneering deforestation experiment as a sanitation measure under the guidance of doctor Robert Koch in Usambara.

During German colonial rule, several species of wild animals declined and the extinction of some mammals was a polemic topic in the colonial press newspapers. For some, the preservation of wild life would also preserve the transmitters and hosts of the viruses or bacilli of certain tropical diseases.

An article of the Lüderitzbucht paper on the trip of President Theodore Roosevelt to the African continent and his hunting there disclosed that where sleeping sickness was endemic, hyenas represented a great threat to the villagers, since these animals were part of the disease's transmission cycle (Lüderitzbuchter Zeitung, 19 ago. 1911). On August 17, 1912, the same paper published an article on the relationship between wild animals and sleeping sickness. The article covered the position of Count Zech, former governor of the colony of Togo, regarding the restriction on hunting in certain areas to avoid spreading or expanding epidemic foci. It also referred to a practical example to prove that certain wild animals are hosts of the trypanosoma. It concerned the experience in Nyasaland, whose government exterminated a large part of the wild life in an area of ten square kilometers to eradicate sleeping sickness. It should be recalled that the eminent researcher Sir David Bruce came to affirm that wild life should be "sacrificed to the benefit of civilization" (Ein Naturschutzpark..., 3 abr. 1914).

An eminent bacteriologist and Nobel prizewinner in medicine, doctor Robert Koch also came to defend the extinction of certain wild animals in the German African colonies. The German doctor suspected that buffalo and antelope, among other animals, might be part of the sleeping sickness cycle (Koch, 1908).

A deliberate policy conducive to the extinction of large animals had, however, its opponents. The polemic generated around the future of wildlife in the colonies could not

be disassociated from the discussion involving the creation and/or expansion of parks and reserves for protecting nature, especially animal life. That issue was intense during the Rechenberg government in German East Africa (Wächter, 2008, p.73-76).

On August 12, 1911, the Dar es Salaam newspaper published material on the decision of the Deutsche Kolonialgesellschaft to create a park to protect wildlife in the German African colonies. The journal mentioned British experience in its African colonies, in which hunting was controlled. In the German colonies, on the other hand, commercial hunting took advantage of doctor Koch's medical discourse to engage in the unlimited slaughter of such animals as elephants.

On April 3, 1914, the Lüderitzbucht paper published important material on the need for wildlife reserves in the German colony. The article referred to the annual report of the Nature Protection Park Association (Naturschutzpark Verein), headquartered in Stuttgart.

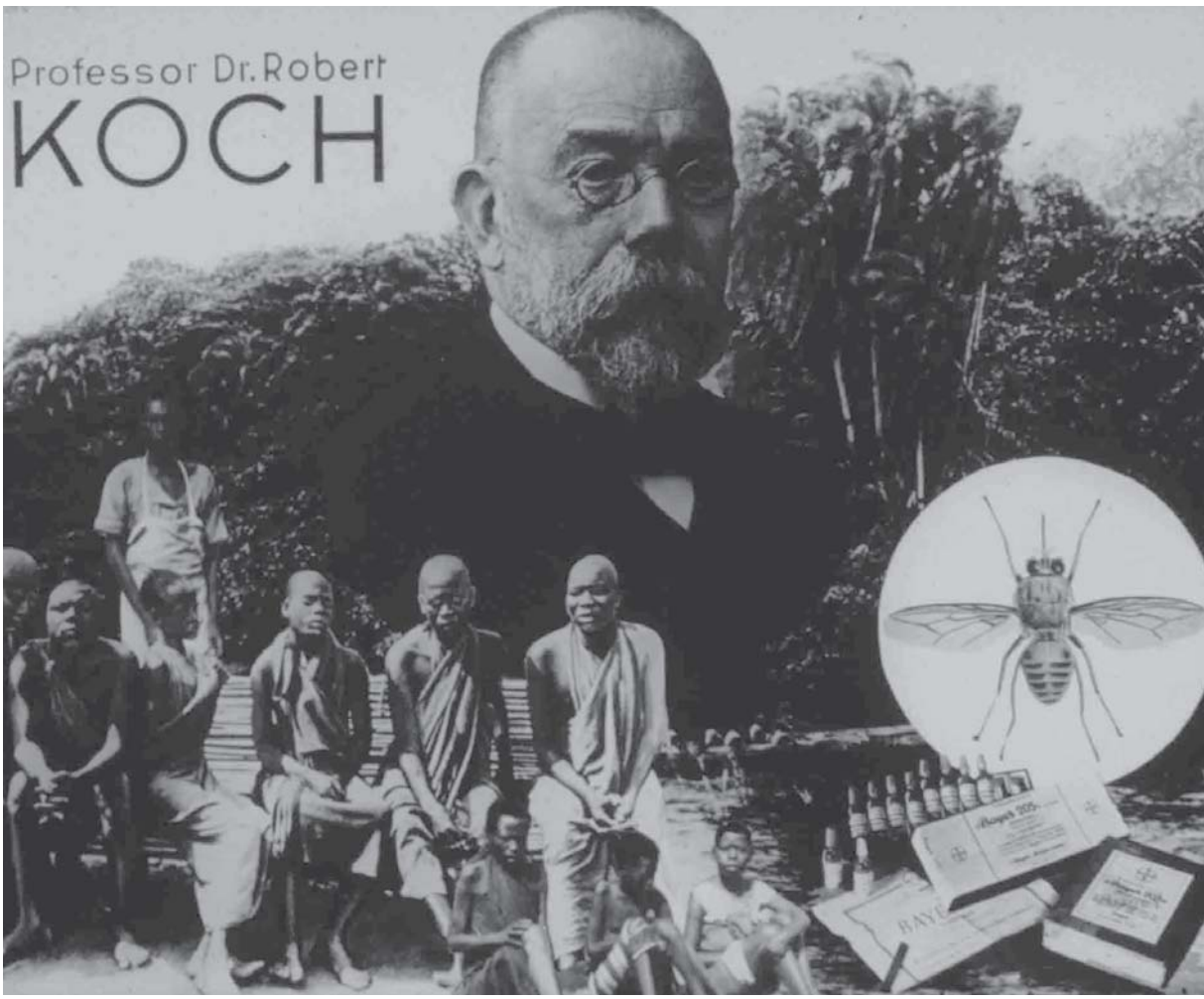


Figure 1: Robert Koch, diseases, tsetse fly and vials of Bayer 205 medication. Photomontage (Robert Koch..., s.d.)

Bilder vom Bahnbau in Togo.

Die Arbeiten an der Linie Lome—Atakpame.

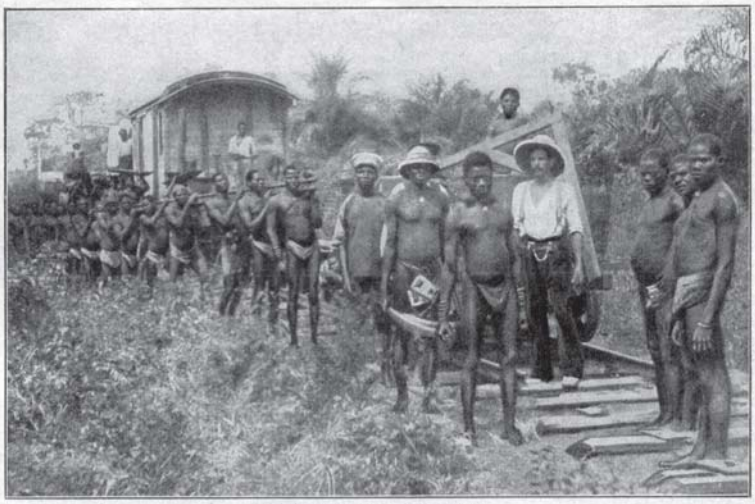
Wohnung eines Bauleiters.

es für den Fortgang der Arbeiten sehr störend ist, wenn das Trinkwasser, wie dies auch in Togo allzuhäufig der Fall ist, von weither zugeführt oder erst durch Brunnenbohrungen beschafft werden muss.

Vor wenigen Jahren noch haftete dem Eisenbahnbau in unsern Kolonien fast etwas Abenteuerliches an und das war auch kein Wunder. Hatten wir doch bis dahin nur die kleine Usambarabahn in Ostafrika gebaut, und zwar unter den allergrössten Schwierigkeiten, und verfügten nur über sehr wenig Erfahrung im kolonialen Eisenbahnbau. Die südwestafrikanische „Staatsbahn" von Swakopmund nach Windhuk zählt nicht mit, denn sie war gewissermassen nur eine Notbahn, mit primitivsten Mitteln von Eisenbahntruppen erbaut.

Mittlerweile haben wir in dieser Hinsicht sehr viel gelernt. Unter dem Eindruck des Krieges in Südwestafrika hat man in Deutschland die Notwendigkeit von Eisenbahnen in den Kolonien begriffen und der Bau von Kolonialbahnen ist jetzt etwas beinahe Alltägliches. Tausende von Kilometern sind inzwischen fertig geworden oder im Bau begriffen und Hunderte von deutschen Technikern haben ihre Kunst im schwarzen Erdteil mit Erfolg versucht.

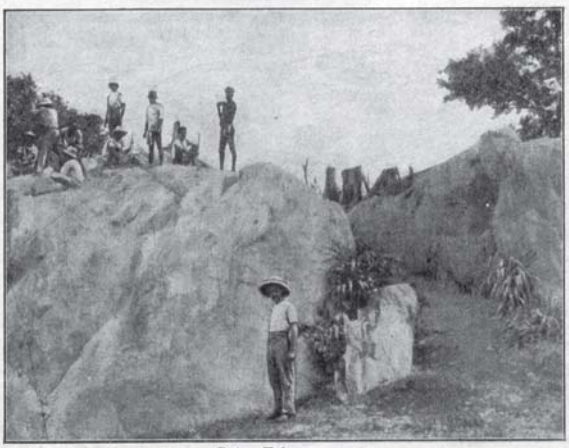
Trotzdem ist die Sache noch lange nicht so einfach, wie hierzulande, das lassen unsre Bilder ahnen, die einige Szenen vom Eisenbahnbau in Togo veranschaulichen. Vor allem ist es das Klima, das unsern deutschen Technikern die Arbeit erschwert. Dazu kommt die Unzulänglichkeit des Arbeitermaterials. Denn der Neger steht natürlich hinter dem europäischen Arbeiter hinsichtlich des Verständnisses für seine Arbeit und hinsichtlich der Leistungsfähigkeit weit zurück. Auch macht sich vielfach der Wassermangel unangenehm geltend. Man kann sich denken, dass



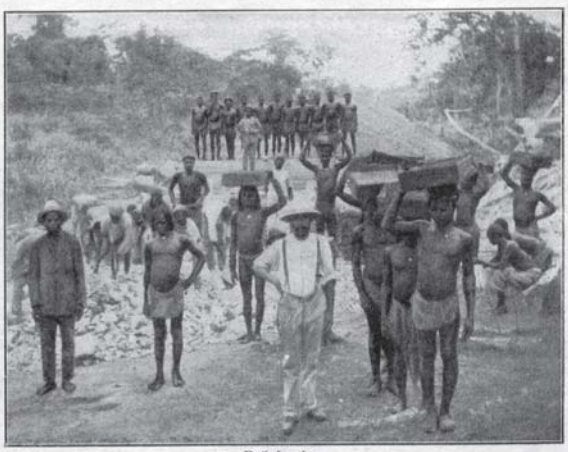
Vorstrecken des Bahngeleises.

Bis jetzt haben wir in Togo eine etwa 45 Kilometer lange Küstenbahn von der Hauptstadt Lome nach Anecho (früher Klein-Popo) und die Inlandbahn Lome—Palime, die den Plantagenbezirk Misahöhe erschliesst und etwa 125 Kilometer lang ist. Gegenwärtig ist die Inlandbahn von Lome nach Atakpame, dem wichtigsten Platz im Hinterland, in Arbeit. Wie die bereits vorhandenen Bahnen und ein Teil derjenigen von Ostafrika, Südwestafrika und Kamerun, so wird auch die Bahn nach Atakpame von der bewährten Eisenbahnbaufirma Lenz & Co. in Berlin gebaut.

Durch die neue Linie soll die Nutzbarmachung eines landwirtschaftlich aussichtsvollen Gebiets ermöglicht werden. Das kolonialwirtschaftliche Komitee hat in dieser Richtung bereits wesentlich vorgearbeitet. Von ihm ist vor mehreren Jahren in Nuatjä eine Ackerbauschule für Schwarze ins Leben gerufen worden, die jetzt die Regierung übernommen hat. Dort sollen intelligente Eingeborene in der Pflugkultur, an Stelle der ursprünglichen Hackkultur, unterrichtet und namentlich zum Anbau von Baumwolle angeleitet werden. Die wirtschaftliche Wirkung der andern kleinen Eisenbahnen in Togo ist bereits so überraschend, dass an der Zukunft der Bahn nach Atakpame nicht gezweifelt werden kann. Die Arbeit unsrer deutschen Techniker, mag sie auch mühe- und gefahrvoll sein, ist nicht umsonst, sondern wird der Kolonie und damit dem Mutterland Segen bringen.



Beim Felssprengen.

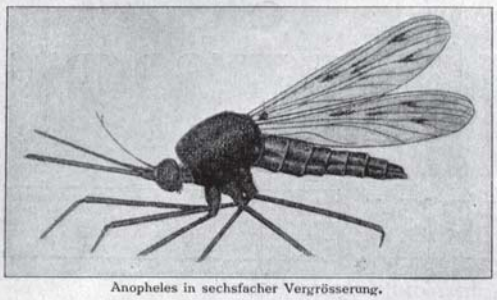


Brückenbau.

Figure 2: Workers on the construction of the railroad in the forest of Togo. This was a contingent vulnerable in epidemic zones, being the potential host of etiological agents or vectors transmitting diseases (Kolonie und Heimat..., p.5, 30 jan. 1910)

Die Malaria.

Von Dr. med. H. Krauss.



Anopheles in sechsfacher Vergrösserung.

Malaria heisst auf deutsch: schlechte Luft, Malaria ist der Name einer Infektionskrankheit, die besonders in sumpfigen Niederungen vorkommt und deshalb auch Sumpffieber genannt wird. Man glaubte, dass aus den Sümpfen oder aus der frisch aufgerissenen Erde krankmachende Dünste und sogenannte Miasmen aufstiegen. Wegen der in bestimmtem Wechsel auftretenden Fieberanfälle heisst die Krankheit auch Wechselfieber, febris intermittens.

Die Krankheit ist vor allem in warmen Ländern häufig, besonders in den Tropen. In Italien ist besonders die Campagna bei Rom als Fieberherd gefürchtet, aber auch bei uns in Deutschland kommt die Malaria vor. So im Flussgebiet der Altmühl und des Maines; ferner wurde Malaria u. a. beobachtet in Potsdam, Leipzig und der Nordsee; da besonders in Wilhelmshaven (gelegentlich der Erbauung des Kriegshafens. Man hat ausgerechnet, dass auf der ganzen Erde 100 Millionen Menschen an der Malaria leiden. In Indien allein sterben jährlich an Malaria etwa 1 200 000 Menschen.

Obwohl wir in Deutschland selbst wenig Malaria haben, ist die Krankheit uns seit dem Erwerb der Kolonien sehr verhängnisvoll geworden. Viele Söhne des deutschen Volkes, die voll Begeisterung für Deutschlands Ruhm übers Meer gezogen sind, wurden drüben von der tückischen Krankheit weggerafft. Nicht in offener Feldschlacht sanken sie dahin, vom Speer des Feindes getroffen; auf kummervollem Krankenlager, fern von der Pflege ihrer Lieben, siechten sie dahin und erlagen dem Stich einer winzigen unscheinbaren Mücke, des Moskito. Wenige Jahrzehnte erst ist es her, dass man diesen Feind erkannt hat, dass man weiss: die Malaria wird nicht in Form von giftiger Sumpfluft eingeatmet, sondern sie wird durch den Stich einer Mucke, des Anopheles makulipennis, und zwar nur des Weibchens dieser Gattung, auf den Menschen übertragen. Dieses sticht den Menschen, weil es zur Ablage seiner Eier Blut nötig hat, und eine Infektion des Menschen erfolgt nur dann, wenn sich der Moskito selbst schon früher an einem Malariakranken angesteckt, inziiert hat und somit selbst erkrankt ist. Lange mühevolle Arbeit im Laboratorium und am Mikroskop hat es gekostet, bis diese Tatsachen entdeckt wurden. Das Hauptverdienst an diesen Entdeckungen gebührt dem französischen Militärarzt Laverau, dem englischen Militärarzt Ronald Ross und dem deutschen Professor Robert Koch. Alle unbestimmten Theorien haben der klaren Tatsache weichen müssen: an Malaria erkrankt ein Mensch nur dann, wenn durch den Stich eines selbst kranken Anophelesweibchens die Malariakeime in sein Blut übertragen worden sind.

Diese Keime, Sporozoiden oder nach ihrer Gestalt Sichelkeime genannt, kreisen nun mit dem Blute im menschlichen Körper. Bald bohren sie sich in die roten Blutkörperchen ein und entwickeln sich da zu ringförmigen Gebilden. Solch ein Ring besteht aus einem Protoplasmaband, das durch die meist angewandte Giemsa-Färbung sich blau färbt und aus einem Zellkern, dessen Chromatinsubstanz nach obiger Methode scharf rot gefärbt wird. Der Ring des Parasiten füllt das rote Blutkörperchen immer mehr aus und zerfällt schliesslich in 12 bis 14 einzelne kleine Kugeln oder Mesozoiden. Zugleich platzt die vom Parasiten leer gefressene Hülle des roten Blutkörperchens. Die Mesozoiden schwimmen einzeln im Blut und dringen rasch wieder in je ein rotes Blutkörperchen ein, wo die gleiche Entwicklung zum Ring usw. wieder vor sich geht.

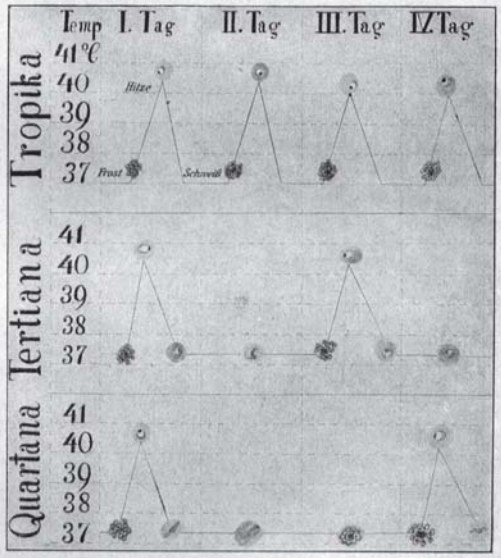
Von dem Stich des Moskito bis zum ersten Fieberanfall verstreicht eine Zeit von etwa 10 Tagen; das ist die sogenannte Inkubationszeit.

Die eigentliche Erkrankung beginnt plötzlich mit Schüttelfrost, dem bald hohes Fieber bis über 40° folgt. Nach einigen Stunden tritt unter heftigem Schweissausbruch die Entfieberung ein. Zur Zeit des Schüttelfrostes findet man im Blutpräparat den Parasiten, wie er sich eben in die Mesozoiden spaltet. Hier wird beim Platzen der Blutkörperchenhülle auch Pigment frei, d. i. ein Abfallstoff des Parasiten und dieser ist vielle cht die Ursache des nun einsetzenden hohen Fiebers. Bald darauf während der Akme — so wird die Fieberhöhe bezeichnet — finden wir schon wieder die kleinen Parasiten in den einzelnen Blutkörperchen sitzen. Ein solcher Fieberanfall kann schon am folgenden Tage wiederkehren; dann handelt es sich um die Malaria quotidiana, auch tropica oder perniciosa genannt. Es ist das die schlimmste der drei Malariaformen. Der Anfall kann am zweitnächsten Tage wiederkehren, dann sprechen wir von der Malaria tertiana, weil je am ersten und dritten Tage ein Anfall erfolgt. Oder der Anfall kann je am ersten und vierten Tage auftreten, dann handelt es sich um die Malaria quartana. Die hier ausgehängten in Anlehnung an Kollehetsch gezeichneten Tafeln machen die Intervalle der einzelnen Tage noch deutlicher und zeigen zugleich die Form der Parasiten zu den verschiedenen Zeiten.

Der Fieberanfall ist meist begleitet von heftigem Kopfschmerz und Erbrechen. Die Diagnose: Malaria kann man aus der Temperaturkurve nur eines Tages nicht mit völliger Bestimmtheit stellen. Hier muss das Blutpräparat über das Vorhandensein von Parasiten uns Aufschluss geben.

Die Parasiten der drei Malariarten sind nicht gleich. Tropica hat die kleinsten Ringe. Wenn die Krankheit ungenügend behandelt und chronisch wurde, findet man in dem Blute auch die sogenannten Laveranschen Halbmonde. Es sind das Dauerformen der Parasiten. Tertiana ist dadurch zu erkennen, dass nicht nur die Ringe grösser sind als die Tropicaringe, sondern dass auch die befallenen roten Blutkörperchen grösser sind als die gesunden. Bei der Quartana finden wir neben der jugendlichen Ringform sehr oft die etwas ältere Bandform des Parasiten.

Nicht jeder erwachsene Parasit teilt sich sogleich wieder in die kleinen Mesozoiden. Manche bleiben als sogenannte Dauerformen im Blute vorhanden. Man unterscheidet von diesen Formen zwei Arten; der eine Parasit hat mehr Chromatin oder Kernstoff, der andere mehr Protoplasma oder Zellstoff. Der erstere stellt die männliche Parasitenform dar und heisst Microgametocyt; der andere stellt die weibliche Parasitenform dar und heisst Macrogamet. Aber eine Vermehrung der Parasiten kommt im Blute des Menschen nicht vor, sondern nur im Magen des eigentlichen Parasitenwirtes, des Moskito.



Wir nehmen an, ein Anophelesweibchen hat einen Malariakranken gestochen und ihm Blut ausgesogen. Mit diesem Blute kommen auch die Malariaparasiten in den Magen der Mücke. Aus den Mikrogametocyten machen sich nun hier fadenartige Gebilde los die Samenfäden. Diese dringen in die Makrogameten ein und befruchten dieselben. Aus den befruchteten Makrogameten entwickeln sich die sogenannten Würmchen, Zygoten oder Oocysten oder Ookineten genannt. Diese Würmchen bohren sich in die Magenwand ein und bleiben auf deren Aussenwand sitzen, wo sie zu zystischen Kugeln heranwachsen. Diese Kugeln bilden in sich wieder Tochterzysten oder Sporoplasten. Und in den Sporoplasten entstehen die sogenannten Sichelkeime. Die Sporoplasten platzen und die Sichelkeime gelangen dadurch in die freie Bauchhöhle und wandern von hier in die Speicheldrüse, von wo sie bei dem nächsten Stiche des Moskito mit dessen Speichel unter die Haut des Menschen eingespritzt werden und so in das Blut gelangen.

Man muss das Weibchen vom männlichen Anopheles unterscheiden können, und vor allem die Gattung Anopheles von der Gattung Culex, einer nahe verwandten Moskitoart. Die Unter-

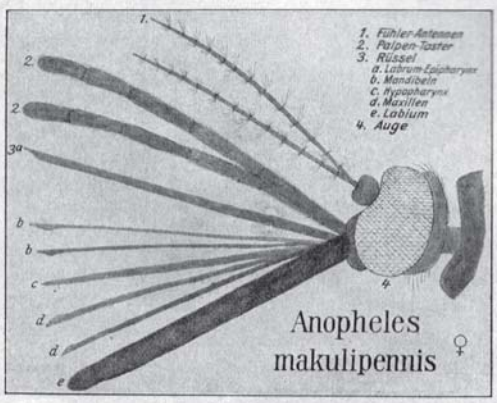
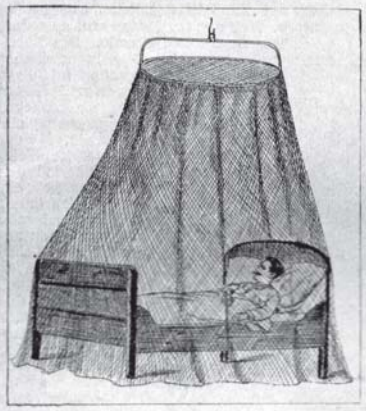


Figure 3: Malaria was the theme of an article in a scientific publication, written by the physician H. Krauss (Kolonie und Heimat..., p.2-3, 8 jan. 1911)

scheidung wird meist so getroffen, dass man zuerst die Männchen ganz ausscheidet. Dieselben sind erkenntlich an den buschigen Fühlern oder Antennen. Die Weibchen unterscheiden sich nun dadurch, dass beim Culexweibchen die zur Seite des Stechrüssels befindlichen Taster oder Palpen viel kürzer als dieser Stechrüssel sind; während hingegen beim Anophelesweibchen die Taster etwa eben so lang sind wie der Rüssel. Die Gattung Anopheles unterscheidet sich von der Gattung Culex auch durch die fleckenförmige Zeichnung der Flügel, während der Culex farblose Flügel hat. Ferner sitzt Anopheles spitzwinklig zur Wand, während Culex parallel zur Wand steht. Die Larve des Anopheles liegt im Wasser horizontal, die des Culex hängt nach unten, die Eier des Anopheles werden einzeln abgelegt, die des Culex in ganzen Gelegen. Das tropenhygienische Institut in Hamburg hat eine Ansichtkarte angefertigt, auf welcher der Unterschied zwischen Anopheles und Culex dargestellt ist. Zugleich sind die Unterscheidungsmerkmale zu einem Merkvers vereinigt, in welchem die auf Anopheles bezüglichen Stichworte ein *a*, die auf Culex bezüglichen ein *u* enthalten. Der Vers heisst:

Malaria machen Anophelen,
Die uns besonders abends quälen.
Von Culex aber wird gestochen
Zu jeder Stund ununterbrochen.



Moskitonetz in Giebeldachform.
(Nach Lion, tropenhygienische Vorschläge.)

Sitzt grad' die Mücke an der Wand
Mit schwarz gefiecktem Flügelrand,
Hat man Anopheles entdeckt:
Culex ist krumm und ungefleckt.

Zuweilen kann dies Zeichen trügen,
Doch werden nie die Taster lügen:
Kurz nur dem Culex-Weib beschieden,
Sind lang sie bei Anopheliden.

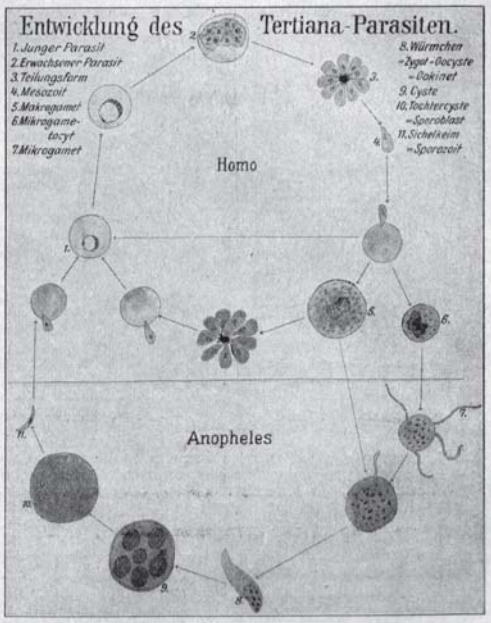
(Da nur das böse Weibchen sticht,
So kümmern uns die Männchen nicht;
Ein Feder-Fühler schmückt den Mann,
Ein borst'ger zeigt das Weibchen an.)

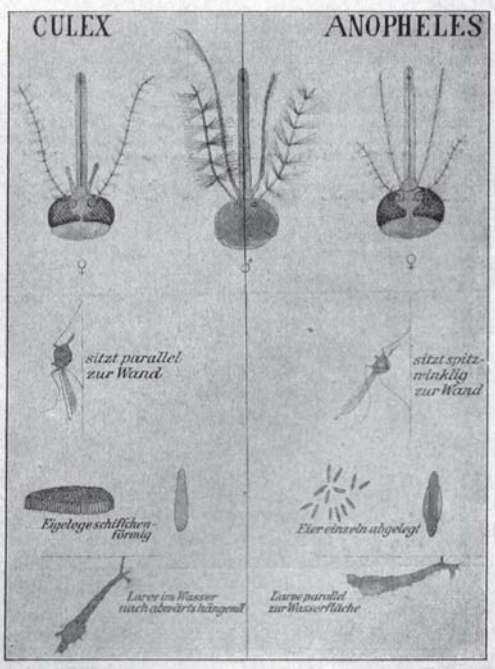
Schon wenn sie noch im Kinderteich,
Erkennt Anopheles man gleich,
Der wagrecht auf dem Wasser ruht;
Herunter hängt die Culex-Brut.

Die Therapie der Malaria kennt bis jetzt nur ein einziges sicher wirkendes Heilmittel. Es ist dies das Chinin, das man aus der Rinde des Chinabaumes gewinnt und das zuerst von der Gräfin del Cinchon, Gemahlin des Vizekönigs von Peru, im Jahre 1640 am eigenen Körper erprobt und nach Europa gebracht wurde. Die Gräfin hatte den Gebrauch der Rinde von den peruanischen Eingeborenen kennen gelernt. Die Rinde des Chinabaumes heisst heute noch cortex Cinchonae und das aus der Rinde gewonnene Pulver führte lange Zeit den Namen Komtessenpulver, pulvis comitissae. Jetzt wird der Chinabaum besonders in Java in grossen Pflanzungen gezogen. Das Präparat der Rinde wird in Kombination mit verschiedenen Säuren in den Handel gebracht. Es gibt salzsaures, schwefelsaures, gerbsaures, baldriansaures Chinin. Die prompteste Wirkung erzielt wohl das salzsaure Chinin. Wegen seines ausnehmend bitteren Geschmackes wird das Chinin meist in Gelatinekapseln genommen oder man vermischt es für Kinder mit Schokolade. Ein Gramm Chinin kostet 15 Pfennig. Ein nicht bitteres Präparat ist das Euchinin. Doch ist dieses dreimal teurer als das Chinin. Man gab früher 1 Gramm Chinin 5 Stunden vor dem zu erwartenden Anfall. Das macht aber sehr starkes Ohrensausen und heftiges Zittern am ganzen Körper. Nach dem Vorschlag von Professor Nacht, Hamburg, gibt man jetzt fünfmal täglich 0,2 Gramm und erreicht dadurch dasselbe ohne diese nervösen Störungen. So kleine Mengen können auch im Fieber gegeben werden, während man früher bei grossen Chininmengen im Fieber oft als schlimmste Komplikation Schwarzwasserfieber beobachtete. Hierbei lösen sich sehr viele rote Blutkörperchen auf; der Blutfarbstoff geht mit dem Urin ab und färbt denselben schwarz-rot. Sehr oft verstopfen sich die Nierenkanälchen mit den Hüllen der Blutkörperchen; dadurch entsteht Harnverhaltung und Urämie, die zum Tode führen kann.

Um einen Malariaanfall gründlich auszukurieren, ist es nicht genug, dass man nur so lange Chinin nimmt, als Fieber besteht, sondern man muss auch nachher noch Chinin weiter nehmen. Besonders empfehlenswert hat sich die folgende Methode erwiesen: man fängt mit 0,2 gr Chinin an, sobald der erste Fieberanfall unter 37,5° gesunken ist. Nun gibt man, unbekümmert um weiteres Fieber, 5 mal täglich 0,2 gr Chinin, also etwa alle drei Stunden eine soviel Chinin enthaltende Gelatinepastille. Der Chiningebrauch wird fortgesetzt, bis zwei Tage lang kein Fieber mehr auftrat. Dann wird zwei Tage lang ausgesetzt, zwei Tage Chinin gegeben; drei Tage ausgesetzt, zwei Tage Chinin gegeben und so weiter, bis man sechs Tage Pause und zwei Chinintage hat. Dieser Turnus des Chininnehmens an jedem siebenten und achten Tage wird beibehalten, so lange man in Malariagegenden sich aufhält. Es ist das der sicherste Schutz vor weiteren Malariaanfällen. Ein jeder, der in Malarialänder reist, sollte von vornherein zur Prophylaxe jeden siebenten und achten Tag je ein Gramm Chinin nehmen, um den Ausbruch eines Fiebers überhaupt zu verhindern. Die durch das häufige Chininnehmen in manchen Fällen bedingte Schwerhörigkeit ist weit weniger gefährlich, als eine Malariainfektion oder als die nach häufigen Malariaanfällen auftretende sogenannte Malariacachexie, welch letztere sich besonders in grosser Blutarmut und Schwellung der Milz äussert und in Verbindung mit andern sonst ungefährlichen Krankheiten leicht zum Tode führen kann. Wer Chinin gar nicht vertragen kann, sollte nicht in die Tropen gehen. Während des Baues der Bahn Daressalam—Morogoro habe ich mit dem prophylaktischen Chiningebrauch gute Erfahrungen gemacht. Die Beamten der Bahnbaufirma Holzmann & Co. in Frankfurt a. M. erhielten besondere Kalender, auf denen jeder siebente und achte Tag rot angezeichnet war mit der Aufforderung, an den roten Tagen je ein Gramm Chinin zu nehmen.

Ein weiteres Prophylaktikum ist der direkte Moskitoschutz durch das über das Bett ausgespannte Moskitonetz, welches aus dünnmaschiger Gaze besteht. Nur so werden die lästig summenden Tierchen vom Schlafenden fern gehalten. Einreibungen der Haut mit stark riechenden Stoffen nützen nichts. Wichtig ist auch der Schutz der Füsse am Abend, wenn sie nicht mehr in die starken Ledergamaschen gehüllt sind und in der Dunkelheit den Moskitos ein besonders willkommnes Angriffsfeld bieten. Zur Sanierung einzelner Stadtgebiete in den Tropen werden am besten alle Malariabrutstätten durch Trockenlegen der Sümpfe vernichtet und für Entfernung jeden Unrates Sorge getragen.





According to the report, indiscriminate hunting was one of the major factors responsible for the extinction and drastic reduction of certain species, such as the elephant, the giraffe and the rhinoceros. As a result, the formation of wildlife protection parks was an imperative in the German colonies. Moreover, the report did not support the thesis defended by David Bruce. On the contrary, it sought to expand wild life protection parks in 'Tropical Germany'.

Despite the different opinions of researchers, the scientific discourse served as a parameter for debate on the pertinence of the reserves and the legalization of hunting, etc. It is recorded that the idea of setting boundaries for the territories of large mammals was also accompanied by the idea of cleaning up the areas inhabited by humans. Hygiene and public health policies focused on rats, mosquitoes and flies. Radical measures such as the extinction of certain animals also fit within a project to domesticate nature.

"The key to Africa in German hands"

In the German colonial press, 'combating' tropical diseases was a constant subject for more than two decades. Even though there was enormous progress in the fields of bacteriology and medical entomology, as well as positive results, such as the vaccine against tuberculosis, prophylaxis with quinine against malaria or Atoxyl against sleeping sickness, it was still a long way to find efficient remedies and treatments for malaria and, mainly, sleeping sickness.

During the 'combat' against tropical diseases in Africa, the German pharmaceutical industry developed as never before. Despite the war (1914-1918) and the consequent loss of the German colonies in Africa, Asia and Oceania, some German researchers continued their work and research, in the search for a cure to sleeping sickness.

On May 15, 1922, the Lüderitzbucht newspaper published an article entitled "Ein Triumph der deutschen Wissenschaft: Ein Wirksames Heilmittel gegen die Schlafkrankheit" (A triumph of German science: an effective remedy for sleeping sickness). It concerned a new drug for treating sleeping sickness, Bayer 205. In another article, it declared that "the key to Africa was in German hands", according to the statement of Hans Zache, a former employee in German East Africa (Das Deutsche..., 11 set. 1922). It also noted that, in a meeting of the Tropical Medicine Association, the return of the former German colonies in exchange for the Bayer 205 formula was contemplated. On September 16, 1922, the Lüderitzbucht journal published material written by Hans Zache, in which the German colonies were demanded in exchange for the Bayer 205 formula. Applying economic logic, the article writer affirmed that, with treatment by Bayer 205, thousands of Africans would be cured annually and, consequently, there would be economic growth. He also associated Bayer 205 with the possibility of curing bovine fever and malaria. Thus, Zache affirmed that the entire African continent would soon be viable for European colonization, as much as Brazil or any other tropical or sub-tropical place was, and that Bayer 205's efficacy had already been tested by the Institute of Maritime and Tropical Diseases of Hamburg. On November 4, the same newspaper published the report of doctor Meyer regarding the Bayer 205 drug in the Congress of Medicine in Leipzig.

Ironically, German colonialism could not take advantage of a drug whose formula German researchers had struggled for decades to obtain. Scientific time does not necessarily correspond to economic or political time.

Final considerations

An analysis of various news articles about 'German Africa' in the German-Brazilian press enables inferring that new endemic zones and epidemics were provoked by penetration of German colonial rule into the interior Africa. The greater attention given to certain productive areas can also be noted. It goes without saying that the productivity of the colonies also depended on the health of its native workers. More productive regions had better medical attention than did regions of no economic interest. As a result, the south of German East Africa was no place for a medical career. Under German colonial rule, the unhealthiest place on the coast of eastern Africa was Mikindani, due to malaria (Bruchhausen, 2006, p.78). The major sanitation concern of the German colonizers in eastern Africa was malaria. The theory of miasmas, however, was still in vogue during the first years of the German colony. This also appears in Ärtzliche Rahtgeber für Seeleute, Colonisten und Reisende in südlichen Gegenden und für allgemeineres Publikum (Medical device for sailors, colonists and travelers to the meridional confines and for the public in general), published several times in the final decade of the 19th century (p.72).

One of the aspects of colonialism was the process of domesticating nature. In this regard, microbiology played an unparalleled role, since the development of prophylaxis for tropical diseases depended on advance in the field of bacteriology. By 'combating' tropical diseases, *Tropenmedizin* had, however, a twofold objective: making those regions innocuous for the colonizer's body and making the bodies of native workers healthy so they could better serve colonialism.

In Africa, faced with a series of obstacles in the colonial undertaking, the weak German immigrant wave further reinforced the need to discipline natives to work, since the lack of labor was one of the main problems of the colonial economy. In this 'disciplinary campaign' that had started with the missionaries, the colonial authorities came up against a series of tropical diseases that jeopardized worker health and, consequently, the colonial economy. As a result, it was necessary to intervene directly in the collective health through prevention, hygiene precepts, sanitary measures and the whole prophylaxis regime being prepared by emergency tropical medicine.

The German colonial press was an efficacious means of disseminating the knowledge accumulated by tropical medicine and hygiene to the lay public in the German colonies, both in South Brazil and Africa. At the same time, information circulated in the scientific world. A study of the circulation of information concerning topical medicine between German scientists or those of or German origin through the medium of manuscript (letters, journals etc.) or printed (scientific articles, research reports etc.) material might show how much the lay community followed in the press what circulated among the scientific community.

The German communities in South Brazil developed almost without any institutional assistance in the field of tropical medicine. Information obtained by the German-Brazilian

press on the institutionalization of tropical medicine in Germany's Second Reich probably raised expectations regarding the eventual benefits, only for the German colonies in Africa, but also those in Brazil, regarding the prevention, cure or even eradication of certain tropical diseases.

NOTES

[*] A preliminary version of this article was presented in the international symposium "Medical-scientific relationships between Brazil and Germany: history and perspectives", held between March 23 and 25, 2011 in the Museu da Vida auditorium at the Casa de Oswaldo Cruz/Fiocruz. The article presents partial results of the CNPq research project on productivity.

[1] According to Eckart (1990), 250 doctors participated in the Deutschen Kolonialverein (DKV) on the eve of the Berlin Conference. In 1903, their number surpassed 1,500 in the Deutsche Kolonialgesellschaft, the institution which succeeded the DKV.

[2] In this and other citations of texts from non-English languages, a free translation has been provided.

[3] See, for example, the articles by doctor Wilhelm Lehmann "Südbrasilien als Ziel deutscher Auswanderung", and articles by the sanitarist Karl Däubler: "Die Ansiedlung von Deutschen in tropische Hochländer"; doctor Theodor Förster: "Die Ansiedlung von Deutschen in tropische Kolonien"; and the article "Die Eignung Deutsch-Ostafrika als Ziel für die deutsche Auswanderung".

[4] The German geographer Leo Waibel (1979, p.102) believed that "tropical Africa itelf is interested in our cooperation, since we have great experience and have obtained excellent results in combating tropical illnesses, without which it is impossible to think of the economic and cultural development of natives in Africa".

[5] James Christie had published *Cholera epidemics in East Africa* in 1876.

[6] According to Bruchhausen (2006, p.78), doctor Ollwig participated in the expedition against malaria led by Robert Koch between 1899 and 1900.

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