Glimpses of medicine in early Japanese-German intercourse

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Chapter 1

Glimpses of medicine in early Japanese-German intercourse

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For most of the Edo period, encounters between Japanese and Germans took place within the framework of Dutch-Japanese intercourse. World maps and occasional writings such as the "Notes on Western Countries" (*Seiyō kibun*, 1715) by Arai Hakuseki referred to the existence of Germany (*Zerumania*), but this was of little significance in actual encounters, as every European setting foot on Japanese soil officially had to be a 'Redhead' (*kōmōjin*) from Holland (*Oranda*). Nevertheless, a considerable number of merchants, physicians, surgeons, and pharmacists at the trading post at Dejima in Nagasaki came from German-speaking regions. Some of them made significant contributions to mutual understanding between Japan and Europe. Various German books in Dutch translation also provided Japanese scholars with new perspectives on man and nature. This essay discusses the early stage of German-Japanese encounters and the gradual absorption of Western medicine and allied disciplines into Japan.

Growing awareness of weaknesses and needs

During the 15th and 16th centuries, Japan absorbed a number of foreign innovations in smelting and forging methods and in crafts such as papermaking, silk weaving, and printing. Most of this know-how came from China. It was disseminated not by Buddhist monks or scholars as earlier knowledge had been, but by merchants and artisans; hence it was predominantly of a practical nature. This tendency continued even after the birth of the Tokugawa regime. But since the mid 1580s the activities of Iberian missionaries and merchants had raised growing annoyance among Japanese rulers, who reacted with a series of restrictive measures until they finally decided to rid Japan of all 'Southern Barbarians' and

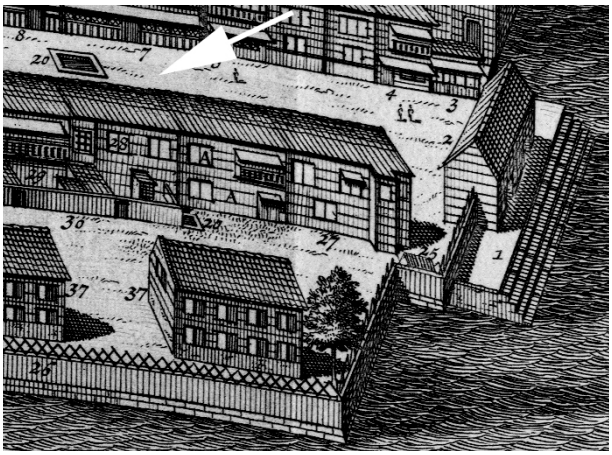

Figure 1 **Dejima trading post physician's quarters**

(Thomas Salmon: Hedendaagsche Historie of Tegenwoordige Staat van alle Volkeren, vertaalt door M. van Gogh. Amsterdam 1736. Collection of the author)

Christianity.

By then at the latest, Japanese rulers, who tried to control foreign trade and the flow of information, became aware of their country's dependence on imports of certain products and raw materials. Before banishing the Portuguese and Spanish, high-ranking officials such as imperial councillor Sakai Tadakatsu (1587-1662) ensured in negotiations with the head of the Dutch trading post in Hirado, François Caron, that the Dutch East India Company was able and willing to supply raw silk, silk textiles and herbal medicines in sufficient quantities[1)]. Furthermore, imperial commissioner Inoue Masashige, many governors of the shōgunal demesne of Nagasaki, and even imperial councilors such as Inaba Masanori made great efforts to use foreign knowledge and goods to stabilize the country. Despite Japan's so-called 'seclusion policy', useful Western knowledge was never rebutted[2)].

New conditions for medical encounters

The Dutch East-India Company (Verenigde Oostindische Compagnie, VOC) was founded in 1602 as the first stock holding company in

Western history. Only seven years later it managed to establish a trading station (in Dutch: *factorij*) at the Japanese island of Hirado. During the early years, company employees at Asian outposts were treated by local physicians or surgeons from anchoring Dutch ships. Gradually a health care system was established with Batavia at its center, but for decades the company faced considerable difficulties in securing qualified medical personnel and medicinal supplies that met the standards of the Pharmacopoeia Amstelredamensis (1636).

After their relocation to Nagasaki in 1641, the Dutch were confined to the small artificial island of Dejima. It was then that the East India Company finally installed a resident physician, who took care of the trading post personnel and accompanied his superior on the annual journey to the court in Edo. For the first time in Dutch-Japanese intercourse a continuous medical exchange was possible. Furthermore, high-ranking officials in Edo and Nagasaki were involved in all matters concerning the trading post, and it did not take long until the effects became visible.

Physicians working at Dejima enjoyed much more freedom than merchants, and as they were called to residences of Japanese officials and other influential residents of Nagasaki and Edo, they had many opportunities to meet highly trained court physicians and personal physicians of feudal lords. On the other hand, the company was not allowed to train European interpreters. So even if they managed to stay in Japan for several years, trading post physicians were not able to read Japanese or Chinese books and had to be supported in any communication with local associates by official local interpreters[3)].

The trading post diaries and other documents show about 90 names of European medical staff for the two centuries of Dutch presence in Nagasaki. Until the first half of the 18th century, the European medical presence in Japan was dominated by barber-surgeons who had

received their education in guilds. Later, the number of graduates from universities and military medical schools increased. Although data on place of birth are only available for a part of the staff at Dejima, at least 20% of physicians and other medical personnel working there were of German decent.

Caspar Schamberger's epoch-making contribution

A figure of significant influence in early Japan-Europe interactions, who nevertheless remained in obscurity for many years, was the Dutch surgeon Caspar Schamberger (1623-1706), the German surgeon who sparked a lasting interest in Western medical treatment, herbs, and pharmaceutics and whose work led to the birth of 'Caspar-style surgery' (*kasuparu-ryū geka*) in Japan[4].

The acceptance of his teachings and treatment methods was influenced by a variety of factors. Schamberger came to Edo in December 1649 as a member of a special Dutch delegation from Batavia. He was educated in

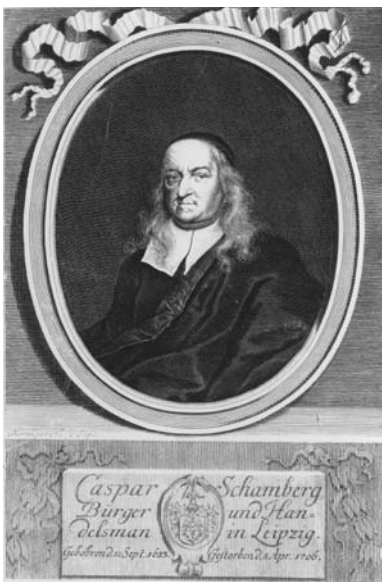

Figure 2 Caspar Schamberger in his later years as a wealthy merchant in Leipzig
(Stolberg-Stolbergsche Leichenpredigt-Sammlung, No. 19803)

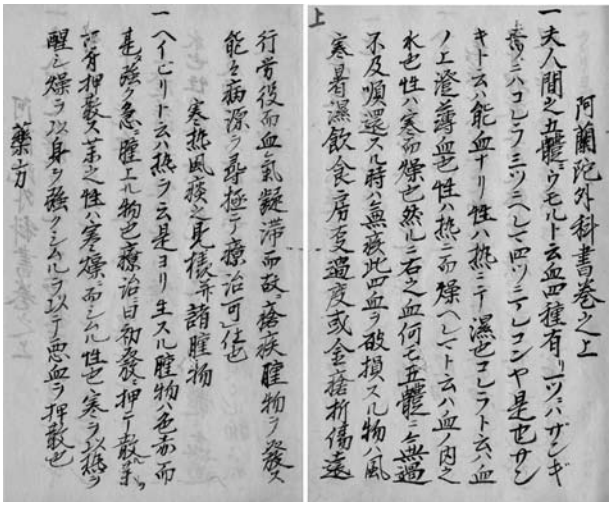

Figure 3 **Outline of humoral pathology and diagnosis in a Caspar-style manuscript**

(*Nanban gekasho*/*Oranda gekasho*, manuscript copy, Edo-period. Collection of the author)

the surgeons' guild of Leipzig and trained on the battlefields of the Thirty Years War. Considering the formality of the Japanese court, he must have displayed a greater mastery of etiquette than the average barber-surgeon of his time. Chance also played a part. Due to the serious illness of the shōgun Tokugawa Iemitsu (1604-1651), the Dutch delegation was forced to stay in Edo for several months. The extraordinarily long wait and the constant presence of an unengaged foreign surgeon at the delegation's inn stimulated some high-level officials suffering age-related illnesses to invite Schamberger to their residences. Precious medicines and successful treatments brought more patients of rank and name, giving social credibility to his medical practice. Subsequently, Schamberger was asked to stay in Edo for another six months following the departure of the Dutch envoy Andries Frisius. Without this coincidental interest and approval of the political elite, the teachings of 'Master Caspar' and his successors at Dejima would have been accepted less enthusiastically throughout the country.

Political and economic factors played their parts as well. The

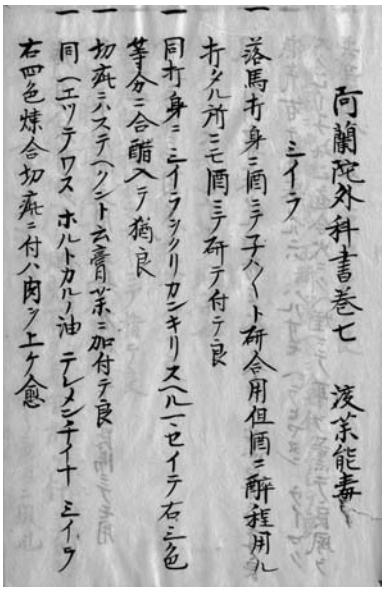

Figure 4 **Explanation of materia medica brought to Edo by the Dutch special envoy Andries Frisius in 1649**

(*Oranda gekasho*, manuscript copy, Edo-period. Collection of the author)

determined adoption of Western medical knowledge is neatly explained within a context of the shōgunate's encouraging activities beneficial to the further development of the country, and incidentally to the consolidation of the Tokugawa regime. As revealed in the loading lists of Dutch ships destined for Japan, throughout the 17th century the demand for and supply of medical goods, books and information were never threatened – despite numerous restrictions, scrupulous controls and severe punishments for transgressing them[5].

Furthermore, the personal contributions of members of the Japanese political elite should not be ignored. Many events and decisions made during the decades before and after Schamberger's stay in Japan cannot be adequately explained without taking into account the influence of imperial inspector general Inoue Masashige (1585-1661), who with great enthusiasm promoted the introduction of foreign know-how whenever it deemed to be useful[6]. Therefore, despite the growing restrictions on

the flow of goods and information under the first Tokugawa shōguns, the social and political conditions for the introduction of Western medicine, especially surgery, were actually not as bad as has sometimes been supposed. This small but new wave of change commenced at the top of Japanese society. From Edo and Nagasaki, cities administrated by the central government, it spread to the regional fiefdoms.

Schamberger had changed life for his successors at Dejima. In the records of the time, many factory chiefs at Dejima mention the growing number of inquisitive visitors. Because the short stay of the trading post chiefs in Edo during their annual journey to the court did not allow any systematic medical instruction, the feudal lords began to send their personal physicians to Nagasaki. Such prolonged visits were difficult, considering the working and living conditions of the European surgeons. Nevertheless, a number of Japanese received instruction for several months, while others with good connections were allowed more or less regular visits to the trading post, even for periods as long as one or two years. Only two decades after Schamberger left Japan, licenses from the Dutch trading post surgeon boosted careers in feudal domains and at the court. But the continued success of 'redhead-style medicine' was not merely the result of its medical and social usefulness. Japanese physicians were less subject to the prevailing rigid social restrictions, and thus were in a better position than most of their countrymen to travel and to seek and spread new knowledge.

Plant imports and an early technological transfer

Soon after Schamberger went back to Batavia, there was a sudden rise in orders from Japan for drugs, herbs, pharmaceutical oils, books, lancets and other medical equipment. Many scholars link the beginning of concerted Japanese efforts to absorb Western medicine and technology (*rangaku*, 'Dutch Learning') to shōgun Tokugawa Yoshimune (1684-

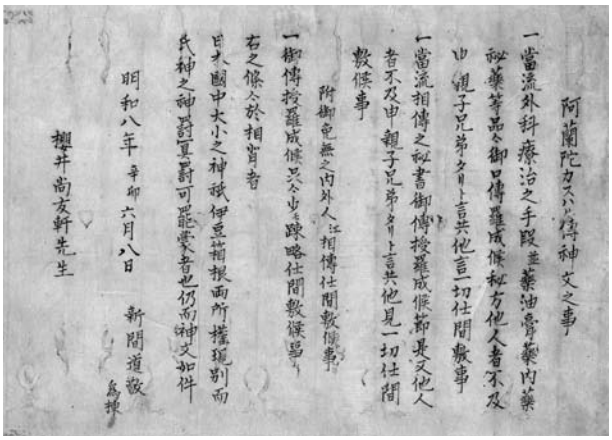

Figure 5 **Disciples solemn oath to keep the teachings of Caspar secret**

(*Oranda Kasuparu-den shinmon no koto*. Autograph, 1771. Collection of the author)

1751), pointing out his lifting of import restrictions on non-religious Western books, the imports of foreign medicinal materials and the promotion of domestic production of herbs and drugs between 1716 and 1736[7], but actually, books on nautical and medical matters were explicitly exempted from the list of banned import items as early as 1641[8], and official requests for herbal seeds and plants and instructions on pharmaceutical production methods and the necessary equipment were already being made during the reign of the fourth shōgun Ietsuna (1641-1681). In a country with only limited export commodities and insufficient natural resources, economic factors always played an important role. As the deliveries of expensive pharmaceutical oils, theriaca, mummies and other precious medicinal substances had to be bought with gold or silver, the search for local substitutes began almost immediately after Schamberger left the country.

In 1668 the Dutch were given a long list of luxury commodities such as certain textiles, musical instruments, clocks, animals, etc. that should not be brought to Japan. Only a few months before, the Company received a request from the Nagasaki governor, Kawano Gon'emon, who was leaving for Edo, and his co-governor Matsudaira Jinzaburō,

Figure 6 **Report on the medical properties of herbs found in the bay of Nagasaki by Godefried/Gottfried Haeck**

(*Rampō sōki nōdokushū*, manuscript copy, Edo-period. Collection of the author)

who was preparing to take over the office in Nagasaki[9]. During their audience with Daniel Six, the departing head of the trading post, and his successor, Constantin Ranst, they conveyed a message from Edo, carefully recorded in the trading-post diary:

> "An order was given to send to Japan a mature person, well versed and experienced in the extraction of oils and waters from various fresh medicinal herbs, together with the necessary instruments and a variety of young plants [...] This request for a distiller and herbalist, by order of the emperor and his senior councilors, has already been discussed at length in Edo and has been once again brought explicitly to our attention by the governors. Therefore, we are considering it very seriously and report it to the Governor General at Batavia[10]."

To meet the high expectations of the Japanese government, two German pharmacists, Godefried Haeck[11] and Franz Braun, were successively dispatched to Japan in 1669 and 1671, followed in 1674

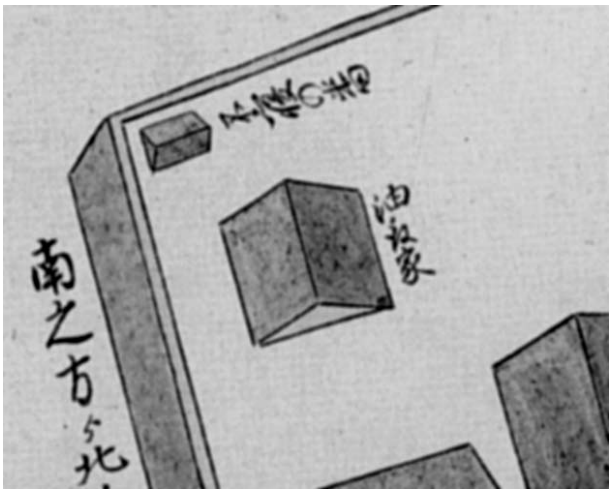

Figure 7 **Distillation hut pictured in a map of Dejima kept by the Motoki family of interpreters in Nagasaki.**

(Part of the pictorial collection *Shoga ezushū*. Nagasaki Museum of History and Culture)

by the Dutch physician and botanist Dr. Willem ten Rhijne. All of them gave extensive instructions on local and imported plants. Reports drawn up by the Japanese interpreters show Latin and Dutch names for various herbs, their botanical properties, information on growing techniques and their usage in medicine. Eventually some of Haeck's and Braun's reports found their way into printed books and became available to the general public.

The coinciding investigation of local plants in Nagasaki reveals that the authority of traditional Chinese botany in Japan (*honzōgaku*) had already begun to crumble. Clearly some Japanese were aware of the abundance of plants inside and outside Japan and the limits of the once almighty Chinese herbal book Bencao Gangmu. This occurred about four decades before Kaibara Ekiken (1630-1714) published his famous book 'Japanese Plants' (*Yamato Honzō*), a seminal work that led to him being named the 'father of Japanese botany'.

In the summer of 1671, Braun brought a European distillation unit and various vessels to Japan. At the shōgun's expense, a hut was built for

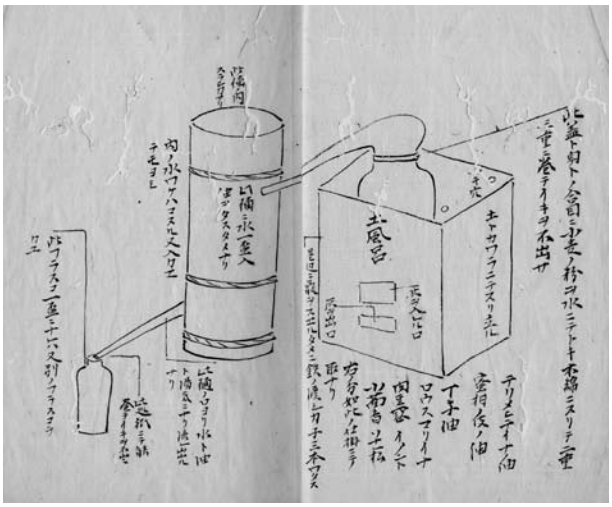

Figure 8 **Distillation apparatus used at Dejima in 1672**

(*Rampō hiketsu*, manuscript copy, Edo-period. Collection of the author)

him in a corner of the trading post, and in April 1672 he demonstrated the production of oils from fennel, aniseed, clove, rosemary, camphor and juniper berry in the presence of Japanese officials. These oils were presented to the imperial councillors and to the shōgun himself. Six Japanese interpreters translated the explanations given by Braun. They also sketched the oven, the vessels, the cooling pipes and barrel, etc. and even took measurements. After a month of instruction, Japanese physicians were able to produce clove oil and turpentine oil by themselves. The transfer of technical knowledge went smoothly. For about a decade, heads of the trading post left notes about the distillation performed at Dejima.

Andreas Cleyer, merchant and pioneer naturalist

While helping to introduce Western medical knowledge to Japan, the physicians at the trading post at Dejima did not ignore Japanese medicine. Until the early 19th century about 70% of European writings on Far Eastern Medicine were based on observations made in Japan and

Figure 9 **Japanese description of the "Persicaboom" (Prunus persica) based on Franz Braun's explanations**

(*Oranda sōka kyōzu*, illustrated scroll, 1674. Siebold Memorial Museum, Nagasaki)

materials collected there[12]. Western research on Japanese plants too has deep roots. Here the contributions of Andreas Cleyer (1634-1697/98[13]) and Engelbert Kaempfer (1651-1716) deserve a closer look.

Cleyer, a German physician who ran the two pharmacies and the herb garden in Batavia, had been responsible for the Company's internal supply of medicinal products since 1667. He took care of the Japanese orders for seeds and herbs, for the distillation equipment and for the dispatch of pharmacists to Nagasaki. Thus, the investigations of Japanese plants by his employees Haeck and Braun provided useful information for his own research on possible useful drugs[14]. A couple of years later Cleyer applied to be head of the trading post in Nagasaki. During his stays in Japan in 1682-83 and 1684-85 he and his German gardener George Meister (1653-1713) conducted intensive research

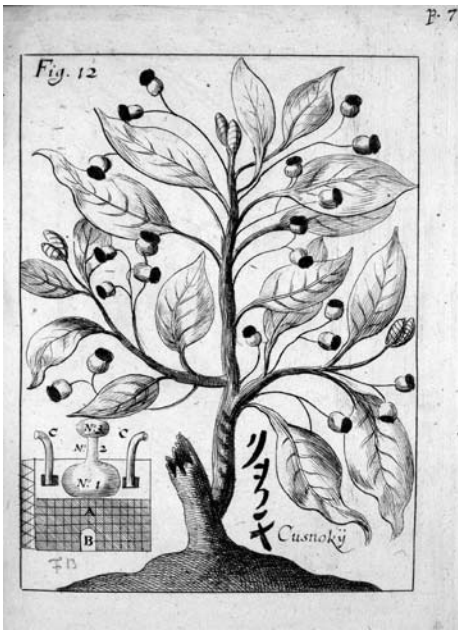

Figure 10 **Japanese Camphor tree (kusunoki) and a distillation apparatus to produce camphor depicted in Andreas Cleyer's "Observatio De Arbore Camphorifera Japonensium Kusnoky dicta" (1692).**

(*Miscellanea curiosa medico-physica*, Dec. II, Ann. X. Collection of the author)

on Japanese *materia medica*. Cleyer had become a member of the German *Academia Naturae Curiosorum* ('College of Those Inquisitive of Nature') in 1678 and since that time, he continuously sent letters, sketches, and botanical samples to scholars throughout Europe (Simon Paulli, Nicolaas Witsen, Jacob Breyn, Michael Bernhard Valentini etc.). One of his correspondents was Christian Mentzel (1622-1701), botanist and personal physician to the Elector of Brandenburg. Between 1683 and 1700 Mentzel translated and published 43 excerpts from Cleyer's letters together with numerous illustrations in the *Miscellanea Curiosa Medico-Physica*, a scientific journal dedicated to medical and natural science. Here we find the first Western illustrated articles on Japanese plants, moxa, ginseng, catechu (*Terra Japonica*) and ambergris. A set of 600 Japanese watercolours Cleyer had acquired in Japan and sent to Berlin was added to the Elector's collection, under the title *Flora*

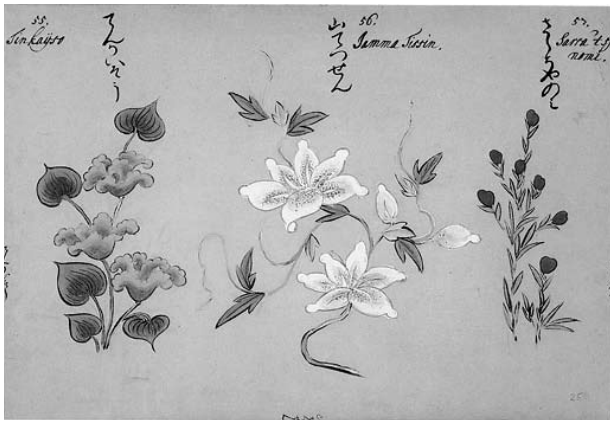

Figure 11 **Illustration made by a Japanese artist sent to the court in Berlin by Andreas Cleyer**

(Staatsbibliothek zu Berlin, Libri Picturati, A41/42)

Japonica[15].

Engelbert Kaempfer

In 1689 the German physician Engelbert Kaempfer (1651–1716) arrived in Batavia. While he was looking for his next position in the service of the East India Company, he stayed at Cleyer's house. Soon the small community of educated people in Batavia knew about his long journey from Sweden via Persia and India to the East and the materials he had collected during these years. As there was an urgent need for comprehensive, up-to-date data about Japan they drew Kaempfer's attention to the trading post in Nagasaki and to the scientific harvest he could gain by conducting comprehensive research into Japanese plants[16]. Before leaving for Nagasaki in the summer of 1689 he received careful instructions and a list of books, plant samples and objects to be collected in Japan. Among the travellers to Japan during the seventeenth century, Kaempfer was the most experienced observer, with a rich knowledge of non-European cultures that enabled him to make comparisons and to put things into a broader perspective.

And like many of his predecessors Kaempfer developed close relations

with Japanese counterparts interested in medicine and other Western scientific disciplines. Without his personal servant Imamura Gen'emon Eisei, and the trust and help of interpreters such as Narabayashi Chinzan or Bada Ichirōbei he would not have been able to carry out his plans.

As he had been told in Batavia, the Japanese officials did not like foreign research into their country – with one exception. Since the 1670s, plant collection was one of the few activities in which foreigners could participate with the consent of local officials.

> "I must own, that from the very first day of our setting out, till our return to Nagasaki, all the Japanese companions of our voyage, and particularly the Bugjo, or commander in chief, were extremely forward to communicate to me what uncommon plants they met with, together with their true names, characters and uses, which they diligently enquired into among the natives. The Japanese are a very reasonable and sensible People, and are themselves great lovers of plants and look upon Botany as a study both useful and innocent, which pursuant to the very dictates of reason and the law of nature, ought to be encouraged by every body[17]."

But for the East India Company as well as for the Japanese government officials, the study of potentially lucrative plants was anything but innocent. This common interest made botany one of those fields where Japanese and Europeans continued to cooperate until the reopening of the country.

The results of Kaempfer's research can be observed in two books. His German manuscript *Heutiges Japan* (Today's Japan) was published only after his death, in 1727, first in English as *The History of Japan*, later in Dutch, French and finally German. In contrast to the adventures and colourful narratives in 17th century travel books and missionary letters, most parts of Kaempfer's writings are well structured and

Figure 12 **Portrait of George Meister by Moritz Bodenehr in Meister's book *Der Orientalisch-Indianische Kunst- und Lust-Gärtner* (Dresden, 1692).**
(Collection of the author.)

focus on subjects such as geography, plants, animals, rulers, religious denominations, trade, etc.

Understandably, he presented some personal judgments too. Catholic authors used to condemn Japan's persecution of Christianity and the semi-closure of the archipelago. While admitting in principle that nations should develop in close interaction with one another, Kaempfer made an exception with Japan where, in his view, due to foreign threats, the closure of the country was inevitable, justified and possible. Kaempfer (wrongly) considered Japan to be economically self-sufficient and (compared to conflict ridden Europe) in a peaceful and harmonious state. Such statements spurred strong reactions among his readers, but thanks to his detailed and comprehensive descriptions Kaempfer's opus magnum dominated Europe's image of Japan throughout the Age of Enlightenment.

Kaempfer, second only to Siebold as the most prominent German in early modern Euro-Japanese intercourse, did not exert much influence on

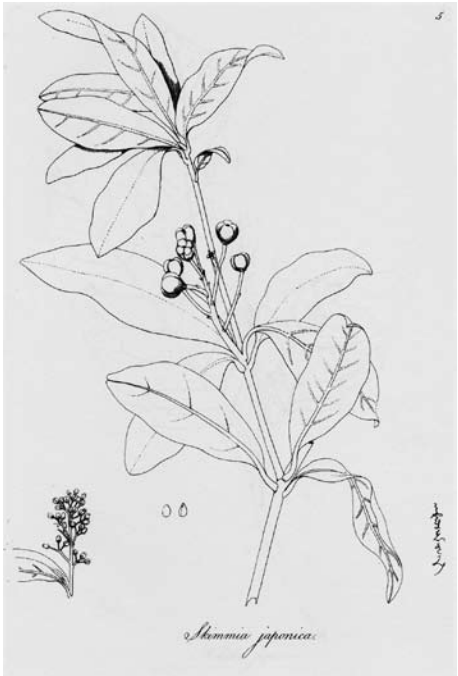

Figure 13 **Engelbert Kaempfer's sketch of *Skimmia japonica*. The Japanese name *Miyamashikimi* was written by one of Kaempfer's collaborators at Dejima**

(Joseph Banks: *Icones Selectae Plantarum quas in Japonia collegit et delineavit Engelbertus Kaempfer*. London: s. n., 1791. Facsimile Print, Deutsche Gesellschaft für Natur- und Völkerkunde Ostasiens (OAG), 1980.)

Japanese medicine. We know that he taught Western surgery to Japanese physicians, among them the eminent interpreter and scholar Narabayashi Chinzan (1649-1711), who is famous for his book 'Surgery of the Red-head Barbarians' (*Kō-i geka sōden*). But in contrast to Schamberger and many others trading post physicians, there are no Japanese manuscript sources showing traces of Kaempfer's medical teachings.

Kaempfer was deeply impressed by the 'softness' of Japanese medical therapies. His thoughts on this subject were first published in the first of his two books, *Amoenitates exoticae* (1712). This scholarly text provides medical, botanical, geographical and cultural observations on Persia, India, and Japan. Acupuncture and moxibustion are discussed in two chapters. Here he presents the translation of a Japanese 'Moxa-mirror'

(*Kyūsho kagami*), various treatment methods and instruments such as 'hammer-needling' (*dashin-hō*) and 'tube needles' (*kudabari/kanshin*) that were original Japanese inventions and not known in China. These two treatises provided the most detailed descriptions of acupuncture and moxibustion available at the time. Of similar importance is the fifth section (Fasciculus V), an extensive 'Flora Japonica' that served as one of the most authoritative dissertations on that subject for about a century.

Siebold's contribution to Japanese Western Studies and European Japanese Studies

After Napoleons's defeat and the Congress of Vienna (1814/15), the Dutch started to rebuild their country and reassess their overseas territories and trade relations. During this process Batavian governor-general Godert van der Capellen dispatched Philipp Balthasar Franz von

Figure 14 **Record of Siebold's Therapies written by one of his disciples.**

(*Shiiboruto kempōroku*, manuscript copy, Edo-period. Murakami Medical Archive, Nakatsu)

Siebold (1796-1866), a young German medical officer and ambitious naturalist, to Nagasaki. While taking care of his medical duties at the trading post, Siebold was entrusted with a comprehensive investigation of Japan's society and natural resources[18].

Enjoying full support from his superiors and considerable financial means Siebold gained the trust of the Japanese authorities and was allowed to establish a small medical station in the outskirts of Nagasaki. Here he treated patients free of charge and instructed Japanese disciples from all over the country. His medical activities can be observed in several manuscripts written by students such as 'Journal of Siebold's Therapies' (*Shiiboruto chiryō nikki*) or 'Recipes of Siebold' (*Shiiboruto shohō roku*)[19]. Siebold is often credited with the introduction of modern medicine to Japan, but according to these Japanese sources his therapies and medicaments were not much different from those of his predecessors. Having worked as a doctor for only one year after his graduation, Siebold's knowledge and experience were limited, and he himself was well aware of that[20].

But by giving instructions and medical help, Siebold developed close relations with his disciples and scholars all over Japan, and even sparked interest in his research among feudal lords such as Okudaira Masataka and the influential Shimazu Shigehide. Through this network, he managed to accumulate an unprecedented collection of natural specimens, books, woodblock prints, maps, coins, tools, everyday household goods, hand-crafted objects, models etc. As the lives and achievements of disciples such as Itō Keisuke (1803-1901) show, Siebold's way of collecting objects and information, of preparing specimens, of observing, analyzing and describing things had a lasting impact. And in combining medical and natural studies, he paved the way to modern medical education.

After his return to Europe, Siebold spent several decades writing and

publishing three books (*Nippon, Fauna Japonica* and *Flora Japonica*) that laid the foundations for modern Japanology and research on Japan's natural environment. His collection of items from Japan soon drew the attention of Europe's scholars and stimulated the establishment of a "Museum Japonicum", which proved that such ethnological collections can be more than just a mean to satisfy human curiosity. Siebold's second journey to Japan in 1858 was less successful. When he returned to Europe in 1862 his sons Alexander (1846-1911) and Heinrich (1852-1908) decided to stay in Japan. Like his father before him, Heinrich (Henry) became one of the pioneer collectors of Japanese ethnological items and antiquities. He and the American zoologist and orientalist Edward S. Morse (1838-1925) laid the foundations of modern archaelogy in Meiji-Japan.

At that time, Japanese Studies had become highly specialized, and researchers soon surpassed Siebold's *Nippon* on many topics. Nevertheless, Siebold's revolutionary approach to Japan, that included studies of Ezochi (present-day Hokkaidō), the kingdom of Ryūkyū (Okinawa) and Korea, has never lost its stimulating power, and even today his collections are studied by researchers from many disciplines of science and humanities.

Concluding remarks

Germans such as Schamberger, Braun, Cleyer, Kaempfer, and Siebold deserve a prominent place in the history of Euro-Japanese interactions, but events do not occur solely due to individual actions. Each of these Europeans had his Japanese counterpart. Without the foresight and initiative of powerful men such as the imperial inspector general Inoue Masashige and the Imperial counselor Inaba Masanori or curious intellectuals such as Imamura Gen'emon, Motoki Shōdayu, or Takahashi Kageyasu, these visitors to Japan would have made only modest

achievements at best.

Furthermore, in Edo-period Japan, with its insufficient natural resources and export commodities, the state of economy was always determining the course of foreign trade and policy.

One should also not forget the effects of coincidental happenings. Due to a heavy illness of shōgun Iemitsu in 1650, the Dutch special envoy and his entourage were forced to prolong their stay in Edo, thus setting the stage for close contacts between Schamberger and influential court officials. And if there had not been a typhoon in September 1828 that wrecked the Dutch vessel with Siebold's hidden treasures on board, there would not have been a 'Siebold incident' (in which he was expelled from Japan for possessing maps of Japan and Korea) with all its tragic and far-reaching consequences.

Policies change, they have their twists and turns. In the mid-17th century, the Tokugawa regime stood a the forefront when it came to the introduction of useful Western knowledge, but in the late 1830s, adherents of 'Dutch Studies' were brutally suppressed. During the reign of both shōgun Iemitsu and shōgun Ietsuna, the study of Western medicine and allied disciplines made great progress, whereas the same cannot be said about the reign of shōgun Tsunayoshi, although his era is famous as a high point of Edo period culture.

After shōgun Yoshimune ascended to power in 1716 the number of imported Western scientific books as well as the number of people who could read them grew steadily, but the amount and contents of information Japanese scholars were able to absorb conveyed only a tiny and sometimes outdated fraction of Western science. This was never enough to shake up Chinese studies (*kangaku*), which continued to dominate Japanese thinking. Even during the late Edo-period, it was very difficult for Japanese scholars to grasp the background and the dynamic unfolding of modern Western medicine.

Nevertheless, supported by a high level of education, a flourishing publishing industry and an environment of intellectual curiosity, over a course of about two centuries, Japanese physicians acquired knowledge of a great variety of treatment methods, an impressive amount of information on pharmaceuticals, a better understanding of human anatomy, and a basic lexicon of Western-style medical terminology. As most of this knowledge had spread even into rural areas, the ground was well prepared for the seeds that L. C. Pompe van Meerdervoort, Benjamin Karl Leopold Müller, Theodor Eduard Hoffmann and their successors were about to introduce.

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