The worldwide spread of the European type of medicine has taken place since the early modern period, above all through trade settlements, Christian missionary work, and colonial conquest. However, the Western claim of superiority developed only with successes of the scientifically oriented medicine of the late 19th century, not least of bacteriologically informed tropical medicine. In the past, foreign medicine had even been considered potentially superior by local standards. At the time, the dominant concern was the health of one's own staff. Not until the development of the colonial economy around 1900 was more protection against epidemics provided for indigenous populations in European colonies. Since around 1930, the new task of development has entailed an expansion of curative care. This has increasingly included indigenous health care personnel, despite a long history of racism.
and adapted? Of its constituent parts, i.e. personnel, material, processes or knowledge, which ones were considered and chosen in response to which perceived health problems? How did the inhomogeneous native population react to these different imports?

Here in this thread, the predominant focus is on the European side. Numerous similarities and parallels exist in the different phases between the developments in the trade and mission areas in Asia, Africa, and Latin America. As a result, despite characteristic differences, it is not possible to present findings that were consistently separated by continent or region, as is customary in ethnomedicine, medical ethnology, or anthologies on the history of colonial medicine. Not until the 18th and 19th century are the asynchronous developments of socio-political conditions and the procedures of medical actors so distinct that a regional breakdown is thoroughly justified.

The sea voyages of the early modern era: imports and exports of various kinds

In infectiological terms, contact with virgin soil, i.e. the populations of America not yet affected by certain infectious diseases, represents a specific case of European expansion. Thus, while the land masses and shipping connections that had long connected Europe with Asia and Africa had brought with them an at least occasional (and in the case of the late antique and late medieval plague even catastrophic) exchange of many pathogens, the populations of America possessed no immunity against a range of agents. As a consequence, they fell victim to the novel diseases on a massive scale. Though statistically difficult to prove, there is good reason to believe that more people in the Incas and Aztecs have fallen victim to infectious diseases than to the violence of the European invaders. This pattern would repeat itself later in the Pacific region. Conversely, ship crews from South and Central America with syphilis brought strains of the bacterial genus Treponema to Europe. As there was no cross-immunity here, they spread rapidly in the Old World by means of various Europe-wide military campaigns (Media Link #af).

Where the attitude of European physicians to native medicine from the end of the 19th century was marked by a sense of superiority, the attitude in the early modern period was notably less condescending. True to the physiotheologically inspired principle that in God's world order every country grew the medicinal plants it needed for its own diseases, many Europeans expected native healers to have a better knowledge of the necessary treatment than they did. This applied to academic and non-academic ship's doctors, but also to European crews, who at a number of garrison- and harbor towns (Media Link #ag) gladly let themselves be treated for fever by native healers.

Indeed, medicinal plants enjoyed a great interest, not least because the priority of these sea voyages was to discover commodities and trade routes. Over the centuries, however, only few new substances managed to make it into the European medicinal catalogue, marketed in the pharmaceutical system of the Baroque era as “exotica.” In keeping with the aforementioned principle of a geographical link between illness and medicinal plants, these were mostly special compounds for the treatment of new diseases which predominated in warmer countries. This applied to products from South America like cinchona bark (quinine) (Media Link #ah). Named after the Viceroy of Peru, a Countess Chinchon, and known as Jesuit powder because of the distribution channels, it was used against malaria, which was also common in Europe at that time. Also worth mentioning are guaiacum wood and the sarsaparilla root, also found in Asia and Europe, which were used to treat imported syphilis, and ipecacuanha, which was used against dysentery. On the other hand, many medicinal substances such as cloves or ginger, which were already known in ancient times and were also used as spices, were imported from the Orient and Asia, along with opium poppy. Ginseng from East Asia was also introduced in the early modern period.

Some of these medicinal plants were only described for Europeans in the extensive travelogues of learned doctors. This kind of reporting was facilitated by changes in the medical personnel of the settlements and colonial territories. Previously, mostly non-university-educated ship surgeons had travelled as members of the crews and thus been bound to the environs of the harbors. From the 17th century onward, various academically trained doctors arrived in foreign lands to the West and
East with greater freedom and more opportunity.

Some were able to conduct research in the conquered areas as royal physicians. One of the pioneers of local medical and botanical research in Brazil was Willem Piso (1611-1678) (Media Link #ai). Commissioned by the Dutch West India Company (WIC) and serving as a companion of Count of Nassau-Siegen, he described the common diseases and medicinal plants there in detail (Media Link #aj).

The Dutch doctor Willem ten Rhijne (1647-1700) (Media Link #ak) and the Westphalian doctor and botanist Engelbert Kaempfer (1651-1716) (Media Link #al) entered into the service of Asian settlements of European trading companies on behalf of Dutch East India Company (VOC) (Media Link #am) Based in Batavia (Media Link #an) and Nagasaki, they described patterns of disease as well as East-Asian medicine.

Asian written cultures and European medicine: interest and resistance

The major written cultures of India and China and the areas they influenced, Indochina, Indonesia, Korea and Japan, fell under European influence. Their medical traditions, which had also been written down, reached as far back in time as those of the eastern Mediterranean and thus much further than those of Western Europe and even more so America. This simultaneously held out the prospect of greater understanding and more competition.

During the 18th century, when India was violently defeated by British supremacy, European medical personnel played a decisive role in the armed forces and administrations. In the course of the colonial rule, especially during the Indian uprising of 1857 (Media Link #ao), there was a realization that subjugated peoples should not be unduly forced to westernize. Instead, cooperative traditional authorities and institutions should be supported in a kind of indirect rule, which also had an impact on medicine. In addition to the medical colleges for medicine imported from Europe, state-controlled training centers emerged for the practice of Ayurvedic and (Y)unani medicine, the Islamic heritage of the "ionic," i.e. Greek, humoral pathology, and, as a further import from Europe, homeopathy. The basic acceptance of European academic medicine was also encouraged by this already established medical pluralism. However, like other types of medicine, it was used and avoided according to its perceived strengths and weaknesses.

In 1817, the Indian subcontinent was placed front and center in matters of health for the rest of the world. Cholera, previously only a seasonal and regional concern, spread from easternmost border region and became a pandemic for the first time. Migration, deteriorating hygienic conditions, and increased trade are recognized as enabling factors attributable to the activity of the British East India Company. The first pandemic reached the Arab countries and East Africa via shipping routes; later pandemics also reached Western Europe (Media Link #ap) and even America (Media Link #aq).

China was a political and medical exception. Excluding certain coastal regions, China had never been the colonial territory of a European power. But from 1860 onwards, it was forced by one of the "unequal treaties" following the Opium Wars to tolerate the pervasive presence of Western trade and mission societies, which also included educational and healthcare institutions. In the medical field, North American missionaries led the way in opening hospitals. Some European mission societies followed suit, however, especially those from Germany and Switzerland. In the process, requests for medical treatment considerably exceeded the demand for foreign religion. Wealthy Chinese, both merchants and senior officials, even financed the construction of new mission hospitals without becoming Christians themselves. But here, too, demand was by no means related to the entire spectrum of Western medicine. Above all, interested Chinese wanted to learn from the foreign doctors (Media Link #ar) the natural sciences, surgical subjects including dentistry, and disease control. In fact, foreign doctors had already responded to this curiosity since the late 19th century by establishing independent colleges and universities. When it came to internal diseases, the Chinese usually preferred to rely on their own medical traditions. They praised foreign doctors who developed an understanding of Chinese medicine for these conditions, and, indeed, even expected them to do so. Deaths in mission hospitals often led to xenophobic campaigns due to religious, professional and political tensions. Often, they were eluded through timely discharges or refusals of admission.
Health care upheavals in America: slave trade and independence

The European expansion also led to the development of a number of epidemiological and demographic phenomena, which had previously been more regional in nature. Besides the decimating effects of the above-mentioned epidemics, deportations also grew in scope. This included forms of enslavement through war, robbery and debt bondage common in certain parts of Africa. People brought into bondage in this way were kidnapped through the transatlantic slave trade, pursued by European actors, as workers for the plantations in the Caribbean (Media Link #at) and in southern North America (Media Link #au). Diseases thus reached new lands and survivors weakened by the brutal transportation conditions were exposed to massive new health risks. African healing cults were also transplanted. In syncretism with Catholic and Indian elements, they transformed spectacularly into Voodoo, Umbanda, or Santería, among others. In the form of smallpox vaccinations (Media Link #av), European preventive medicine was also transported onboard the slave ships. Still, individual treatment from European doctors and surgeons probably did not occur. Some of them, like the Frenchman Captain Maurice at the end of the 18th century, were even active as slave traders themselves.

As North America had itself been colony for most of the 18th century, some experts even regard the health care there to have been colonial medicine before independence. Certainly, urban European medicine was also introduced and adapted here in a characteristic manner, albeit far less radically than in more culturally foreign regions. In general, there was less state regulation and academization, a tendency which persisted through the later establishment of more practice-oriented medical schools in lieu of Old-Europe-style scientific medical faculties. In the 19th century, when Latin American countries gained independence from Spanish and Portuguese rule (Media Link #aw), medical training and care - which was largely limited to the cities - continued to follow the traditional European model. New impulses only came as a result of increased immigration from medically and scientifically prominent countries at the time such as France, Germany, or Italy.

Ottoman Empire: European doctors in North Africa and the Middle East

Through the activities of European physicians in the Ottoman Empire, Istanbul and Egypt in particular developed into centers of encounter for medicine between the Orient and the Occident. In Istanbul, Italian doctors learned about the Asian practice of variolation, i.e. the rather dangerous vaccination against smallpox by inserting smallpox scabs into skin incisions. This procedure was then sporadically introduced in Europe.

Egypt became especially important for transfers in the opposite direction. After the Napoleonic expedition (Media Link #ax) had brought the country into greater contact with European science and medicine, innovative contributions were made to research and medical administration in Egypt above all by younger proponents of modern, scientifically influenced medicine from France and Germany. Antoine Barthélémy Clot(-Bey) (1793-1868) (Media Link #ay), the personal physician of the Khedive of Egypt, was responsible for cholera and plague control, public and military health services, medical training, pharmacy, and midwifery. The Upper Palatinate native Franz Pruner(-Bey) (1808-1882) (Media Link #az) also worked for almost three decades in Egypt as a teacher, researcher, and medical administrator. At first, he was a professor of anatomy and physiology, and later ophthalmology; he was also a director of two central hospitals, a personal physician, and author of numerous works on infectious and eye diseases. Similarly, in his two years in Cairo (1850-1852) as head of medical training and health care, Wilhelm Griesinger (1817-1868) (Media Link #b0), who later would become famous as a psychiatrist, conducted research with a focus on infectious diseases and worms. The latter subject became the specialty of his first assistant Theodor Bilharz (1825-1862) (Media Link #b1), who described eggs and larvae of the worm disease schistosomiasis that is also named after him (Bilharzia haematobium). Bilharz later advanced to chief physician of various Cairo hospitals and professor of anatomy.
Similar developments took place in other areas of North Africa and the Middle East. With the appointment of European doctors to the top of the health care system, Islamic rulers leaning towards Europe replaced the humoral-pathological tradition with Western-style training and treatment centers.\(^9\)

**Medicine in the exploitation and colonial imperial conquest of Africa**

The chief task of European overseas physicians was to provide health care for white and, over time, indigenous personnel. European physicians had a range of functions in exploiting areas and populations for European influence: They were missionary and expeditionary physicians in remote areas (following the example of David Livingstone (1813–1873) \(\Rightarrow\) Media Link #b2), consular physicians at indigenous courts (e.g. British, French and German physicians at the emperor's court of Ethiopia or the Sultan of Zanzibar), company doctors at large commercial enterprises such as mining, trading and shipping companies or railway construction projects, and, above all, military doctors in the colonial armies. Doctors prevented and treated frequently fatal diseases, mostly of an infectious nature, and serious injuries resulting from armed conflicts or from wild animals in the case of their own staff. They also addressed the care of indigenous groups.

Initially, doctors sought to gain local trust, but also prestige. Politically or economically important figures were thus gladly treated. The doctors of different European nationalities - who were also viewed suspiciously by local healers - even competed with each other for the favor of the aforementioned rulers. On the other hand, in remote areas, desperate, sometimes even already deceased patients were often taken to foreign doctors. Due to the locals' naivété, the latter were initially expected to perform miracles.

The first phase of establishing health care facilities in Christian mission societies was largely accomplished without doctors.\(^10\) Nuns with nursing training and missionaries who had received rudimentary pre-departure instruction provided first aid, dressed wounds, and administered medication to both whites and locals \(\Rightarrow\) Media Link #b6. Early on, they even included indigenous people in the provision of care who had graduated from their missionary schools. For the missions, so-called superstitions - i.e. local notions and rituals for dealing with disease, which also included spirits and magic - were a compelling reason to set up more professional health services, especially in the areas of obstetrics, infant care, and chronic ulcers.

In the beginning, the higher number of doctors in the colonial armed forces brought few health benefits to the local population. During the brutal wars of conquest and the no less bloody crackdown against resistance, the counterattacking side scarcely experienced any European medical or nursing care. The martial law that was developed in Europe at that time provided for humanitarian care for all victims. This standard, however, was not applied to indigenous peoples in Africa. Much to the contrary, there are even accounts of wounded locals being murdered. Similar racist attitudes \(\Rightarrow\) Media Link #b7 were even found in times of peace, for instance when white nurses resisted or were even hostile to the idea of caring for sick natives.\(^11\)

**Tropical medical research and disease control around 1900**

Crucial to the development of tropical medicine, whose founding was tied to the new bacteriology, was the fact that it coincided with the climax and conclusion of colonial imperialist conquest. After the Berlin Conference \(\Rightarrow\) Media Link #b8 on the Division of Africa 1884/1885, the European powers focused even more on scientific research to advance the military-political subjugation and economic-technical development of their older and newer colonial territories. At first, the health debate in Germany was still dominated by the questions of social Darwinism and acclimatization. Specifically, it was discussed whether whites, who were the supposedly superior race from a civilizational standpoint, could ever adapt in tropical climates for long-term habitation and physical work.\(^12\) Following many skeptical responses to the question of
adaptable, but also concerning the inroads of various “conquerors,” the focus shifted to protection against infectious diseases as a result of developments in tropical medicine. Research in this area was now politically desired and publicly acclaimed.

To begin with, tropical medical research had the political advantage of national and international prestige, for it was uniquely characterized by competition and exchange between European states. It also offered advantages in terms of research technology. The sheer size of many pathogens that were protozoa or worms, and the comparatively easy capture of insects and snails, which acted as carriers and intermediate hosts, often meant particularly good visibility of the test objects. In 1880, the French physician Alphonse Laveran (1845–1922) described the malaria plasmodium in Algeria and founded his own “Société de Pathologie Exotique” in 1908. In India, in 1897, the British doctor Ronald Ross (1857–1932) confirmed the assumptions of many locals and researchers that malaria is transmitted by mosquitoes. Also one of the founders of bacteriology, Robert Koch (1843–1910) recognized new opportunities in the tropics after he domestically failed to prove the effectiveness of tuberculin as an alleged cure for tuberculosis. In 1896, he thus researched, again with little practical benefit, Rinderpest in South Africa and one year later the plague in India and German East Africa, today’s Tanzania. In 1898 and 1899, he studied malaria in Italy, Java and New Guinea. And, in 1905/06, he investigated sleeping sickness, again in German East Africa and in neighboring British Uganda.

Research into even smaller pathogens also made considerable progress in tropical climates. Breakthroughs in yellow fever were achieved by the Cuban Carlos Juan Finlay (1833–1915) and the US-American Walter Reed (1851–1902) on Cuba. The investigation of typhus profited from discoveries by the Russian Ossip Motschutkowski (1845–1903) in Odessa, the American Howard Taylor Ricketts (1871–1910) in Mexico in 1910, as well as the Czech-Austrian researcher Stanislaus (von) Prowazek (1875–1915) in 1913 as well as the Brazilian Henrique da Rocha Lima (1879–1956) in 1916. The latter two were at the Hamburg Institute for Ship and Tropical Diseases at the time. Apart from being a national prestige project, tropical medicine had become an global and internationally interactive science.

While Europe felt the threat by epidemic diseases in the 19th century especially in the case of cholera, this fear was surpassed in large parts of Asia by the plague. The modern plague epidemic began in 1855 in the western part of the Chinese Yunnan province. It claimed ten million lives in India and came to an end with a last major outbreak in Manchuria from 1910–1911. Pathogens and transmission pathways were identified during these years, in particular by French physicians Alexandre Yersin (1863-1943) and Paul-Louis Simond (1858-1947). Their work provided a basis for countermeasures, including quarantine response and isolation, disinfection and vector control.

Health care in the consolidation phase of European colonies

After 1900, the activities of European doctors in the colonial areas changed significantly. Since the economic exploitation of the colonies, the mise en valeur, could only be achieved with local labor, their health and reproduction now also played a role. In particular, the devastating epidemics of smallpox, plague, and cholera were combated through vaccination, controls, isolation, and quarantine.

There were also endemic, often fatal diseases caused by malaria, dysentery, hookworm, and tuberculosis. For a long time, success was limited against these diseases, which were fostered by the confined, unhygienic living conditions of the plantation and mine workers. Robert Koch’s ambitious and globally acclaimed attempt to eradicate malaria in Dar es Salaam, the capital of German-East Africa, with microscopic examination of all inhabitants and quinine treatment of all plasmodia carriers, failed because of the social conditions and the lack of vector control. Fecal examination for the eggs of the
hookworm was also time-consuming. The British replaced it with repeated mass treatment of the population with worm-
destroying agents on the assumption the majority of people were affected.

Leprosy was combated through the creation of leprosy colonies (Media Link #bp). The sleeping sickness epidemic in the
area of the African Great Lakes, i.e. the border region of British Uganda, Belgian Congo, and German East Africa, posed a
particular challenge. Here, there were striking national differences: While the Belgians in the Congo, consistent with their
reputation as a ruthless colonial power, immediately forced large population resettlements, the more careful British
concentrated on controlling the vector, the tsetse fly, and the animal hosts. The Germans’ trust in the chemical industry led
them to test new substances against the trypanosomes in “concentration camps” for sleeping sickness patients. Despite
coercion, severe pain, side effects that included blindness or even death, success was elusive. Ultimately, the Germans, too,
decided to resettle those villages in the midst of infested brushland.

People were divided up not only in terms of healthy and sick, but, even more so, colored and white. Arguing from the
standpoint of hygiene, the residential areas of the Europeans and the natives were separated. As in the case of Cameroonian
Duala, this also resulted in expulsions. In the large cities there were hospitals only for Europeans, whereas those for locals
tended to be founded by local benefactors. In smaller provincial hospitals, the infirmary in permanent buildings was usually
reserved for white people, while local patients slept in huts.

Social medicine and racism in the interwar period: the ambivalence of modernity

The end of the First World War initially caused drastic personnel changes. British doctors, who had fought the war in Africa
and Asia, joined the rapidly expanding Colonial Medical Service. Now, increasingly recruited mission doctors were added by
the numerous new foundations and expansions of mission hospitals. After the German doctors had fled or been expelled from
most of the former German colonies, some entered the colonial service of European states not belonging to the victorious
powers or the missionary service. Altogether this resulted in a shift from Africa to Asia, so that, for a while, the formally
independent China and Netherlands-East Indies, today’s Indonesia, could be counted among the non-Western countries with
an especially large number of German doctors. It is worth noting that Swiss missionary doctors were forced to go in the
opposite direction: As China had become too precarious because of military destabilization, they instead went to Africa.

The First World War and its outcome brought about fundamental changes for health and medicine in the colonies. In the
previously German colonies, disease control programs initially collapsed, while those of other colonial powers had been
weakened by wartime austerity measures. Besides the Influenza pandemic of 1918 (Media Link #bq), or “Spanish flu,” which
was also common here, there were smaller outbreaks of the previously controlled diseases. Perhaps the most substantial
change, however, was the part played by the newly founded League of Nations (Media Link #br). For through the League’s
foundling, the hitherto German territories were entrusted to neighboring powers as mandates (Media Link #bs), with the
express obligation to provide for the welfare of the population. Compliance with this obligation was verified through reports
and inspections, not least in the area of health care. Because of this, the character of colonial rule changed fundamentally;
instead of open exploitation, the temporary trusteeship was now at least the official political model.

The required nationwide network of health facilities could only be set up with local personnel. For this reason, their training
was promoted in various health professions, e.g. in month-long courses as tribal dressers or in longer courses as dispensers or
hospital assistants. Paradoxically, the associated delegation of medical tasks, e.g. injections, to non-physician staff was
facilitated by the professionalization of nursing care, which had already taken place in the British context for many years.
Medical and nursing tasks, however, were strictly differentiated. In the Spanish-speaking area, state-recognized health care
remained much more doctor-centered and was thus barely accessible in the remote rural regions of Latin America.
The expansion of health care did not by any means affect all medical services and disciplines in the same way. The focus continued to be on disease control and mother-child health. Surgical care was only slowly established in rural areas when the few missionary and government physicians had acquired the necessary skills. Psychiatric treatment was limited to severe psychoses that seriously interfered with living in the communities. It took place in large central institutions with considerable, often humiliating enforcement measures, which even greatly exceeded the conditions of European "insane asylums". The flourishing field of eugenics contrived supposedly fundamental differences between the "races" not only in the area of psychiatric care, but also more generally in the settlers' colonies.

The hierarchical structure of the health care professions was also racist: With the exception of certain Indians and West Africans, who in the 19th century could already study medicine at European universities via mission societies, the highest positions were reserved for whites. In the British colonial service, Indians could only become sub-assistant surgeons, with there being even fewer opportunities for blacks. Such relegation led to numerous problems in health care after independence. The situation was marked in particular by a serious shortage of doctors, as, for instance, after the expulsion of Dutch doctors in Indonesia in the 1950s or the sudden withdrawal of Belgian doctors after the independence of the Congo in 1960. There were also significant tensions with the remaining white doctors.

A gradual departure from Eurocentrism: the World Health Organization and decolonization

The end of the colonial era also saw the emergence of a new world order in the health sector. Categorical statements in the United Nations Universal Declaration of Human Rights (Article 25) in 1948 and in the Constitution of the World Health Organization signaled an end to the political path of combatting epidemics out of power and economic considerations and an acceptance of health care as an intrinsic human right. Thus even though human rights and biomedicine are of Western origin and were therefore often problematized as foreign by representatives of African or Asian nationalism, the claim of the fundamental equality of all human beings was likewise formulated in the health sector. This universal perspective would subsequently help shape future health policy. Colonial territories and international cooperation found further encouragement here in their desire to establish comprehensive health services with the training of local people and also more academic institutions.

For three decades, the looming Cold War thwarted an international consensus on using health systems as a way to implement the universal right to the highest attainable standard of health. Instead, WHO returned to less controversial control and eradication programs for specific diseases. These include yaws, which had already strongly influenced the health policies of some tropical colonies in the 1920s and 1930s, malaria, and, finally, with lasting success, smallpox. One of the effects of the decolonization policy on international health is worldwide accord in the area of disease control, despite disagreement about the extent of state influence in the health care system. Therefore those who did not stand at risk of contracting one of these infectious diseases or who could not afford treatment in one of the few hospitals did not benefit from the international health policy of the 1950s.

Ultimately, the goal from the late colonial period and early decolonization phase to make health care available to everyone was not taken up again until the détente policy of the 1970s and the announcement of Primary Health Care (PHC) in Alma Ata in 1978. The eight elements of PHC's work were based on measures already implemented during the colonial period: health education, improved water supply and nutrition, vaccinations and mother-child health programs, local disease control, and appropriate treatment. Now, however, the implementation would be different: Instead of hierarchical regulation from above, those affected were expected to be involved, and rather than having an isolated health care system, focus was placed on integrating health-relevant measures from other development sectors such as education or agriculture. The real change to the colonial health system was therefore not a completely different kind of medicine, but the integration of health care into a new form of society.
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Early Modern Ports

Bag for storing cinchona bark, Peru, 1777–1785

Willem Piso (1611–1678) VIAF DNB ADB/NDB

Willem ten Rhijne (1647–1700) VIAF DNB ADB/NDB

Engelbert Kaempfer (1651–1716) VIAF DNB ADB/NDB

Willem Piso, Historia naturalis Brasiliae, 1648; digital copy: Biodiversity Heritage Library

Willem Piso, Historia naturalis Brasiliae, 1648; digital copy: Biodiversity Heritage Library
- United East India Company

- Outline of Batavia 1629

- Troops of the Native Allies, ca. 1857

- John Snow, Report on the cholera outbreak in the Parish of St. James, Westminster, during the autumn of 1854; digital copy: Wellcome Collection
  [Link](https://wellcomecollection.org/works/r7dcczr3)

- John S. Billings, The cholera epidemic of 1873 in the United States, 1875; digital copy: Wellcome Collection
  [Link](https://wellcomecollection.org/works/vtsvcz87)

- The physician Dugald Christie (1855-1936) with staff and patients, Mukden Hospital, Manchuria, 1905

- Slaves on a sugar cane plantation in Cuba
Five Generations of a Slave Family in Beaufort, South Carolina, 1862

District vaccination in East End of London, 1871

Simón Bolívar (1783-1830)

Perspective de l’Égypte

Antoine Barthélémy Clot(-Bey) (1793-1868)

Franz Pruner(-Bey) (1808-1882)

Wilhelm Griesinger (1817-1868)

Theodor Bilharz (1825-1862)
ADB/NDB [pnd118573616.html](http://www.deutsche-biographie.de/pnd118573616.html)

Link #b3

Link #b4

David Livingstone (1813–1873) and Henry Morton Stanley (1841–1904)

Link #b5

Link #b6

Harold Copping (1863–1932): A medical missionary attending to a sick African, 19th century

Link #b7

Link #b8

Link #b9
ADB/NDB [pnd117607606.html](http://www.deutsche-biographie.de/pnd117607606.html)

Link #ba
- Ronald Ross (1857–1932) VIAF [71468590](http://viaf.org/viaf/71468590) DNB [119533855](http://d-nb.info/gnd/119533855.html)
ADB/NDB [pnd119533855.html](http://www.deutsche-biographie.de/pnd119533855.html)

Link #bb
- Robert Koch (1843-1910) VIAF [66481244](http://viaf.org/viaf/66481244) DNB [118564064](http://d-nb.info/gnd/118564064.html)
ADB/NDB [pnd118564064.html](http://www.deutsche-biographie.de/pnd118564064.html)

Link #bc

Link #bd
Robert Koch in his laboratory in Kimberley

Carlos Juan Finlay (1833–1915) VIAF DNB ADB/NDB

Walter Reed (1851–1902) VIAF DNB

Howard Taylor Ricketts (1871–1910) VIAF DNB

Stanislaus (von) Prowazek (1875–1915) VIAF DNB ADB/NDB

Henrique da Rocha Lima (1879–1956) VIAF DNB

Knowledge Transfer and Science Transfer

Alexandre Yersin (1863-1943) VIAF DNB ADB/NDB

Paul-Louis Simond (1858–1947) VIAF

Quarantine area during an outbreak of bubonic plague in Karachi
• Former leper colony on the island of Spinalonga

**Link #bq**
- Radio Influenza: Re-telling the events of 1918-19 (http://radioinfluenza.org/about/)

**Link #br**

**Link #bs**

**Link #bt**

**Link #bu**

**Link #bv**

**Link #bw**

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