

# European Physicians and Botanists, Indigenous Herbal Medicine in the Dutch East Indies, and Colonial Networks of Mediation

Hans Pols

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**Abstract** During the nineteenth and the early twentieth century, European physicians and botanists working in the Dutch East Indies displayed an eager interest in Indonesian indigenous herbal medicine or *jamu*, the investigation of which required them to establish contacts with local informers and mediators who could make indigenous medicine understandable to researchers. In the Dutch East Indies, these mediators were Indo-European women who had built up a medical lore with both European and Indigenous elements. The diminishing trust in the standard therapeutic measures created a window of opportunity for the investigation of Indonesian indigenous herbal medicine. The way medical knowledge circulated in the Dutch East Indies, the intermediaries who aided this circulation and the factors which impeded or facilitated it, and the ways in which European physicians and botanists legitimized indigenous herbal medicine are analyzed.

**Keywords** Indonesia · Indo-European culture · *Jamu* · Indonesian indigenous herbal medicine · Botany · Medicine

## 1 Introduction

European colonial powers viewed Western medicine as a tool of empire. Initially, medical care was seen as necessary for reducing the high mortality rates in the military forces and colonial settlements. Later, medicine came to be seen as an ideal method of gaining the affection of governed populations. European physicians working in the Dutch East Indies were not always certain about the superiority of Western medicine: they were often confronted with unfamiliar ailments and were at a loss as to how to treat them. Consequently, some of them were eager to find out more about indigenous herbal medicine, which appeared to be able to alleviate and even cure most of the most common

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H. Pols (✉)  
Unit for History and Philosophy of Science, University of Sydney, Carlaw F07, Sydney, NSW 2006,  
Australia  
e-mail: h.pols@usyd.edu.au

tropical ailments. European botanists displayed an eager interest in the plants, fruits, and herbs used in local healing practices as well. After the successful cultivation of quinine at the Buitenzorg botanical gardens, a project initiated by the German biologist Franz Junghuhn in the 1860s (the Dutch controlled 90% of the world market in quinine at one point), botanists started to conduct research on herbs, plants, roots, and spices to uncover which ones could be successfully exploited economically in the future; medicinal uses were certainly of interest to them (Taylor 1945; Headrick 1988; Goss 2009). In this article I analyze the strategies these physicians and botanists employed to acquire knowledge about medicinal plants and herbs, and to interpret indigenous medical lore. This required establishing contacts with local informants and mediators, who could assist in processes of translation, stabilization, validation, and legitimation.

The European inhabitants of the Dutch East Indies (variously called mestizos, children of the land (*'s Lands kinderen*), Indo-Europeans, Eurasians, or Indies Europeans) formed, until the early twentieth century, an intermediary group between newly arrived Europeans and the indigenous population. Few physicians and botanists acquired their insights from *dukuns* (indigenous healers) or indigenous informants; apart from the obvious linguistic divide, cultural differences and mutual distrust were often sufficiently large to preclude effective communication. Instead, investigators relied on the mediation of traders in herbs and spices at local *pasars* (markets), Chinese pharmacists, and Indo-European women who had acquired a reputation for their knowledge of herbal medicine. One of the most ubiquitous herbal manuals in twentieth century Dutch East Indies, *Guidance and Advice regarding the Use of Indies Plants, Fruits, etc.*, which was present in virtually all European households, constitutes one of the most interesting mediation points.<sup>1</sup> It became an indispensable source of information for physicians and pharmacologists on indigenous herbal medicine and was frequently referred to in medical and botanical publications. For Indo-Europeans and well-to-do indigenous individuals, it provided an example of rational and scientific organization and presentation. Just like the physicians and botanists interested in indigenous herbal medicine, its author, Mrs. Jans Kloppenburg-Versteegh, had to build extensive networks to acquire and validate information. In her case, these networks included family members, friends, Indo-European and indigenous women, botanists, and physicians. She successfully presented an overview of Indo-European domestic medicine that was both comprehensible and acceptable for European readers. Her work became a standard reference for European families plagued by illness and curious physicians interested in the medicinal plants of the Indies.

In this essay, I analyze the changing patterns in which medical knowledge circulated in the colonial space of the Dutch East Indies. I trace how medical knowledge was translated and recreated as it passed between *dukuns*, merchants selling dried plants, herbs, and spices at *pasars*, Chinese pharmacists, Indo-European women healers, Dutch expatriate physicians, pharmaceutical researchers, and Dutch-educated Indonesian physicians. In the process, herbs and plants were uprooted from an indigenous cosmology in which plants, humans, animals, disease, social life, and spirituality were inherently interrelated, and became transformed into goods that

<sup>1</sup> The first edition appeared as Kloppenburg-Versteegh (1907). The most frequently used version is Kloppenburg-Versteegh (1934a [1911]). The herbal manual was accompanied by an atlas with illustrations of the most frequently used medicinal plants: Kloppenburg-Versteegh (1934b [1911]).

could be transported, exchanged, and traded, and, later, into specimens that might contain active ingredients that could be revealed through pharmacological experimentation. In the colonies, knowledge about medicinal plants circulated between various individuals; similarly, it moved through a variety of places: gardens, remote European plantations, colonial urban centers, kitchens, Chinese pharmacies, doctor's offices, the botanical garden in Buitenzorg, and laboratories. In the process, herbs and plants acquired mobility: *pasar* merchants and pharmacists had already loosened the ties between plants and the places where they sprouted by transporting them over long distances and turning them into merchandise. Botanists replicated many of these processes by growing plants in botanical gardens, making them available at will for pharmacological analysis. In many ways, the scientific and commercial processes that made plants mobile reinforced each other: researchers could easily obtain a great variety of herbs and plants by visiting their local *pasar* and the market value of these herbs and plants increased once physicians and botanist had made positive pronouncements about their medicinal uses.

The way medical and botanical knowledge circulated in the Dutch East Indies changed significantly between 1820 and 1930 as the manner and level of interaction between the different social and ethnic groups in the Dutch East Indies changed. In the 1830s, it was not unusual for newly arrived European physicians to marry Indo-European or indigenous women. The hybridized Indo-European way of life was generally accepted as virtually all Europeans who arrived in the colonies were unattached men who would spend long periods of time in the Indies. After the 1880s, and even more explicitly after the turn of the twentieth century, ethnic boundaries were drawn increasingly starkly. European professionals often arrived with their families with the intention of staying only for a limited period of time. They brought their Western culture with them and hardly mixed with the locals. The decreasing level of interaction between the indigenous population, Indo-Europeans, and newly arriving Europeans impeded the circulation of medical knowledge in the Indies. By the twentieth century, Western professionals, including physicians, pharmacists, and botanists had become less interested in indigenous herbal medicine, had less respect for indigenous knowledge, and increasingly valorized the powers of Western science. Spurred by the bacteriological revolution, the development of safe surgery, and the availability of medical instruments such as X-ray machines, European physicians focused on transferring Western medical knowledge to the indigenous population instead of exploring the benefits of indigenous herbal wisdom for Western medicine.

In this paper, I will not attempt to uncover the essentials of Indonesian traditional herbal medicine (*jamu*) before European colonial forces arrived or as it was practiced in the *desa* (countryside villages) before any Western influence was felt there. *Jamu* has always been a hybrid, incorporating Indian, Chinese, Arab, Portuguese, Dutch, and many other elements; in addition, it was dynamic, always incorporating new elements.<sup>2</sup> The Indonesian archipelago is located at the cross-roads of various trade routes in South East Asia, which led to a wide variety of ingredients being traded and a great number of plants being imported and exported. Chinese traditional medicine was brought to the Indies archipelago by Chinese merchants, who

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<sup>2</sup> *Jamu* is alive and well today in Indonesia. See, for example, Lyon (2003); Koesoebjono-Sarwono (2000).

dominated the trade in plants, herbs, and spices until the late twentieth century. Traditional indigenous medicine can therefore be expected to have regional variations and to evolve constantly, making the task of defining its essence exceedingly difficult (Jordaan 1985).

## 2 Indonesians, Indo-Europeans, and Newly Arrived Netherlanders

Historians have described the Dutch East Indies as a plural society, where a number of ethnic groups lived side by side, without mixing, except at the marketplace or in the interest of trade (Furnivall 1939). Legally, the Dutch East Indies society was divided into three groups: Europeans (and those declared equivalent to these, which included, after 1899, the Japanese), the indigenous population, and so-called foreign Orientals (among them Chinese and Arab traders). Each group had its own legal code and was expected, to a large degree, to manage its own affairs. These groups generally lived in different neighborhoods as well. Yet, the policies of ethnic separation in the Dutch East Indies, although they appeared rigid and impenetrable at times, did not prevent individuals from transcending ethnic boundaries. Until the turn of the twentieth century, European migrants to the Indies were mostly male; those men who wished to make the Indies their home generally married local women. Under Dutch colonial law, the mixed-race offspring of European men were entitled to European legal status if they had been recognized by the father (which he could do either by adopting the children or by marrying their mother). As a consequence, a sizeable mestizo or Indo-European community came into being.

European settlement of the South East Asian archipelago started in the sixteenth century (with Portuguese traders) and initially focused on the Spice Islands. At the turn of the seventeenth century, Dutch traders, backed by the Dutch East Indies Company (VOC), took over and small European settlements, centering on trade and the military, were established. Before the 1870s, very few European women settled in the Indies—the journey, past the Cape of Good Hope, South Africa, was considered too long and the conditions near the equator too undesirable. The VOC encouraged its male employees to marry local women (and turned a blind eye to cohabitation, which occurred much more frequently). This approach, apart from being more affordable than transporting European women to the Indies and providing European families with suitable accommodation, presented men with well-informed and well-placed guides to local custom, markets, and society. European trading centers and military barracks were surrounded by communities of mestizo or mixed-race families, which forged a unique culture containing elements of (previous) Portuguese settlers, the many indigenous ethnic groups of the Indies, and Dutch colonial culture. Today, it is remembered for its distinctive music (*kroncong*), the *Komedie Stamboel* (Cohen 2006), its hybrid language, and its food. As Jean Gelman Taylor (1992, 254) stated: “Over the course of two centuries, then, there evolved an intermediary society that was neither Asian nor European, but mestizo and autonomous, with folkways and norms of its own. It was urban, created in a trade city whose population was imported from outside.”

As Taylor has described in great detail, newly arrived European men could enhance their social status by marrying into well-established and well-to-do Indo-

European families, which would secure their social position in colonial society by forging ties with the existing elite (Taylor 1983; Bosma and Raben 2008). To acquire the credentials for future careers, sons of these unions were sent to the Netherlands for their education (if their fathers could afford it); daughters generally stayed in the Indies. For newly arrived European men, these women were excellent mediators between the local indigenous population, the population of European descent who had lived in the colonies for several generations, and themselves as newly arrived Europeans (Clancy-Smith and Gouda 1998; Locher-Scholten 2000). Their wives arranged the hiring of employees and servants, oversaw the household, supervised the purchasing of food and other goods, and negotiated the demands of local rulers. The mestizo or Indo-European inhabitants of the Indies became the intermediaries between the Dutch colonial administration and the indigenous population.<sup>3</sup> In everyday life, this mediating role was mostly taken up by Indo-European women, who were generally also responsible for safeguarding the health of the members of the household, including their husband, children, and employees and servants. A small number of Indo-European women, in particular those from well-respected families, wrote advice books for European women who were planning to settle in the Indies, be it temporarily or for longer times (van de Loo 1994; Locher-Scholten 1998). After all, these women were thoroughly informed about the nature of daily life in the colonies and were therefore in an excellent position to inform Dutch women who were new to the Indies about what they could expect.

After the Suez Canal opened in 1869 (making the journey to the East much briefer) and Dutch colonial policy changed after the turn of the twentieth century, a new group of professionals arrived in the Indies who would stay there only for a limited period of time (generally 7 years). They came over with their wives and children, and prided themselves in maintaining their Dutch culture and building as few ties as possible with the Dutch East Indies. A distinction was made between *trekkers* (“sojourners”) and *blijvers* (“settlers”); the former group called the Indies their home only temporarily and eagerly sought out opportunities for career advancement in the Netherlands while the second group had made the Indies their home but still strongly associated themselves with European culture (Bosma 2005). The *trekkers* or *totok* (full-blooded) Europeans increasingly displaced the older Indo-European groups; they were generally appointed to the best positions and kept their distance from Indies individuals. They often discredited Indo-European and Indies culture by associating it with indigenous culture, which they characterized as primitive, irrational, and guided by animistic beliefs and superstition. In doing so, they deliberately collapsed the distinction between Indies and Indonesian, which was experienced as highly offensive by the former group. At the same time, many well-to-do Indo-Europeans attempted to erase the distinction between themselves and the newly arrived Europeans by emphasizing their legal European status.

The Indo-European ethnic group was highly diverse. Its wealthier members were able to avoid stigmatization by sending their children to the Netherlands for further education, which would provide them with the credentials for a successful career in the colonies and prevent them from keeping the typical Indies accent as well. Less

<sup>3</sup> See, for example, Kuitenbrouwer (1982). This and other papers presented at this conference focused on indirect rule and the organization of the colonial administration in the Dutch East Indies.

wealthy families had to make do with the educational facilities available in the Indies, which limited the career opportunities of their children. Over the course of the twentieth century, “Indo-European” became increasingly defined with reference to one’s place of birth instead of one’s ethnicity or the race of one’s progenitors. Distinctions among European individuals in the Dutch East Indies were not solely based on skin-color or (assumed) percentage of Indonesian blood that was flowing through one’s veins; one’s manner of speaking, one’s education, and one’s family connections played a role as well. The markers of social class were often more important than those of race or ethnic origin. During the twentieth century, the Indies community aimed to avoid identification with the indigenous inhabitants of the Indonesian archipelago by maintaining high standards, European manners of speech, dress, and social etiquette (van der Veur 1954, 1968; Locher-Scholten 1998). Formerly proud to serve as mediators and bearers of a hybrid culture, they now emphasized their European roots and culture (although many had never been there and did not feel at home in the Netherlands when they had the opportunity to migrate there).

Indo-Europeans had their own medical subculture, which was a hybrid of indigenous (Indonesian) herbal medicine and European medical lore. In particular a small group of older women, known for their knowledge of herbal medical lore, were widely consulted about medical matters. These women came to hold a particular fascination for European physicians: on the one hand, they could provide essential information on indigenous herbal lore (which would be much harder to obtain by traveling to the countryside and speaking with *dukuns*) but, on the other hand, they were their most significant competitors. Virtually all Indo-Europeans but also many Europeans preferred treatment by these women, who “enjoyed very high and very widespread confidence” (van der Burg 1882b, 536). Many European newcomers found their way to these women as well. At times, patients would even recommend their physicians to consult one of these women. “There are even physicians,” leading physician Cornelis Leendert van der Burg asserted, noticeably annoyed, “who would not object to treatment from these women for their own wives and children and even submit themselves to them” (van der Burg 1882b, 357). The continuing popularity of these women, even among highly educated individuals, was a source of irritation and concern among European physicians, who were eager to emphasize the dangers involved in medical care provided by lay people.

Medical advice books were very popular in the Dutch East Indies in the nineteenth and the first part of the twentieth century. In the 1880s, there were slightly fewer than 300 European-trained physicians in the Dutch East Indies (by 1910, this number had risen to almost 400). Most of them worked in military hospitals; almost all were concentrated in the urban centers. In the countryside and in particular in the “outer regions” (that is, outside of Java), physicians were generally out of reach. The inhabitants of these areas had to provide their own medical care. The wives of plantation owners were responsible for the health of the indigenous workers; only in rare occasions could they rely on European physicians.<sup>4</sup> As a consequence, most

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<sup>4</sup> Health care for indigenous patients was necessary to maintain man-power, but also needed to be provided as cheaply as possible, reason to use indigenous herbal medications. There were a number of medical advice books for the treatment of indigenous patients, such as van der Burg (1910).

medical treatment in the Indies was provided at home, by women. Useful medical manuals referred to medical ingredients that could be obtained relatively easily in the neighborhoods where people lived and worked. Most medicine in the Indies was domestic medicine and therefore firmly placed in the female sphere. It is therefore not surprising that herbal medicine, which made use of herbs, plants, and fruits often used in cooking as well, constituted the most common form of medicine in the colonies.<sup>5</sup>

One particular concern for Western physicians was that it was difficult to distinguish between patent medicines and the herbal remedies Indo-European women offered. By law, providing indigenous herbal medications did not constitute the practice of medicine. This meant that, in the Dutch East Indies, anyone could practice medicine with impunity (van der Burg 1882a, b, 554). The market was flooded with a wide variety of herbs, herbal pills, tonics, elixirs, and other concoctions. Another source of concern to European physicians was that most Indo-European women known for their knowledge of herbal medicine did not share their wisdom freely, since this would undermine their position in the medical marketplace. Many women maintained notebooks in which they wrote down their favorite and most often used prescriptions. In the 1870s, two of these manuals were published, in both cases after their authors had died. The first one was written by an Indo-European woman from an established planters family living near Yogyakarta, Njonja Emelie van Gent-Detelle, who had probably acquired her interest in medicine from her grandfather Joseph Thomas Coenraad, a German surgeon for the VOC who had settled in the Indies.<sup>6</sup> Njonja van Gent-Detelle had acquired a considerable reputation for her knowledge of herbal medicine during her lifetime. The second book was published by Njonja Johanna Wilhelmina Gunsch-van Blokland, who lived in Surabaya, and was based on a collection of prescriptions collected by her father.<sup>7</sup>

Indo-European women herbal healers were well-positioned intermediaries between European and indigenous Javanese medical culture with respect to medical insights. They generally spoke Dutch, Javanese (or Sundanese, or other local languages), and Malay, and could make themselves understood to many ethnic groups. They had forged a herbal medicine from “indigenous and European domestic medicine as well as from complicated, Javanese prescriptions and the one-time application of simples available at (Chinese) pharmacies. They advance on their art and sometimes derive part of their ingredients from European pharmacies” Vorderman (1894a, 272). Their herbal medicine was acceptable and suitable to the newer inhabitants of the colonies by interpreting, filtering, and translating indigenous medical insights into a Western perspective. They removed numerological beliefs, animistic convictions, and reliance on the supernatural, which were part and parcel of the medicine as practiced by *dukuns*.<sup>8</sup> They provided prescriptions which were based on the inherent properties of plants that were both comprehensible

<sup>5</sup> For similar observations on colonial America see Rosenberg (1983).

<sup>6</sup> van Gent-Detelle (1875). “Njonja” is Malay for Mrs.; the word is most likely of Portuguese origin.

<sup>7</sup> van Blokland (1885). Her father was Adolph Christiaan Gunsch, who was born in 1801 on Sri Lanka, then still a colony of the Netherlands. He moved to Surabaya in the 1810s, after the British took over Sri Lanka.

<sup>8</sup> See, for example, Vorderman’s analysis of the doctrine of signatures and transmigration in indigenous medicine: Vorderman (1894b).

to Europeans and which could be assembled relatively easily at home as well. As Indo-European culture was a hybrid culture that mediated between the indigenous population and the colony's European inhabitants, it also had the means to present indigenous medical lore in a way Western individuals could understand and appreciate. At the time, theosophists were highly interested in what they viewed as the deep and century-old spirituality of the Javanese; they elevated the *wayang kulit* shadow puppet plays from popular entertainment into high art conveying spiritual values (Sears 1996). Nevertheless, the spirituality of the courts of Solo and Surabaya stirred the curiosity of Europeans; the cosmology of peasants and *dukuns*, on the other hand, was dismissed as primitive.

In the twentieth century, when Indo-Europeans found themselves increasingly sidelined in colonial society, a new group presented itself as intermediaries between newly arrived Europeans and indigenous ethnic groups: Indonesians who had acquired qualifications in the Dutch educational system. The medical school in Batavia expanded significantly in the first decade of the twentieth century, thereby becoming a leading center of higher education for Indonesians as well as a focal point for the development of the Indonesian youth movement and the later nationalist movement (Pols 2007). Several Indonesian physicians developed careers in journalism and politics; some of them came to occupy positions in the *Volksraad*, the colonial parliament of the Dutch East Indies. Because of their Western education, orientation on European values, and familiarity with Dutch culture, Indonesian intellectuals presented themselves as intermediaries between Dutch colonialists and the indigenous population. Several commentators in the colonies denied them this role, claiming that they were uprooted individuals without any ties to their original communities. Nevertheless, educated Indonesians came to occupy an increasing number of positions in the colonial administration, displacing the Indo-Europeans who had occupied these before. Indonesian physicians were hardly interested in indigenous herbal medicine; they viewed it as their role to bring Western medicine to the indigenous population.

### 3 European Physicians in the Dutch East Indies

The perceived superiority of Western medicine was based, ironically, on a medical Renaissance in the Netherlands, which had been fuelled by the arrival of plants, herbs, spices, and specimens from the East.<sup>9</sup> A significant part of the trade of the VOC from its founding in 1602 to its demise in 1798 consisted in *simples* from the East for pharmaceutical use (in which coca and opium were an important part). Jacobus Bontius (Jacob de Bondt, 1598–1631), a VOC surgeon and pharmacist who lived in Batavia from 1626 to his death in 1631, wrote an influential treatise on the medicinal plants of the East Indies in which he praised the medical acuity of the Indo-European women living in the colonies (Bontius 1642; Cook 2005). The work of Georgius Everhardus Rumphius (Georg Eberhard Rumpf, 1627–1702), also known as the Pliny of the Indies and author of the six-volume *Herbarium Amboinense* (*The Amboinese Spice Book* (1741–1750)), was very influential as well (Rumphius 1741–1750). Both

<sup>9</sup> See Cook (2007). For colonial botany in general see Schiebinger (2004).



authors made the medicinal plants and herbs of the Indies known to a Western medical public; in particular Rumphius' work remained a standard reference in medical and botanical writings until the early twentieth century. At the University of Leyden, where Hermann Boerhave taught, medicine thrived because of the botanical garden he established there to grow specimens from the East, which established Leyden as the center of tropical botany, and his method of clinical instruction.

One of the pioneers in the investigation of indigenous herbal medicine in the Indies in the nineteenth century was the German physician Friedrich August Carl Waitz. The situation he found himself in after he moved to the Dutch East Indies in 1823 was not unusual. After he received an appointment by the [Colonial] Health Service as city physician in Semarang, one of the most vibrant cities in the Dutch East Indies, he discovered that more than half of the medications he used to prescribe in Germany were not available there.<sup>10</sup> The medications that had been transported to the Indies were either prohibitively expensive, spoiled on arrival, or completely dried out and therefore lacking any potency. In addition, he was unfamiliar with several disease conditions that, he assumed, were unique to the tropical zone (such as dysentery and yaws); he was at a loss as to how to treat them. He was both bemused and slightly irritated that a number of locally operating *dukuns* (indigenous healers) were able to cure these conditions (in particular intestinal troubles) with relative ease. At the time, European physicians repeatedly bemoaned the fact that most European inhabitants of the Indies viewed visiting European physicians with a high degree of distrust and preferred to rely on home remedies.

During the nineteenth century, many European physicians lost their confidence in the treatment methods their colleagues had used for centuries. The tradition of heroic medicine, which relied on blood-letting, mercury, purgatives, and emetics came increasingly under fire after the discoveries of the Paris Medical School challenged its theoretical foundations (Rosenberg 1979; Warner 1986). Unfortunately for physicians, the new understanding of human biology and disease processes from Paris did not result in practical therapeutic interventions that could replace the ones they no longer trusted. The ensuing therapeutic nihilism made Waitz reluctant to practice allopathic or conventional medicine, which would require him to prescribe large quantities of calomel (a mercury compound), jalappa root, opium, and potassium iodine (Waitz 1864, 11). It also inspired Waitz to look to Indonesian herbal medicine for alternatives. In his prescriptions for new inhabitants of the Dutch East Indies he frequently emphasized the cooling and benign effects of frequent baths; later, he embraced hydrotherapy (Waitz 1848).

Waitz, an energetic and curious individual, decided to conduct experiments (both on his patients and himself) with the herbal medications used on Java. He presented his findings in a short booklet, which, as he later claimed, made him into one of the better-known physicians in the Dutch East Indies. It appears that Waitz used a number of rather straightforward methods to find out which herbs were potentially valuable. Some of his patients had used them after suffering adverse affects such as severe exhaustion following orthodox medical advice (Waitz 1829a). The local *pasar*, where the spice trade was dominated by Chinese merchants, was another source of information; as Waitz stated repeatedly, useful herbs were available at all

<sup>10</sup> Biographical information on Waitz can be found in Waitz (1864).

markets in Java (Fig. 1). Other herbs were generally known among the European inhabitants of the Indies: they were grown in most gardens. His wife, a woman of “half European, half Malay descent” whom he married 2 years after arriving in Semarang, most likely was a useful informant as well (she probably suggested the use of green (unripe) pineapples as an abortifacient) (Waitz 1829a, 1).<sup>11</sup> Waitz, in other words, did not have to leave Semarang to collect information about indigenous medical lore. He just asked the individuals he encountered in his everyday life (servants, traders, the Indies inhabitants of Semarang, and his own wife.).

Waitz emphasized that *dukuns* could only provide useful hints on possible herbal remedies, which would have to be verified through experimentation. “It appears,” he related, “that the practice of medicine of the Javanese is still very elementary, and that the inadequate knowledge the Javanese *dukuns* have acquired about their medications has no value in the eyes of European physicians. They can only serve to guide further investigations” (Waitz 1829a, 5). In other words, indigenous medical lore was based on habit and experience, not on insight and knowledge, and needed to be validated in medical practice. Waitz stated that there were two vices that threatened the health of Europeans in the colonies. The first one was the excessive use of calomel, the second one following the advice of *dukuns* or self-medication. “There is no doubt that the help of [European physicians] always is the most certain, if he has investigated the powers of indigenous remedies and convinced himself for which diseases they really are helpful” (Waitz (1829b, 157). Examples of medications listed by Waitz are betel leaves (*siri*) as a narcotic agent and, in an infusion, as a cure against persistent cough. He also recommended infusions prepared from the bark of a variety of trees for the treatment of persistent fevers (*suren* or Toona *sureni Mer.*) or for intestinal problems (the bark of the *Sintok*, cooked in water).

Waitz attempted to develop a stable translation of Indonesian indigenous herbal medicine for the use of (European) patients and physicians. His book followed the standard contemporary European categories, such as emetics, purgatives, diuretics, tonics, and analgesics; for each category, he listed potentially useful local replacements. This approach was not always successful; at times, he noted that some of these categories (such as emetics) did not have any equivalents in Javanese medical lore. At other times, he noted that some useful herbal remedies could not be categorized easily using Western medical categories. When possible, Waitz listed Javanese equivalents for standard European simples; using these listings, the European medicine chest could be completed easily and affordably with material that was locally available. For all plants listed, Waitz provided both the local (Malay) name, essential to buy the plant at the local market or to ask one’s indigenous servants to fetch them, as well as the Latin name, which gave his work medical legitimacy and provided useful observations for medical scholars, physicians, and botanists. Both his proposed substitutions and his translations were potentially unstable: plants and herbs had many different names in the Indonesian archipelago (inhabited by more than 100 different ethnic groups speaking more than 250 different languages). When he was working, many Indonesian plants had not been given Latin names either; the plant families in which they ought to be placed were as yet unclear. This instability made his book less useful with the passing of time.

<sup>11</sup> The name of his wife was Johanna Helena Hillebrandt.



**Fig. 1** A small *warung* selling *jamu* on a *pasar*. Source Boorsma 1913

Before Waitz published his booklet on the medicinal uses of indigenous plants and herbs, physicians had already investigated indigenous medical practices on a modest scale. During the rule of the Dutch East Indies Company (VOC, 1602–1798), traders, military pharmacists, and military surgeons who lived near the major centers of commerce displayed great interest in the medicinal herbs. In the seventeenth century, a small number of herbal gardens were established in Batavia, and investigations of plants were discussed in local circles. The directors of the VOC, the Heren XVII, encouraged research in medicinal plants because it was expected that this would reduce expenses (Blankhart 1966). They sponsored several botanists to conduct investigations. The Batavian Society of Arts and Sciences (founded in 1778) maintained a few herbal gardens (not very successfully) and discussed medical botany at its meetings. The Buitenzorg botanical gardens, founded in 1817 with the purpose of conducting research into the transfer of useful plants to the Indies for economic exploitation, were also active in this area. In 1850, the military hospital in Weltevreden (then a suburb of Batavia), which also housed the Batavia medical school and, later, the research quarters of Christiaan Eijkman, also had a garden growing medicinal herbs. This garden was planted on the instigation of Geerlof Wassink, who, for more than a decade, was the director of the colonial health service, the president of the Society for the Advancement of Medicine in the Dutch East Indies, and editor of the *Medical Journal of the Dutch East Indies*.<sup>12</sup> Wassink heralded the power of experiment to identify effective therapeutic agents, now that “over one third of the

<sup>12</sup> For the history of the botanical garden at the Weltevreden Military Hospital (today's Rumah Sakit Gatot Subroto) see Filet (1855).

materials in our pharmacies is no longer in use and useless since pathology has become a more objective science and therapeutic directions have become based on more solid foundations” (Wassink 1852, 432). It did not matter much to him whether the agents he tested were patent medicines, Western medications, or Indonesian herbs—he distrusted the claims made about all of these equally.

Wassink was keenly interested in herbal medicine and requested physicians all over the colonies to experiment with specific herbs. He published the results in the *Medical Journal of the Dutch East Indies*.<sup>13</sup> It is possible that his marriage to Johanna Catharina Kijdsmeir, one of the heirs of the well-known and influential van Riemsdijk family, had increased his interest in indigenous herbal medicine. Johanna Catharina’s mother was a Javanese woman; at baptism, children with European fathers and indigenous mothers were sometimes given last names which were a variation on the family name of the father; in this case, the last name was reversed.

Van der Burg, whose misgivings about Indo-European herbal healers were mentioned above, arrived in the Indies in 1863. Two years later, he married his fiancée Neeltje van Rossen with the glove; she subsequently migrated from the Netherlands to Batavia to join her husband. When, in 1867, after Wassink’s death, he became a co-editor of the *Medical Journal of the Dutch East Indies*, an editorial was published in which readers were invited to submit “conscientious observations on the efficacy of tropical plant-medications (the so-called indigenous medications)” (Sonnemann Rebentisch et al. 1867, 2). In 1877, he became the president of the Society for the Advancement of Medicine in the Dutch East Indies (founded in 1852) and the Association for Natural Science in the Dutch East Indies (founded in 1844); he can therefore be considered an authoritative voice in medical matters. In 1885, he published an authoritative, three-volume set of books entitled *The Physician in the Dutch East Indies* (which was published by the Association for the Advancement of Medicine in the Dutch East Indies) (van der Burg 1882b, 1885, 1887). The third volume of his trilogy was entitled *Materia Indica* (copying the title of Whitelaw Ainslie’s (1826) book on India) and was entirely devoted to the medicinal plants of the Dutch East Indies. When he announced the topics of the further two volumes of his trilogy in the first volume, he received a great number of requests to expedite the publication of the third volume on indigenous medicine, which therefore appeared before the second one (van der Burg 1885, vii). Van der Burg did not see a problem publishing the volume on *Materia Indica* first; he actually felt somewhat hesitant writing the second volume, dealing with the pathology of Dutch East Indies diseases because it was “undergoing such significant modifications through examinations and studies about microbes and bacteria that, during the last few years, hardly any mail arrives without something new on this area. ... it would be daring to compose a study on these disease forms at this time” (van der Burg 1885, vii). For van der Burg, uncertainties about modern European medicine provided the inspiration to investigate traditional Indonesian therapies. He relied on information provided by his patients and his acquaintances, by local Indo-European women who provided medical care, and on the many writings that had already appeared on this topic.

<sup>13</sup> Wassink (1852). This article was followed by a dozen more installments during the next 10 years.

A more diverse set of investigative strategies towards indigenous medicine was taken up by Adolphe Guillaume Vorderman, who was inspector for the Civil Health Service and occasionally taught at the medical school in Jakarta (STOVIA, *School ter Opleiding van Indische Artsen*; School for the Education of Indies Physicians). Vorderman, who is better known for his work with Christiaan Eijkman on beri-beri, is considered one of the most outstanding investigators of medical ethnobotany in the Dutch East Indies (he had a wide range of interests and also wrote on linguistics, archeology, and ornithology (Vorderman 1990)). He finished his studies at the military medical academy in Utrecht in 1866 and signed up for 10 years service with the navy of the Dutch East Indies. When his ship anchored in the harbor of Banjarmasin (Borneo/Kalimantan) and the crew was allowed to disembark, Vorderman met an Indo-European woman with whom he promptly eloped to marry in Singapore.<sup>14</sup> A year later, in 1871, he was discharged from the navy and became a government physician. In 1877 he settled in Batavia as a private physician (Fig. 2).

Vorderman had an enduring interest in medicinal herbs, and published a great number of articles in the *Medical Journal of the Dutch East Indies* and the journal of the Batavia medical school (the first one was Vorderman (1894c)). In his publications in the latter journal, he aimed to enlist the help of the Indonesian medical students and the graduates of the school to obtain information about plants and herbs used in indigenous practice, whose “detailed observations ... could inform us and whose comments on this are invited.”<sup>15</sup> These Indonesian students and physicians would be able to collect information while practicing, but because of their familiarity with Western medicine, were able to present this information in an intelligible way. The director of the Batavia medical school, H.F. Roll, who taught forensic medicine, used the same journal to publish his investigations of poisons (about which rumors, in particular in association with *guna guna* or black magic, persisted). Their students, however, were not the best informers on indigenous practices. They had grown up in Europeanized elite households and were socially far removed from the indigenous world of the *desa* (countryside villages).<sup>16</sup> Nevertheless, they were able to communicate with the population and the cultural distance between them and their patients was not as vast as that between European physicians and the indigenous population.

Vorderman employed many other avenues to collect information about indigenous herbal medicine. He recommended the aforementioned manuals by Njonja van Gent (from which one “can learn a lot” (Vorderman 1886, 18)) and Njonja van Blokland (“indispensable for everyone who wishes to dedicate himself to the study of indigenous therapy or pharmacology” (Vorderman 1886, 23)) highly (he had met

<sup>14</sup> The woman was Constance van Dijk (1845–1912). Her father had migrated from the Netherlands to the Dutch East Indies and had been assistant resident in the Preanger and on Bantam. He married an Indo-European woman from Semarang. After he retired, the family moved to the Netherlands; when he died a few years later, his wife returned to the Dutch East Indies with five of her children (two remained in the Netherlands).

<sup>15</sup> Vorderman (1893, 81). These comments were made in the context of obtaining information about poisons used by the indigenous population.

<sup>16</sup> A leading Indonesian physician, who had received his education at the medical school in Batavia, confirmed that most Indonesian physicians had had no interest or knowledge of *jamu*. See Sastroamidjojo (1948).



**Fig. 2** A.G. Vorderman (to the *right*) at home. Image courtesy of KITLV, Leiden, The Netherlands

Adolph Christiaan Gunsch, who had collected most of the prescriptions published in the latter volume, in 1868, 2 years after he had arrived in the Dutch East Indies, and studied the manuscript at that time). In his writings, Vorderman only used the indigenous names as mentioned by van Blokland (Vorderman 1900a). When he was interested in the way *sinses* (Chinese physicians) treated throat diphtheria, he asked advice from someone who could read and speak Chinese; when he investigated indigenous medicine on Madura, he also aligned himself with someone who could speak the local language (Vorderman 1900b). He mentioned the traders in herbs and spices at the local *pasar* (*tukang rempa rempa*) and the Chinese pharmacists (two of which he specifically recommended) as informants (Fig. 3). Harold Cook (2005) has emphasized the necessity of building relationships of trust and reciprocity between physicians and indigenous informants for the former to translate local knowledge into universal or cosmopolitan knowledge. This is, however, not always the case. Vorderman asserted that the best way to find out about the trade secrets of Chinese physicians is to find a Chinese individual who is indebted to oneself and ask him to fetch a prescription listing all ingredients. In other cases, he obtained the prescription himself and analyzed it by chemical means (Vorderman 1890). Apart from establishing relationships of trust and reciprocity, certain amounts of deception and trickery were used to find out more about indigenous medicine.



Fig. 3 A Chinese pharmacist. Source Boorsma 1913

After 1880, pharmacists were regularly appointed by the Buitenzorg botanical gardens to conduct investigations on plants and herbs.<sup>17</sup> Willem Gerbrand Boorsma (Fig. 4) was one of these. He had completed his studies in pharmacology at the University of Utrecht in 1891 and moved to the Indies later that year. One year later, he became the director of the pharmacological laboratory at the Buitenzorg botanical gardens (today's *Kebun Raja* in Bogor) with the assignment to investigate the medicinal properties of plants. In 1895, he married Maria Kraal, a woman from Makassar. Boorsma was intensely interested in indigenous herbal medicine and investigated its efficacy in the pharmacological laboratory, which had opened in 1885 under the directorship of Maurits Greshoff.<sup>18</sup> He hoped that the scientific investigation of medicinal plants would reduce the distrust between the Indonesians and the Dutch and would lead to the inclusion of indigenous healers into the sphere of rational medicine (Blankhart 1966). In effect, Boorsma was engaged in bio-prospecting *avant la lettre*; he was not overly concerned with the fact that indigenous Indies medical folklore was inherently irrational and based on superstition. Instead, he aimed, through chemical and pharmacological analysis, to locate the effective medicinal properties of plants, which could then be exploited economically. In his laboratory, he experimented with boiled solutions of leaves,

<sup>17</sup> Dutch botanical research was often focused in finding new ways to exploit the natural resources of the Indies. See, for example, Bisschop Grevelink (1883), de Clercq (1909).

<sup>18</sup> Greshoff was particularly interested in poisonous plants. Greshoff (1890, 1894–1900). For the pharmacological laboratory see Boorsma (1917a).



**Fig. 4** Dr. W.G. Boorsma drinking tea in Buitenzorg, courtesy of Royal Tropical Institute/Collectie Tropenmuseum, Amsterdam. coll.nr. 60027023

herbs, and roots, and added acids and other chemical solutions to identify whether there were any effective ingredients. At times, he would inject rabbits or small dogs with the resulting ingredients to test for toxicity. Each time he was successful, he effectively loosened the link between, on the one hand, a medicinal substance and, on the other, indigenous culture and even specific plants. He thereby was able to provide physicians with a substance that was effective, easily obtained, and transportable. It had become a medicinal agent like any other, no longer tainted by its Eastern origins.

Boorsma's predecessor Greshoff had embarked on a systematic investigation of the properties of Indies flora, analyzing the characteristics of plants by genera and species. Boorsma decided that such an approach was too time-consuming, and followed a short-cut by actively looking for herbs and plants that were used by the indigenous population (Boorsma 1894). To gain information on this, Boorsma had to build a network for his investigations of medicinal plants; after all, he could only start his analytical work after he had obtained credible information on medicinal plants from outside sources. He corresponded with a great number of administrative officials, planters, and others who reported observations on the use of medicinal herbs in all parts of the Indies. At times, his correspondence had undesirable consequences: once, a correspondent informed a newspaper that he had sent a specific herb with medicinal properties for analysis to the botanical gardens. Immediately, Boorsma was inundated with letters requesting this herb (even before he had grown a sufficient amount of it to conduct his own research). When a plant



was sent to the botanical gardens for investigation, it acquired a highly regarded seal of approval, even when actual results had not yet been obtained.<sup>19</sup>

At times, Boorsma conversed with *dukuns* about medicinal plants, but he did not find this very useful. With ease, they substituted plants when the one they were looking for was unavailable, they confused plant names, and often picked plants because of superficial characteristics. It was very difficult to obtain specific plants from them for chemical analysis: “Not just because one has the chance to become the victim of specific and intentional fraud, but also because the native thinks, in good faith, that one does not need to be very careful with the identity of medications, since external resemblance or similarity in name or in a few characteristics are in his eyes often sufficient to justify substitution.” (Boorsma 1913). In addition, *dukuns* often held animistic and numerological beliefs and were guided by superstitious ideas. According to Boorsma, their reasoning did not meet the standards of logic or reason. In addition, their gardens often looked messy and disorganized (Fig. 5).

Like Waitz, Boorsma also frequented the local *pasar*, but he was not particularly impressed with what he observed there. *Pasars*, he related, were unhygienic, the leaves that were offered for sale were often dusty, old, and moldy, which, surprisingly, seemed of no concern to sellers and buyers alike. He also found *pasars* rather chaotic. Boorsma (1913) described one stall as follows: “Everything is piled up and mixed up; one does not understand how the saleswoman finds her way. Despite this, she is generally well informed about both her supplies, as well as the virtues these are assumed to contain, which is apparent from her well-intentioned advice with which she continuously provides her customers” (p. 28). The confusion made visiting the *pasar* less useful for scientific purposes: if one could only “determine the names of these plants, then these *warungs* [market stalls] [would] provide a beautiful opportunity to get to know an important part of the pharmacy of indigenous medicines (Boorsma 1913, 28–29). To make matters worse, merchants often substituted inferior leaves and herbs for the ones he was looking for and mixed spices with sand or other impurities (Boorsma 1913, 1924). These strategies were not uncommon for merchants and were characteristic of markets everywhere; nevertheless, they impeded pharmacological research. In addition, plants were known under different names at different locations, and taxonomically different plants were known under the same Malay or local names (Holtappel 1924). For Boorsma’s research, the marketplace was not a good trading zone.

Waitz hoped to provide Europeans in the Dutch East Indies with a range of readily available herbal remedies to help them to fight the most common tropical diseases and to aid physicians in the expansion of their pharmacopeia to include locally available plant materials. This meant that he focused on those plants that were available at the local *pasars* and were not prone to spoilage or rapid loss of potency over time. He was not overly concerned if merchants, indigenous physicians, or Indo-European women healers substituted goods which, according to them, had an equal healing power. Boorsma, on the contrary, had a different goal, in which the

<sup>19</sup> Boorsma (1894, 42–43). Only in the first volume of the results of his investigations does Boorsma elaborate on the way he acquired his information, by mentioning the names of his correspondents. Later volumes only report the nature of his investigations and the results obtained.



**Fig. 5** The garden of a *dukun*. The accompanying text states that “the planting is chaotic, which can be seen clearly on this image.” Source Boorsma 1913

exact identification of plants was necessary. He was not interested in the direct needs of Europeans afflicted with enervating tropical diseases or those of practicing physicians. His audience consisted of pharmacists and botanical and medical researchers. For him, the fact that *dukuns*, women healers, or European medical practitioners found certain herbs useful in their practice only had heuristic value. For him, it was essential to identify plant species and to investigate the active ingredients in their roots, leaves, or flowers. To grow quantities sufficient for his research, he needed large numbers of intact specimens. For Boorsma, the standard practices of merchants to make vegetable material durable and transportable (such as drying and grinding) impeded his research efforts. Naturally, standard substitution practices were even more bothersome to him.

The interest of European physicians and botanists in indigenous herbal medicine decreased significantly after the turn of the twentieth century. After van der Burg returned to the Netherlands (1886), Vorderman died (1902), and Boorsma was increasingly occupied running the agricultural college at the botanical gardens, few publications dealing with this topic appeared in the medical literature of the Dutch East Indies. The waning of interest is also related to new developments in Western medicine (anti-septic surgery, X-ray devices), which were eagerly imported to the Indies as soon as they became available. Because of the new promises of Western medicine, it no longer appeared necessary to explore indigenous treatment methods. In addition, after the turn of the twentieth century, boundaries between ethnic groups were drawn increasingly starkly, which made it much harder for knowledge to circulate in the colonies.

#### 4 *Guidance and Advice* by Mrs. Kloppenburg-Versteegh

The best known dispenser of knowledge of herbal medicine in the Indies was Mrs. J.M.C. Kloppenburg-Versteegh (1862–1948; Johanna Maria Carolina; in daily life going by the name Jans (Fig. 6)), who published her first book on medicinal plants in 1907 (Kloppenburger-Versteegh 1907). An expanded and revised edition appeared in 1911 under the title *Guidance and Advice Regarding the Use of Indies Plants, Fruits, etc.* (Kloppenburger-Versteegh 1911). An accompanying atlas with drawings of the plants most frequently used in the manual, printed in color, was published as well. The book found such a wide readership in the Indies that the expression “Kijk in Kloppenburg!” [“Check Kloppenburg!”] was generally used when a family member became ill. It was held by virtually all European households in the Indies, especially in those living in the outer regions and areas distant from urban centers, where European women, inspired by this book, started to plant their own medicinal gardens with the species mentioned in her manual.<sup>20</sup> The widespread use of her guide to herbs, plants, and fruits illustrates the significant place home remedies and domestic medicine had in most Indies households, despite the growing presence of both European-trained physicians and indigenous physicians trained at the medical school in Batavia. It also demonstrated the ubiquitous presence of domestic medicine in the Dutch East Indies.

Mrs. Kloppenburg-Versteegh and her husband were an upstanding and well-respected family in the Dutch East Indies. During her childhood, her father operated a number of coffee plantations in central Java and attained considerable wealth, most of which he lost because of crop failures. Her husband, Herman Kloppenburg, arrived from the Netherlands in 1876 and met Jans 5 years later. At the turn of the twentieth century, he was a board member of a company that provided financing for and exported products of large plantations around Yogyakarta and Solo.<sup>21</sup> They lived in a large villa on the Bodjong road, Semarang (today's *Jalan Pemuda*), back then considered the city's most beautiful avenue, the home of many well-to-do Europeans.

The immediate motive to publish her herbal guide was the death of her 14-year-old daughter Tina in 1899.<sup>22</sup> The European doctor the family consulted had diagnosed malaria and prescribed quinine. Because her condition did not improve, a second physician was called in, who diagnosed typhus. Unfortunately, it was too late; Tina succumbed a few days later. After the death of her daughter, Mrs. Kloppenburg perceived it to be God's calling to investigate the herbal remedies of the Indies, in which she already had had a lifelong interest, and to make the results of this study available to everybody. In this attempt, she was motivated by her strong Catholic faith, which dictated that her primary role in life was to serve humankind.

<sup>20</sup> Boelman (1936, 101). The influence of Mrs. Kloppenburg-Versteegh's manual can be felt upon the present day. Dutch families with connections to the former Dutch East Indies still consult it. Since its inception in 1956, *Tong Tong*, the (Dutch) magazine for individuals with an interest in and/or ties to the former Dutch East Indies (renamed *Moesson: Het Indisch Maandblad* in 1978), has frequent references to her herbal manual in the form of advertisements, comments, and as a reference when herbal matters are discussed.

<sup>21</sup> This was the *Cultuur Maatschappij De Vorstenlanden*. See van de Loo (2000).

<sup>22</sup> For an excellent biography of Mrs. Kloppenburg-Versteegh, from which most biographical information in this article has been derived, see van de Loo (2000). Together with this biography, a reprint of both *Guidance and Advice* and the *Atlas* appeared.



**Fig. 6** Mrs. Kloppenburg-Versteegh, wearing *sarong* and *kebaya*. Courtesy of KITLV, Leiden, The Netherlands

Since she came from a respectable Indies family and was married to a successful businessman, financial motives did not play a role. Mrs. Kloppenburg had no scientific pretensions with her writings. Since most remedies used by physicians originated in folk remedies which had been used for centuries, she merely aimed to

provide a systematic overview of the remedies originating in the Indies, including observations on their use and efficacy as she had encountered them. By presenting medicinal folklore in a systematic way, she aimed to bridge “the lacuna between science and [folk] experience” (Kloppenburg-Versteegh 1940, 2).

Literary critic Rob Nieuwenhuys, in his overview of Dutch East Indies literature, described the life of newly arrived European women in the Indies as dull, boring, and full of challenges. According to him, if they lived outside the urban centers, there would be “no physician, but a *dukun* or the advice of old Indies or Indonesian women, or the herbal books of Mrs. Kloppenburg-Versteegh.” He also commented on the reverence in which she was held (Nieuwenhuis 1972, 304). When the author of a text on botany used in high schools in the Dutch East Indies, Dirk de Visser Smits, elaborated on the medical lore of Indo-European women, he stated that “the book of Mrs. Kloppenburg, a lady from Semarang, is generally known” (de Visser Smits 1928, 81). From these and other comments, it can be inferred that Mrs. Kloppenburg’s manual was used by Europeans living outside the urban centers who could not easily contact or visit physicians. Europeans living in urban areas probably used home remedies for less serious complaints and consulted physicians as well. The fact that many physicians disliked the manual indicates that it was popular among the people they considered their possible patients.

The book was not particularly expensive (it was about the same price as a kilogram of butter, but cheaper than a lady’s hat or a pair of women’s shoes); the atlas was more than double the price. This meant that the book could be bought by European families of average means, and the wealthier Indo-European and indigenous families. The manual was useful for European and Indo-European families who had lived in the Indies for some time as well. Indo-Europeans of lesser means and literate Indonesian families could read the Malay translation (Kloppenburg-Versteegh 1916a). A Javanese translation appeared as well, indicating that there was sufficient interest within indigenous circles for her work (Kloppenburg-Versteegh 1911, 1916b). Because the book was first published in Dutch, the author probably intended to reach newly arrived Europeans who were not familiar with the herbal lore of the Indies. The presentation was most definitely Western: the information was organized alphabetically, and Latin names were given for plants. The book relied on the assumption that the efficacy of the prescriptions was due to the nature of the ingredients, eliminating all other characteristics that were attributed to them by superstitious *dukuns*. Because of this, her work was acceptable to individuals with some Western education who appreciated a scientific approach. The strength of the book lay in presenting indigenous knowledge in a Western format. The medical views of Mrs. Kloppenburg, on the contrary, would have been familiar only to European physicians of past generations (and most inhabitants of the Indies). The polarities hot-cold and dry-wet occupied a central place in her model of health and disease. Disease occurred when the balance between these elements was disturbed; health could be attained with the aid of external agents that could restore the balance. She described the effects of turmeric (*temulawak*) as follows: “it has a cooling effect and cleanses the blood. It is used against fever, liver disease, stomach fever, and induces a good production of gall” (Kloppenburg-Versteegh 1934a [1911], 113).

*Guidance and Advice* was organized in a systematic way. The first part was an alphabetical listing of herbs, plants, fruits, and spices with medicinal properties,

while the second part consisted of an alphabetical list of diseases and afflictions, each with prescriptions that would alleviate them, containing the ingredients listed in the first part. In an accompanying volume, an *Atlas of Indies Medicinal Plants*, drawings of most of the plants and herbs were presented, including their Latin, Dutch, Malay, and other indigenous names. The drawings made it possible to easily identify the ingredients needed to prepare herbal remedies at home. Mrs. Kloppenburg took great care to transmit her insights in ways that were unambiguous and understandable to individuals who had just arrived in the Indies, to those whose families had spent several generations there, and to those with some botanical training. Through these techniques, she successfully stabilized the meanings of the names of the plants and herbs she was using as well as the referents of these names. Plants, fruits, and herbs were different in comparison to those commonly found in the Western world; they also had many different names in the Indonesian archipelago. Using Mrs. Kloppenburg's guide, one could be fairly sure that one would be able to find the correct species. By placing the images of plants, their Malay names, and their Latin names, her books provided a comprehensive botanical dictionary that enabled its readers to move comfortably between the scientific and everyday spheres of life.

The handbook of van Mrs. Kloppenburg illustrates how closely the art of cooking and the art of home remedies were related; about half of the ingredients for her prescriptions were also common ingredients for cooking (ranging from fruits such as pineapples, limes, and oranges to vegetables such as potatoes, mung beans, and cabbage, to the common spices used in Indonesian cooking, such as turmeric, ginger, pepper, and nutmeg). Most of her prescriptions involved boiling (fresh) leaves or roots, which were then strained—much like tea or an infusion. This approach to herbal medicine made it appear mundane and homely, rather than mysterious or spiritual. It also decisively placed home remedies in the female sphere, as the preparation of food and herbal remedies were done in the kitchen, using goods from the garden and the market. It also presented domestic medicine as an everyday art, rather than a source of pride, esteem, and earning. The great popularity of the handbook also indicated that medical care at the time was provided at home; interventions provided by physicians were the exception rather than the rule. Outside the cities and among Europeans who were not wealthy, domestic medicine was informed by manuals and herbal lore that was handed down the generations. This demonstrates an interesting hybrid culture in European households, in which most members would speak only passing Malay (just sufficient for dealing with the servants) and would know very little about Javanese or Indonesian culture.

The close link between health, medicine, and nutrition, characteristic of Indies indigenous medicine, was demonstrated in a very different way by Dr. Christiaan Eijkman, who, in the 1890s, was puzzled about the poor state of health of his chickens in the experimental garden of the military hospital of Batavia. Upon closer inspection, his chickens appeared to have all the symptoms of beri-beri; they recovered when they were fed brown rice again. His research later led to the appreciation of certain elements contained in fresh foods (later called vitamins) for maintaining health. Eijkman and his colleagues isolated what has later been called vitamin B1, a lack of which causes beri-beri (Carpenter 2000). This was the first

time in history that a vitamin had been identified and inspired fruitful research to identify other such substances. For most Indonesians this research, for which he received the Nobel prize in 1929, had hardly generated surprising results. Indigenous medicine had always pointed to *katjang hijau* (mung beans) as the most appropriate treatment for beri-beri (Mrs. Kloppenburg (1934a [1911], 34) lists this as a treatment). For them, it would not really matter that later nutritional analysis demonstrated that these beans contained very high levels of vitamin B1. The importance of Eykman's discovery was not lost on his fellow researchers, in particular Vorderman, who verified Eijkman's results on the prison and mental hospital populations of Java and Madura by demonstrating that there was a direct link between the type of nutrition prisoners received and whether they suffered from beri-beri Vorderman (1897). Eijkman, due to bad health, had returned to the Netherlands even before his investigations had been finished.

The reaction of European physicians towards *Advice and Guidance* was, not surprisingly, mostly negative. In a review of its first edition, published in the *Bulletin of the Association of Physicians in the Dutch East Indies* under the title "Quackery," the manual was called useless, dangerous, and based on mere superstition. It was concluded that it was written by someone "who had spoken frequently with her *babus* (child minders) and other natives; who had, at times, consulted a *dukun*; and who had derived her general principles from indigenous fairy tales" (Benjamins and Damsté 1907, 16). The reviewers clearly attempted to distance Mrs. Kloppenburg as much as possible from science, rationality, and Western thought by identifying her writings with the indigenous culture of the Dutch East Indies—which, in a colonial context, would be the most effective way to discredit her work. The reviewers only considered the book useful because it provided interesting bits of information on indigenous medical lore. Reviews in the progressive newspaper *De Locomotief* emphasized the dangers of lay medicine.<sup>23</sup> A reviewer of a later edition, formerly associated with the medical school in Surabaya, criticized the *Atlas*; he found the images so confusing that he could not make out which plants were portrayed (Rant 1935, 14) (pharmacist Greshoff, on the contrary, had commented favorably on these drawings (Kloppenburger-Versteegh 1940, 14) (Fig. 7).

Mrs. Kloppenburg had acquired her insights through a variety of sources and relied on an unusually extensive network to realize her ideals. Her main inspiration was her mother, Albertina van Spreeuwenburg, who was of both Dutch and noble Indonesian descent (Mrs. Kloppenburg's indigenous heritage was not known during her lifetime and was only revealed by her biographer (van de Loo 2000)). After her marriage to a wealthy plantation owner, she was expected to provide basic health care to the indigenous employees of her husband's plantations (which were located near Weliri, west of Semarang). Out of necessity, she acquired a thorough knowledge of indigenous herbal cures. From an early age, Jans showed a keen interest in what her mother was doing; as a consequence, her mother frequently took her with her when she was collecting herbs or visiting patients. Jans' mother also received help from Dr. C.C.W. Mandt, a German physician who operated a spa rich in iodine and sulfur nearby (at one point, Waitz had conducted a chemical analysis of

<sup>23</sup> Quoted in van de Loo (2000, 45–49).



**Fig. 7** A page from the *Atlas* of Mrs. Kloppenburg-Versteegh, displaying *Sembang* (ngai camphor or *Blumea camphor*; *Blumea balsamifera* DC) on the left and *Temulawak* (turmeric; *Curcuma xanthorrhiza* Roxb) on the right



its water).<sup>24</sup> Mandt had been interested in indigenous herbal medicine for a long time and had studied it in relation to diet. He also studied the association of the incidence of specific diseases in relation to the seasons. His wife, an Indo-European woman from Makassar, willingly shared her collection of prescriptions with Mrs. Kloppenburg's mother. The contact with this physician and his wife greatly aided Jans' mother to sift through the great amount of information about medicinal herbs that was available at the time. Later, another physician, married to an Indonesian woman, aided Mrs. Kloppenburg in providing useful prescriptions (Kloppenbug-Versteegh 1940, 32).

Apart from building and maintaining an extensive network through friends, family, and acquaintances, Mrs. Kloppenburg also established and maintained relationships with a number of physicians, botanists, and other scientific men. When she started her studies in herbal medicine in earnest, she frequently received visits from Hendrik Freerk Tillema, who at that time operated one of the pharmacies in Semarang (where the prescriptions Waitz had left there several decades earlier were probably still available). Tillema was a highly energetic and enterprising man, who had an interest in the local *materia medica*. In 1899, he started to produce mineral water under the brand name "Hygeia", using the most modern production methods. As the first one in the Indies, he employed modern advertising methods (including balloons which distributed pamphlets, advertising billboards, and advertising with enticing photographs (Vanvugt 1993, Mrazek 2002)). Selling mineral water made him a fortune, part of which he spent advocating sanitary improvements in the Indies. Through extensive documentary evidence, statistics, and photographs, he portrayed the unsanitary conditions common in *kampongs* (indigenous quarters) in the Indies (Tillema 1913, 1915–1923, Tillema-Weehuizen and Tillema 1919). At the time, he advocated public health measures. He was also looking for ways to find simple treatments for the common diseases of the Dutch East Indies that were affordable for the local population. Tillema advised Mrs. Kloppenburg on effective ways to communicate her insights to the public—the organization of her manual and the accompanying *Atlas* probably followed his suggestions. After his return to the Netherlands, he actively promoted the investigation of Indies medicinal plants there (Boelman 1936, 98–99).

Mrs. Kloppenburg-Versteegh maintained an extensive correspondence with Willem Gerbrand Boorsma, which one can assume was reciprocal. Boorsma provided Mrs. Kloppenburg with determinations of the specimens she sent him and additional information on the nature of the plants she was interested in (including their toxicity). Mrs. Kloppenburg, in turn, provided Boorsma, who was disillusioned with the information provided by *dukuns*, merchants at the *pasar*, local pharmacists, and eager correspondents who sought to promote their own wares, with systematic and accessible information on indigenous and Indies herbal lore. She was also very well informed about where one could find the rarer plants. In effect, Mrs. Kloppenburg acted as an intermediary between the indigenous world and researchers like Boorsma, by filtering information on an endless variety of local practices, lore,

<sup>24</sup> Mandt (1845). On Mandt's relationship with the parents of Mrs. Kloppenburg see: Kloppenburg-Versteegh (1940), 5–10. Spas and a temporary retreat to higher altitudes were very popular in the colonies. For an intriguing overview of the roles of spas in French colonial life see Jennings (2006).

secret knowledge, inconsistencies, and by eliminating elements relating to numerological beliefs, animistic ideas, and other forms of superstition. She stabilized the referents of indigenous herbal lore by providing the scientific (Latin) names and by providing drawings of the plants involved. Mrs. Kloppenburg aimed to bridge the gap between science and experience by presenting this experience in a systematic form; Boorsma aimed to bridge the same gap from the other direction by the chemical and pharmacological analysis of the results thus presented.<sup>25</sup>

Mrs. Kloppenburg also maintained an extensive correspondence with Karl Heyne, a botanist at the Buitenzorg botanical gardens and author of the four-volume *Useful Plants of the Dutch East Indies* (Heyne 1913–1917). These books do not make for inspiring reading; all information is presented in catalog format. At the end of the book, two indexes appear: one for scientific names and one for indigenous names. For every described species, the potential economic usefulness for industry, pharmacy, and agriculture is described. When discussing medicinal plants, references appear to Rumphius, Waitz, van der Burg, Vorderman, Greshoff, Boorsma, and to Mrs. Kloppenburg. In fact, Mrs. Kloppenburg appears as a standard reference on the indigenous uses of herbs and plants. In the discussion of a particular folk remedy, Heyne, after quoting her, stated “Reports by other authors with regard to medicinal use I will discard as unreliable” (Heyne 1916, 159). In Heyne’s encyclopedic work, Mrs. Kloppenburg is presented as a reliable source on the uses of medicinal plants and herbs among the indigenous population (which is ironic because she did not aim to give a faithful account of indigenous practices; as a matter of fact, she collected information everywhere and incorporated European medical lore). But, in addition, references to her work also indicate that these plants are possibly effective, and ought to be considered for further economic exploitation. In van Dongen’s (1913) *Succinct Overview of the Most Frequently Used Medications in the Dutch East Indies*, Mrs. Kloppenburg’s work is referred to more than 100 times—not only by listing medicinal herbs and plants, but also by repeating the ways in which medications are to be prepared.

To illustrate how Mrs. Kloppenburg’s herbal manual had come the standard reference text with respect to Indonesian indigenous medicine, consider her prescriptions using the pineapple. Her manual lists 25 of these prescriptions (most using pineapple juice, one the peels and one slices of pineapple), of which 15 are for digestive problems, six for throat problems (diphtheria and throat abscesses), and the rest for other ailments (dandruff, calluses). In her *Memoirs* (Kloppenburg-Versteegh 1940), she relates that she started to use pineapple juice after having read an article by a missionary from Africa which reported that it was frequently used there in the treatment of diphtheria and other throat afflictions. She related how she was asked, when traveling from the Dutch East Indies to the Netherlands, to treat a patient with a severe throat abscess by the ship’s physician (surgery would certainly have killed this patient). Encouraged by the ship’s physician and two other physicians, her treatment with pineapple juice worked by making the abscess break up and reducing the fever (her *Memoirs* presented many anecdotes of desperate physicians begging

<sup>25</sup> Later, Boorsma expressed reservations about using chemical analysis to isolate the effective ingredients in plants and herbs, and instead advocated clinical research. See Boorsma (1917a).

for her help which she, sometimes reluctantly but most often willingly, provided, leading to more or less miraculous recoveries). The “Quackery” review in the *Bulletin of Physicians* simply dismissed her claim (Benjamins and Damsté 1907, 35); Heyne merely repeated it, while mentioning that there were authorities who disagreed. Van Dongen (1913, 19), citing phytochemical analyses, states that her observations “are highly correct,” because of the organic acids present in pineapple juice.

Although Mrs. Kloppenburg served as an intermediary between Europeans and the indigenous population, her closeness to the latter should not be exaggerated. When she traveled around the Indies to investigate local herbal lore, she always brought a few servants with her who could speak the local languages; she herself only spoke *pasar* Malay. In her advice book *The Life of the European Woman in the Indies*, she presents herself as a respectable and upstanding European woman who has been a long-term resident of the Indies and therefore in a good position to provide advice to newcomers to the colonies; she does not reveal her Indonesian roots. In her book, she advised newcomers to adapt to the circumstances of the Indies (climate, food) but to maintain their European identity and resist indianization at all costs. She advised to keep the children away from indigenous *babus*, which would prevent them acquiring an Indies accent and postpone their sexual awakening. She generally describes the indigenous personnel in rather unflattering terms (unhygienic, unreliable, lazy, forgetful, a lack of moral standards) and advised readers not to engage in conversation with them too much, but instead to give orders in a clear and concise manner (Kloppenburger-Versteegh 1913). The fear against indianization grew much stronger after the appearance of Mrs. Kloppenburg’s advice book. The *sarong* and *kebaya* she advised women to wear (she even included a pattern in her advice book) and which she is wearing in Fig. 6 would no longer be acceptable for European women a mere decade later (Locher-Scholten 2000, 128-29).

Mrs. Kloppenburg functioned as a mediator between the indigenous and European worlds, not because of her frequent and intimate interactions with the former, but because she could draw on the cumulative wisdom of her mother and grandmother. She also had an inquisitive mind and investigated local herbal lore at several locations, which led to interactions with Indonesians which were very uncommon for European women at the time. Mrs. Kloppenburg was a transitional figure in the tradition of women herbal healers; she was rooted in Indonesian culture but no longer part of it, she wrote in Dutch rather than Malay, she disavowed her Indo-European origins but presented its wisdom in her *Manual*, and she addressed the newer and transitory, rather than the long-term residents of the colonies. She built up extensive networks with physicians and botanists, whose education in European universities and expertise in medicine and chemistry provided her work with the respectability of Western science. Mrs. Kloppenburg interacted much more extensively with European experts, who could validate her insights, than with Indonesians, who, ultimately, provided her with the insights she communicated in her book.

## 5 Indonesian Physicians and *Jamu*

The Dutch colonial government opened two medical schools, the first one in Batavia in 1851 (initially named *Dokter Djawa school*, later renamed STOVIA (School ter

Opleiding van Indische Artsen; School for the Education of Indies Physicians)); the second in Surabaya in 1913 (NIAS, or the Nederlandsch-Indische Artsen School, the Dutch East Indies School for Physicians). The first school was only open to Indonesians; the second one also accepted Indo-European and Chinese students. In 1927, the STOVIA was replaced by the Faculty of Medicine, which accepted students from all ethnic groups and awarded degrees equivalent to those of medical schools in the Netherlands (Luyendijk-Elshout 1989). Although both Vorderman and Roll had hoped that their Indonesian medical students, once they started practicing, could provide information on the use of medications and poisons by the indigenous population, it is not known whether this actually happened. Most Indonesian physicians displayed little interest in *jamu*, as they were strongly oriented towards Western medicine. This only began to change at the end of the colonial era. The *Vereeniging van Indische Artsen* (Society of Indies Physicians) had been founded in 1911 and aimed, among other things, to improve the working conditions and compensation of Indonesian physicians. During the 1930s, the Society was not very active until, in 1938, Dr. Abdul Rasjid Gelar Maharadja Mahkota Soangkoepon, who was also a member of the *Volksraad*, became its president. Inspired by the initiatives of the Rockefeller Foundation in public health, he and R.A. Mochtar (who headed the Rockefeller project in Purwokerto) became convinced that promoting public health was one of the prime responsibilities of Indonesian physicians.<sup>26</sup>

One of the main obstacles in providing health care to the Indonesian population was the expense of medications. This became a reason to invite two practitioners of traditional herbal medicine to the second congress of the Society, which was held in 1939 in Surakarta. Two speeches were given on the topic as well—in Malay, which was a novelty within the meetings of the society (during a local meeting, a participant had apologized for not being able to give his speech in Malay, since most medical terms did not have Malay equivalents and most participants did not speak that language very well) (Astrohadikoesoemo 1940; Mangoendingrat 1940). Most participants of the congress were completely unfamiliar with indigenous herbal medicine and followed these presentations with great interest. These Indonesian physicians started to explore a domain with which they had been unfamiliar previously, partly because of its roots in the poorer countryside villages, and partly because *jamu* had previously been placed within the female domain. During the Japanese occupation (1942–1945), medications were hardly available, which provided a strong incentive to use traditional herbal medicines (Sastroamidjojo 1948, 1967). After independence, economic necessity sparked a more general interest in *jamu*, and the industrial manufacture of *jamu* took great flight.<sup>27</sup> Interestingly, Indonesian physicians needed their own mediators to acquaint themselves with *jamu*; the publications of the Dutch physicians discussed previously became their guide to the traditional herbal medicine of their own country. The manual of Mrs. Kloppenburg played a significant role as well, and it

<sup>26</sup> The local representative of the Rockefeller Foundation was J.L. Hydrick. For an overview of the public health initiatives undertaken in the Dutch East Indies see Hydrick (1937); Rasjid (1940a); Rasjid (1940b).

<sup>27</sup> Afdhal and Welsch (1988); Sumardono and Hanusz (2007). Almost all of the *jamu* industry was in the hands of Chinese businessmen, who probably followed the successes in the industrial manufacture of traditional Chinese medicine in China. For developments in China see the excellent study by Cochran (2006).

was translated into bahasa Indonesia (Kloppenburg-Versteegh 1983). In effect, the European investigators in indigenous herbal medicine had become mediators between modern Indonesian physicians and indigenous medicine.

## 6 The Circulation of Knowledge in Colonial Spaces

Colonial empires were spaces where individuals, goods, and knowledge circulated on an unprecedented scale. European military men, sailors, colonial administrators, traders, and individuals wanting to make a fortune moved to the colonies. These highly mobile cosmopolitan populations created situations in which individuals from different cultural and ethnic backgrounds interacted with each other on a regular basis to exchange goods, labor, money, information, knowledge, or power. This required a continuous need for translation and mediation. Europeans in the colonies often mobilized local populations as resources for labor (including slaves and contract laborers) and thereby instigated significant movements of colonized populations. Although many indigenous groups were highly mobile themselves and had established extensive trade networks before Europeans arrived, they were not often able to benefit to the same extent from these exchanges. The encounter of individuals from divergent cultural and linguistic backgrounds required mediation and translation; as Taufiq Abdullah has formulated it, a mediation point (or, as he calls it, a *schakel*) is “a cultural link, that could serve as a channel through which the two strange worlds shared something without endangering their respective basic cultural assumptions (as quoted by Kuitenbrouwer 1982, 105). Although a perspective emphasizing interaction, mediation, and exchange introduces new forms of equivalence and symmetry, the outcomes of these exchanges often benefited one side more than the other. In addition, the possibility that exchange could have a far-reaching influence on cultural assumptions could not be excluded.

With respect to the exploration of knowledge of indigenous herbal medicine, I have discussed several points of contact and mediation. In the first place, physicians who married indigenous or Indo-European women were able to access local medical practices through their wives, who functioned as mediators between two cultures. The domestic sphere, of which medical care was a part, was the domain of women; herbal prescriptions were passed down through the generations. Of the physicians discussed, only van der Burg brought his European wife with him from the Netherlands; all others married either Indo-European or indigenous wives. Physicians also had access to local medical lore through their patients, who informed them how their disease condition would normally be treated, and sometimes recommended that they consult indigenous physicians. Individuals from the urban centers in the Dutch East Indies were well able to operate in a context of plural medicine: Vorderman (1890) reports how several patients consulted him when they suspected that they had diphtheria. When the diagnosis was confirmed through the diagnostic tools of Western medicine, they would consult Chinese physicians, because they knew that their treatment of choice (a red powder to be blown in the throat) was highly effective in curing this condition. Several European physicians adopted this treatment method as well. Patients with clear preferences stimulated the circulation of medical knowledge.

The market, in the form of *pasars* and pharmacies, was also a significant locus of intermediation. From the 1880s, both were in the hands of Chinese merchants, who fulfilled important mediating functions in colonial life. Merchants sold herbs, plants, and spices which they sourced from local gardeners, individuals who picked herbs, and from large trading networks that spread over most of Asia. At *pasars*, a great amount of herbs and spices were available, all with Malay names that would be used all over the archipelago (after all, Malay was the language of trade, a universal language for the market). Nevertheless, markets did not always operate to maximize the circulation of knowledge. Merchants were known to offer tainted and adulterated goods, sell cheaper substitutes, and provide misleading and at times exaggerated information about their products. Generally, it required a person who is familiar with the way markets operate and who has been able to establish long-term contacts with individual merchants to determine which claims and which merchants can be trusted under which circumstances. It required knowledge to recognize and negotiate credibility in the market. In addition, just as *pasar* merchants, providers of medical care, be they European physicians, Indo-European women, and *dukuns*, as well as the producers of patent medicines, benefited from secrecy to protect and enhance their market position. The work of Mrs. Kloppenburg was considered trustworthy because she was not operating according to the mechanisms of the market. She provided her information freely and had no reason to make exaggerated claims. Markets can be a locus for mediation and the circulation of knowledge, but their function is enhanced when one of the links in the network is not acting according to the dictates of the marketplace.

Other local informants were individuals with whom Europeans living in the colonies would come into contact on a regular basis: gardeners, friends, acquaintances, shop-keepers, and journalists writing for newspapers and magazines (or, in the case of Mrs. Kloppenburg, a convicted murderer who, as a member of a chain gang, was put to work in her garden). A number of the physicians who were connected to the medical schools in Batavia and Surabaya relied on their students to provide them with insights into the nature of indigenous herbal medicine. This was not successful: most of these students viewed themselves as mediators between East and West by disseminating European medical insights. In the late 1930s, when Indonesian physicians became interested in *jamu*, they had to rely on the writings of their European teachers, who thereby became mediator between them and Indonesian herbal medicine. Only in rare cases was the interaction between physicians, botanists, and their Indo-European informants reciprocal in nature. Through her mediating role as Indies woman, Mrs. Kloppenburg was able to collect information from the local population, which was generally dismissed as folklore and superstition by Europeans, and present it in a vocabulary readable by Europeans. Through botanical images and the use of Latin names, native herbal folklore did not appear murky, messy, inconsistent, superstitious, irrevocably related to superstition, animism, a belief in magic, numerology, and astrology. In exchange, physicians and botanists aided Mrs. Kloppenburg in providing Latin names for the plants she used, aided in the determination of the species she used, and provided some legitimacy to her work, which was sufficient in making her manual a standard reference in botanical works.

In the nineteenth and early twentieth centuries, European physicians expressed ambivalent attitudes towards *jamu*. In earlier times, European investigators had been much less reluctant in their reliance on local informants. Seventeenth-century

physician Hendrik van Reede tot Drakenstein, author of the *Hortus Malabaricus* (12 volumes, 1678–1693) transferred a great amount of local knowledge to his botanical texts; Richard H. Grove (1996) calls his collection “profoundly indigenous texts.” (p. 126). After expressing their interest and admiration in Javene folk medicine, they often criticized it because it was based on habit and not on knowledge or insight. According to them, suggestions from these sources needed to be tested in medical practice or experimental research. Only by being filtered through European medical research practices could indigenous knowledge acquire credibility in cosmopolitan circles. As a consequence, the investigation of medicinal plants in the Dutch East Indies took place through at least two layers of mediation. First of all, physicians and pharmacologists generally did not rely on information provided by the indigenous population, *dukuns*, or the wisdom of the market. Instead, they relied on the collective wisdom of a small number of Indo-European women who had developed a tradition of medical lore based on both European and indigenous elements. Secondly, physicians such as Waitz, Vorderman, and van der Burg tested the suggestions in their own medical practice by prescribing them to their patients (or using them themselves) and observing the results. A pharmacological investigator such as Boorsma used a different method to validate these claims: he boiled plant extracts, added acids or other chemical substances, and attempted to isolate the effective ingredients through chemical analysis.

For many physicians, the publications of colleagues on indigenous herbal medicine were their most important source of information, but this was not sufficient when they wanted to provide credible information. In a blistering critique on van der Burg’s *Materia Indica*, Vorderman illustrated with many examples how the former had relied on previous sources and had copied their mistakes, even going so far as to accuse him of plagiarism. Vorderman (1886) stated that the names of indigenous medications “cannot be found out while one is sitting behind one’s desk, but by [consulting] *dukuns* and traders in indigenous medicines (*toekang rempa rempa*)” (p. 5). In addition, he expressed surprise that about half of the medications available at pharmacies in Batavia were entirely unknown to van der Burg. Vorderman derided van der Burg’s work because he did not base himself on and independent research and experimentation but only on what others have written about the subject. Boorsma later criticized the work of van Dongen in a similar vein: according to him, it was merely a literature review not based on independent research (Boorsma 1915).

Apart from many factors that stimulated the circulation of medical knowledge in the Dutch East Indies, there were also a great number of factors that impeded this circulation. The factors that shaped networks of interaction and possible mediation included gender (in particular the expectation that women provided health care in families, including workers and servants), geographical isolation (Europeans living on remote plantations were more likely to consult locals), reputation (as few Indo-Europeans trusted the ministrations of European physicians), and social class (some physicians were willing to read Mrs. Kloppenburg’s manual, as she came from an upstanding family). Before the 1880s, interactions among *totoks*, Indo-Europeans, and indigenous individuals were relatively unconstrained, as the number of marriages between these groups might indicate. When ethnic lines were drawn more sharply, interaction between different groups became more difficult and constrained. The cultural distance that separated individuals impeded interaction and

exchange: linguistic differences, differences in social class, ethnicity, and religious beliefs made interaction more difficult. An individual's need to acquire knowledge was an important factor as well. When the medical training and therapeutic armamentarium of European physicians had become insufficient, inadequate, or outdated, they were eager to learn from others. When their confidence rose after a number of medical breakthroughs and the introduction of new medical techniques (such as aseptic surgery), the necessity of incorporating knowledge from other cultural domains diminished. More stringent strategies of verification were required for indigenous herbal medicine, or they were simply ignored or dismissed. The therapeutic nihilism in Western medicine created a window of opportunity for the exploration of Indonesian herbal medicine. After Indonesian independence, further windows of opportunity arose because of economic necessity (as Western pharmaceutical became too expensive to import). For the average Indonesian, not much changed at all. *Jamu* has retained its role in Indonesian society and remains immensely popular. For poorer Indonesians, Western-style health care is only available sparingly—making relying on *jamu* central in the management of health and disease.

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