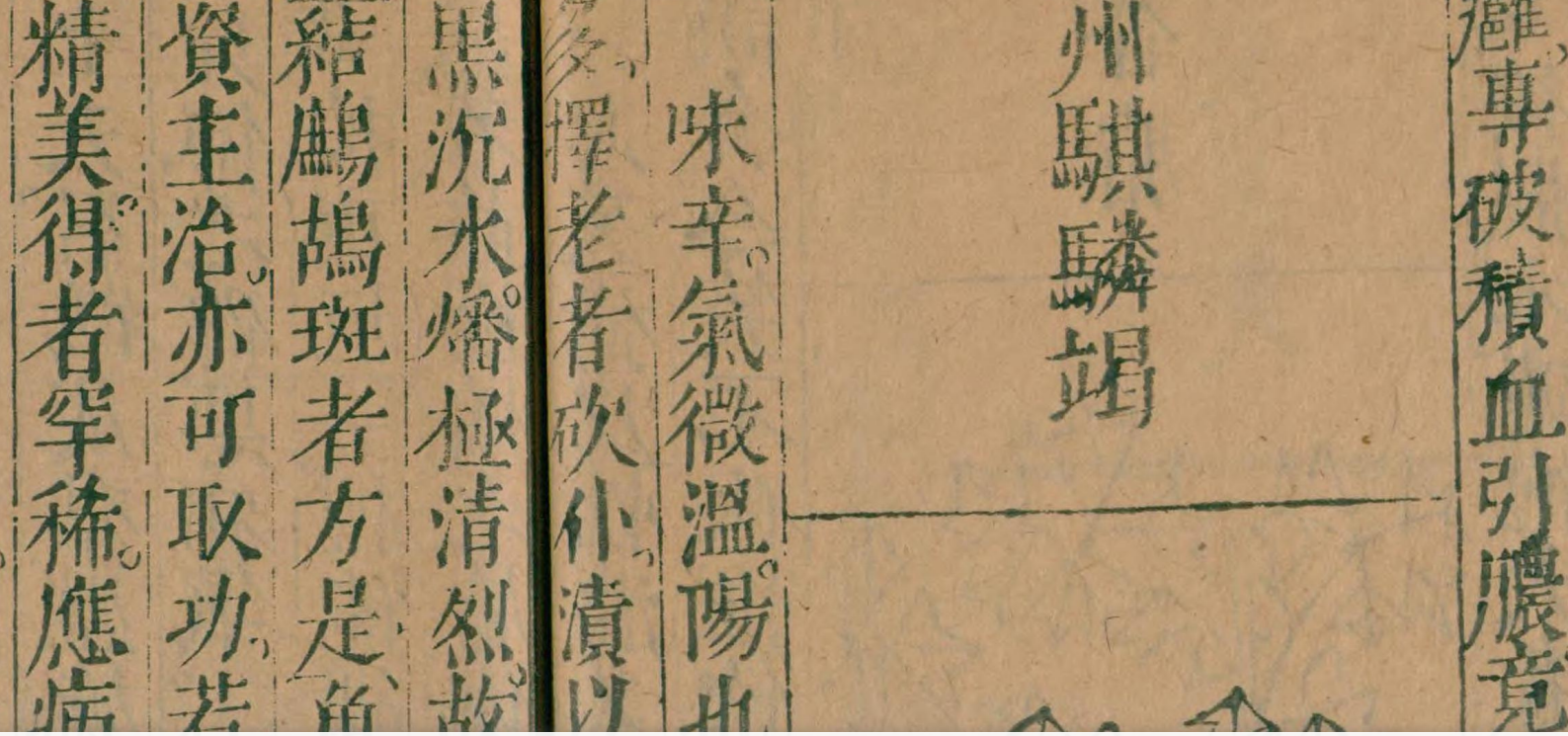

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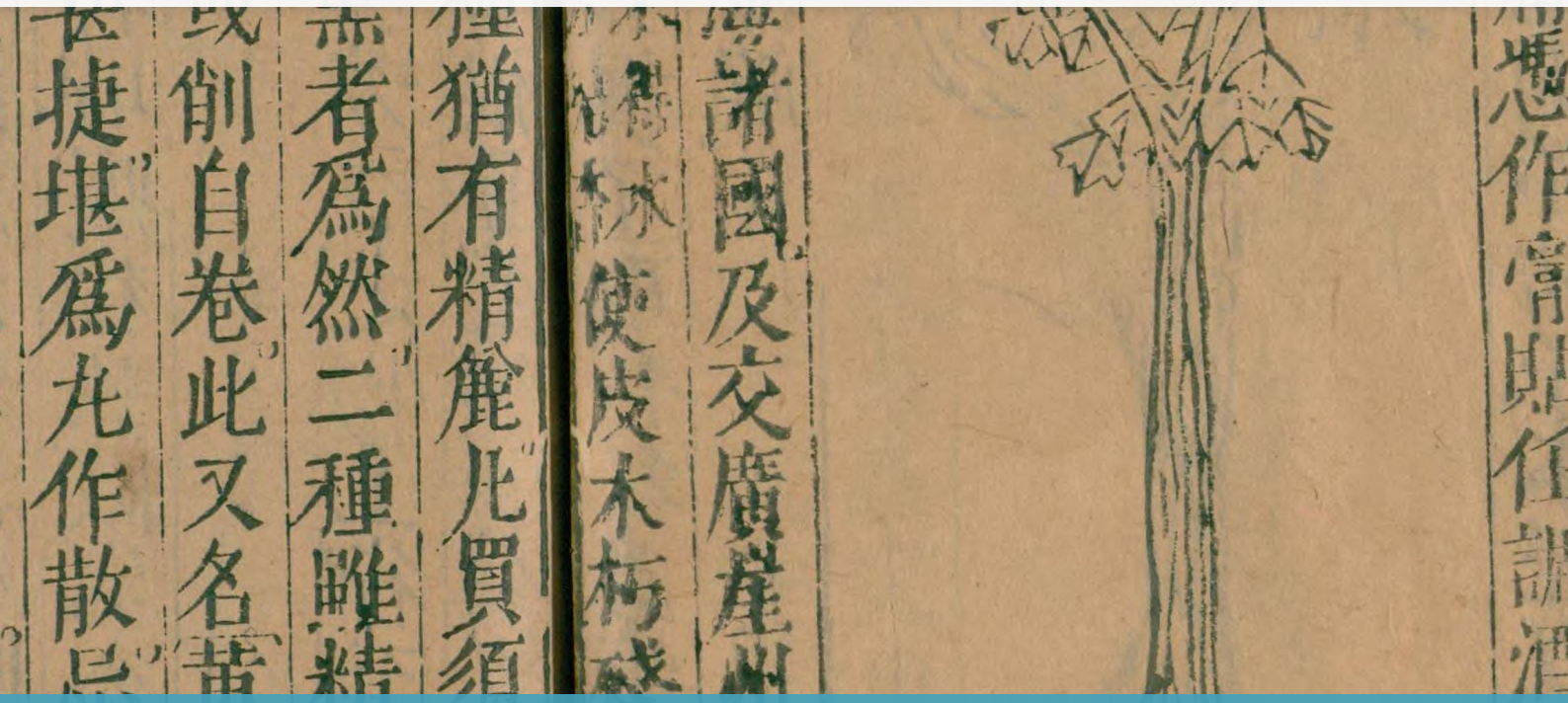

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'Dragon's blood', in *Tuxiang bencao mengquan* 圖像本草蒙筌 (1628), 4.34b, by Chen Jiamo 陳嘉謨 (1486–?) and edited Liu Kongdun 劉孔敦 (fl. 1628), in Jinling shulin wanjuan lou 金陵書林萬卷樓
https://dl.ndl.go.jp/pid/2606963

The Surgeon's Medicinal Chests in Zeelandia: A Concise Overview from the VOC Archival Sources*

Cheng Weichung

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Preface

In the mid-seventeenth century, about twenty years after the Dutch East India Company (Vereenigde Oostindische Compagnie, VOC) established a colony in Taiwan, the company opened up the sea routes in the east to Japan and in the west as far as Iran, whereby Taiwan became a logistics centre for the company's pan-Asian trade, with Fort Zeelandia as the Dutch VOC 'entrepôt'. In 1642, when the VOC opened up the sea route to Malacca, many ships were able to sail directly from Taiwan to India via Malacca rather than Batavia (present-day Jakarta). Batavia was founded by the Dutch in 1619 and thereupon served as the capital of the Dutch East Indies. Consequently, the trade between China and India, and at this time re-exported through Southeast Asian countries and seaports, was also transferred to Fort Zeelandia.

The exchange of medicines formed a significant aspect of the Dutch trade passing there. Since the end of the Tang Dynasty (618–907), exchanges between China and India had gradually shifted from land to sea routes. For example, putchock (*muxiang* 木香, Saussurea Costus), which grows on the Kashmir plateau, was exported as a medicine to improve digestion and cure stomach problems from Surat, India, and then re-exported to China and Japan through Taiwan.[1] The Chinese Radix China (*tufuling* 土茯苓, Smilax China) was also re-exported from Taiwan to various ports in the Indian Ocean, and has been sold to Iran and the Mediterranean region during the years when the VOC connected Taiwan to its trans-oceanic network (ca. 1642–1661).

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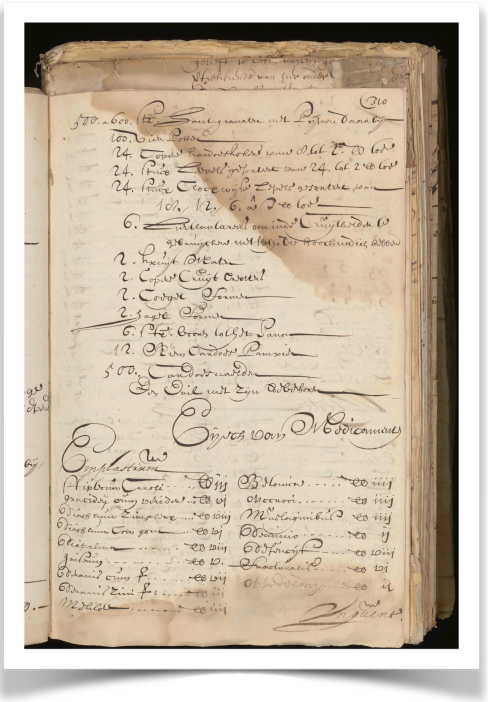
[1] A survey to disclose the medical effects of putchock documented in most Chinese Pharmacopoeia books is: Zhang Liyan 張麗豔, Liang Maoxin 梁茂新, "Muxiang chuantong he qianzai gongyong de kaocha fenxi" 木香傳統和潛在功用的考察分析, *CJTCMP*, 27:11 (2012), 2932-2933. A Scottish physician, John Dudgeon, visited China in 1870, he wrote in his observation of Chinese botanical herbal remedies about putchock: "Mu-hsiang (木香), stomachache and diarrhoea. See John Dudgeon, "Chinese Arts of Healing", *The Chinese Recorder and Missionary Journal* 2:12 (May 1870), 332-339.

Drug Supplement List in Fort Zeelandia

Although it seems that the Dutch authorities in Taiwan had establish a provisional clinic to accommodate ill soldiers during the 1630s, traces of surviving documents are scarce. Nevertheless, we can argue that there was a medical clinic to care for sick soldiers and sailors in the town of Zeelandia.[2] Presumably, the most common method of medical treatment there was for a doctor to write a prescription and give the proper medication. The surgeons (*chirurgen*, who performed all physical intervention from bloodletting to amputation) employed by the company were capable of performing operations, and were often keepers of the medicinal chests. Prior to employment, the company would test the medical officer's competence, the main test being to assess one's ability to utilise the medicine in the medicinal chest and to write prescriptions (see below).

FIGURES 1-4. VOC 1218, *Provisionelen eijsch* (1656), fols. 310r-312r.



As the Dutch East India Company (VOC) did not issue rules on medicine until after 1669 (see below), stipulating the basic contents of a surgeon's chest, little information on the chests survives in the VOC archives before this point. However, the Batavian list of

[2] One list concerning the distribution of rice mentions it. See VOC 1102, Notitie van de waere bevindinge wat aftreck ende Consumptie volgens de lopende boecken No.G van 't Comptoir Taijouan (30 Nov. 1630-30 Sept 1631), date unknown 1631, Taijouan, fol. 565. A more reliable account stated that a clinic located on Zeelandia town was dated in 1643. See: VOC 1141, Discoursz ende Corte rapport over eenige poincten concernerende den jegenwoordigen stant der Japanse, Chinese, Tonquinsche Commertie, insgelijcx ons gevoelen wegen de wegen de quinamse saecken, en hoe de Tonquinsche negotie bij vertieringe van eenige profitabile coopmanschappen in Europa soude connen verbetert en wijder uijtgebreijt worden, door Carel Hartzinck, Amsterdam, 26 Aug. 1643, fol. 365r.

medicines to be replenished by Amsterdam in 1651 listed 115 items.[3] Similarly, in 1656, the Taiwan authorities proposed to the Batavian authorities a list of 198 items of medicines to be replenished, which shows that there were at least 190 items of medicines in the medicinal chests of both places at that time.[4]

Medicinal Chests for the Company's Surgeons

Following the establishment of the Dutch East India Company, each branch had its own policy of self-government, while the use of medical personnel was also a matter of self-regulation. In the last years of the sixteenth century, when the Dutch were exploring the sea routes to East Asia, no standard operating procedures had yet been established, and when someone was injured or suffered from an epidemic, the crews of the ships often surrendered their lives to the gods, only to return to port without any hope of a full recovery.

The Dutch route to the East Indies was not steadily established until 1601, when the Dutch captain Olivier van Noort (1558–1627) successfully entered the Manila waters, attacked the Spanish garrison, completed his circumnavigation and returned smoothly to the port of Rotterdam. It was only thereafter that the municipal authorities began to recognise the importance of maritime medical services for the fleet.[5] However, during the early seventeenth

[3] VOC 1179B, Beschrijving Catalogus medicamenterum quae in officina Bataviensi deficiunt pro anno 1651, ongedateerd, Batavia,1651 date unknown, fols. 244r-245r.

[4] VOC 1218, Provisionelen eijsch van contanten coopmanschappen, provisien, ammonitie van oorloch ectra voor den jare 1657 met d' eerste besendinge vant hier van Batavia en elders gedaane voor Taijoan en Fomosas, Taijouan, date unknown 1656, fols. 306r-312r.

[5] A. E. Leuftink, *Chirurgijns Zee-Compas* (Baarn: Het Wereldvenster, 1963), 23.

century, the quality of surgeons who were willing to accompany the ships varied. In 1616, Governor General Pieter de Carpentier (1586–1659) complained: "The seventeenth Gentleman should understand that, God forbid, the whole fleet is under the care of a few useless surgeons. ..... God help those who fall into their hands ..... for they have no knowledge of the use of medicine."[6]

During the 1620s, the Dutch Admiralty began paying attention to the high mortality rate in the expeditionary fleet and, in light of the bitter experience of the Dutch conquest of the Portuguese colonies in South America, took the initiative to hold examinations for surgeons in several major cities. Since then, the standard of surgeons really improved. The key to this improvement was the use of licensing examinations to screen for qualifications, which required them to have a sufficient knowledge of pharmacology.[7] Such medical care gradually became an indispensable protocol for sea voyages, and the surgeons reported back to the pharmacists in Amsterdam on their observations of medical cases at sea, based on their experience in the East Indies.

According to Leufink, the *Chirurgijns Reysboeckje* was published around 1653 as a collection of useful remedies and prescriptions for other surgeons who went to sea, as a result of more than 30 years of accumulated Dutch maritime medical knowledge. The book was well received, and its author, Johannes Verbrugge (ca. 1633–1681), was made a commissioner for the medical examinations of Middelburg (the capital of Zeeland), which greatly accelerated the circulation of this kind of experience of medical practice at sea.[8]

Since medicine was the most basic means of treatment at that time, it can probably be surmised that medical chests were already a standard equipment for shipboard surgeons around the 1650s, and had to be carried on sea voyages. Long before the East India Company laid down rules requiring surgeons to carry medical chests, other seafaring vessels already carried them at sea. In 1588, William Clowes (ca. 1540–1604), a physician in the English Navy, published a handbook with an illustration describing the configuration of the surgeon's chest.[9] In the army command under the Dutch Prince Maurits van Oranje (1567–1625), the content of the chest in the hands of officially employed surgeons was standardised.

At that time, the content of such a chest usually contained about 250 items, including laxatives, herbs, flowers, seeds, syrups, honey mixtures, dried fruits, powders, oils, ointments, plasters, gums, cereals, chemicals, etc. By and large, herbs were kept in small bags or tin cans, while distilled potions or other fluids were kept in small glass jars which were

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[6] Leuftink, *Chirurgijns Zee-Compas*, 59.

[7] Leuftink, *Chirurgijns Zee-Compas*, 59.

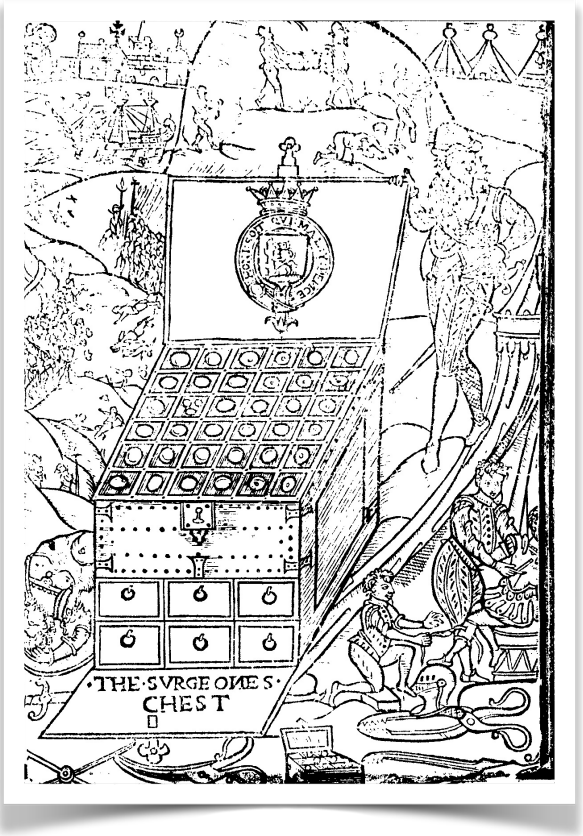
[8] Leuftink, *Chirurgijns Zee-Compas*, 60. There is no extant copy of this pamphlet. Since Johannes Verbrugge was admitted as a surgeon in Middelburg in 1653, Leuftink may have inferred that this is the earliest possible year the pamphlet could have started its publication.

[9] Leuftink, *Chirurgijns Zee-Compas*, 55. Leuftink assumed that the chest might have been standard equipment when William Clowes began his career as an army surgeon in 1563. The specific illustration was included in William Clowes, *A prooued practise for all young chirurgians, concerning burnings with gunpowder, and woundes made with gunshot, sword, halbard, pyke, launce, or such other wherein, is deliuered with all faithfulnesse, not onely the true receipts of such medicines as shall make them bolde, but also sundry familiar examples…* (London: Printed by Thomas Orwyn, for Thomas Cadman, 1588). Clowes was told to be "the father of English naval medicine".

placed in small wooden compartments lined with fabric and sealed airtight using pig skin for the lid seams.[10]

It was not until 1695 that the Dutch East India Company first required every ship to have a surgeon on board. It was in accordance with this requirement that the medicine chests became a standard equipment on every vessel. In practice, since 1666, the VOC had regularly purchased medicines from the Peter's Hospital pharmacy in Amsterdam, so that the surgeons could replenish their medicine chests according to the stipulated catalogue and the required amount of herbs per 100 men. Even the chest itself could be purchased from there. The smallest size, for 50 individuals, is 120 centimetres long, 60 centimetres wide and 70 centimetres high. Others, such as the 300-persons kit, are six times the size of the 50-persons kit.[11]

FIGURE 5. William Clowes, *A prooued practise for all young chirurgians* (1588)



Items in the Medical Chest

The contents of the medical chest remained largely unchanged from the sixteenth to the seventeenth centuries. The prescriptions, composed from a variety of ingredients, were based on the practical medical experience accumulated in Western Europe during the Middle Ages, and although the Galenic pharmacy provided a framework for the administration of medicine, the principles on which it relied were mostly not "scientific" enough by today's standards.

[10] Leuftink, *Chirurgijns Zee-Compas*, 55.

[11] Leuftink, *Chirurgijns Zee-Compas*, 55, 58.

The following is a brief description of the herbs and medicinals used in the medical chests of the time, based on the 1693-edition of the book *Chirurgyns Scheeps-kist*.[12]

FIGURE 6. Johannes Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist* (1693)

The book begins with a list of more than 200 herbs belonging to a typical medical chest, followed by a list of surgical instruments which a surgeon should have at hand. It then goes on to describe the overall functions of the medicines and instruments, as well as the prescriptions that should be administered in the face of common illnesses. During the seventeenth century, the most popular remedies used by medical doctors were not those that had to be prepared by doctors themselves, but were synthetic remedies which had already been prepared according to ancient prescriptions or by other doctors, which were quite similar to today's "ready-made medicines". Selected examples are:

- *Mithridatic ointment* (*Mithridas*): This ointment, said to be made from 65 ingredients, was invented by King Mithridates VI (BCE 120–63) of Asia Minor to remove all poisons. When the Romans defeated him, they obtained the remedy, which was improved by the physician of Emperor Nero (CE 37–68), Andromachus (CE 54–68), and favoured by the Roman Emperor Aurelius (CE 121–180), who used it frequently.[13] The book "*scheeps-kist*" says: "It can cure all headaches caused by colds, bad breath and nasal congestion. Testicular, ear, mouth, cheek and chin wounds, coughing, vomiting blood, weakness; mad dog bites, other animal poison

[12] Johannes Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist, sijnde een Catalogus ofte Lijste der Medicamenten, die yder Chirurgijn naer Oost-of West Indien gemeenlyk mede-voert* (Amsterdam: Jan ten Hoorn, 1693), 9.

[13] Joan Druett, *Rough Medicine: Surgeons at Sea in the Age of Sail* (New York: Routledge, 2000), 64.

wounds; malaria, can be sweetened and swallowed depending on the severity of the symptoms."[14]

- *Laudanum*: This ointment is said to be a medicine created by Paracelsus (1493–1541), a sixteenth-century alchemist, as an opiate.[15] The book "*scheeps-kist*" says: "Excellent for intolerable abdominal pains, other severe pains, dysentery, etc... It promotes sleep and relieves all pain."[16]
- *Unguentum Apostolorum*: A remedy created by the eleventh-century Iranian physician Avicenna (980–1037) using 12 ingredients. The twelve ingredients were: turpentine, wax, *Ammoniacum*, *Aristolochia* root, frankincense, chamomile, myrrh, *geponium*, sweet myrrh, *cuprizone*, *mitragynine* (lead monoxide), olive oil, and vinegar.[17] The book "*scheeps-kist*" says: "Used for old ulcers that have never healed, to purify wounds, soften poisons and digest them. Makes the old skin on scars come off as quickly as possible."[18]
- *Unguentum Aegyptiacum*: A combination of copper green, honey and vinegar.[19] The book "*scheeps-kist*" says: "Used in old ulcers and catarrh. It removes ulcerated flesh and heals the edges of wounds quickly. Mixed with honey and roses, it clears blood-stained ulcers".[20]
- *Unguentum Defensivum*: A combination of dragon's blood, Armenian bole (*bolus armenicus*, an earthy clay, usually red and native to Armenia but also found in other places), rose oil, vinegar, and wax.[21] The ointment was used to treat skin lesions and wounds. The book "*scheeps-kist*" says: "Used to ease and protect fastened limbs from fire or other hazards".[22]

The list of herbs in the book "*scheeps-kist*" includes herbs from South America and East Asia, in addition to herbs native to Europe. For example:

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[14] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 9.

[15] Druett, *Rough Medicine*, 65.

[16] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 9-10. Paracelsus, whose birth name was Theophrastus von Hohenheim, was a Swiss physician, alchemist, lay theologian, and philosopher of the German Renaissance.

[17] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 45. Avicenna, known in the West as Ibn Sina, was a preeminent philosopher and physician of the Muslim world.

[18] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 17.

[19] Druett, *Rough Medicine*, 70.

[20] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 17.

[21] See National Museum of American History, Behring Centre, Collection Health & Medicine, ID Number 1991.0664.0669, description of "Un Defensive", 18th-century. According to the *Bataviasche Apotheek. Waarin begreepen zyn zodanige enkelde en gecomponeerde geneesmiddelen als er in de hospitaals en stads apotheek zullen bewaart worden* (1746), by S. C. Kriel, J. E. Muller, J. C. Smellentin (Batavia: C. J. Weichberger, 1746), 194, *Unguentum Defensivum Coeruleum* contains, among other ingredients, olive oil and wax.

[22] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 17.

- *Sarsaparilla*: Used in the treatment of syphilis, as well as oedema, gout, and ulcers.[23]
- *Radix China*: Especially useful in the treatment of syphilis, gout, and ulcers. It can be used as an infusion or in other ways.[24]
- *Sanguis Draconis*: Used for coagulation, harmonisation, useful in any bleeding condition, also used in dysentery. Powdered from the surface for use.[25]

The *sarsaparilla* mentioned above was originally used by the indigenous people of Central America to make traditional beverages, and in the nineteenth century evolved into a soft drink for European immigrants known as "Sarsaparilla/*Sarsae*", which is still sold today in Taiwan's beverage market. Radix China was originally used in East Asia as a cure for syphilis, and was introduced to the Portuguese in Malacca, where it became popular in Europe in the sixteenth century. However, after the discovery of the more effective 'healing wood' (*Guaiacum*) in the Americas, Radix China was gradually relegated to a lesser therapeutic role. In the seventeenth century, Radix China became a widely accepted medicinal product in the Netherlands. Similarly, *Sanguis Draconis* (Latin for 'dragon's blood'), originally referred to a red resin obtained from various tropical and subtropical regions. In the fifteenth century, the Portuguese brought it back to Europe from the Canary Islands, specifically from the *Dracaena draco* tree. It likely became a regular ingredient in traditional Western medicine around that time. The substance mentioned here appears to be derived from *Daemonorops draco*, which grows in Malaya.[26] In addition to hiring fewer surgeons on board, the East India Company also sent well-educated doctors on duty in the larger garrisons. In Batavia, for example, a doctor, Jacobus Bontius (1592–1631), managed the company's hospital and apothecary. Bontius, who was stationed abroad, thus gained a lot of first-hand experience in dealing with Dutch injuries and illnesses abroad. His book *Oost en West Indische Warande* (Flora and Fauna of the East and West Indies) praised Radix China for its various uses. He believed that the biggest problem faced by the Dutch, when stationed permanently in East Asia, was "*beriberi*".[27] He pointed out that

> *There is no better remedy for this chronic disease than that made with Radix China, sarsaparilla, and healing wood, especially if laxatives are used. The most important of these herbs are aloe vera and Garcinia cambogia (Garcinia gummi-gutta). The disease can also be treated with Venetian remedies, such as mithridates, or other dehydrating, nerve-strengthening medicines. The difficult part of the cure is that it must be accompanied by regular physical rehabilitation, utilizing the restorative powers of nature.*[28]

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[23] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 21. It is Smilax regelii.

[24] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 21.

[25] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 21,30.

[26] "Dragon's Blood", *Columbia Electronic Encyclopedia* (6th Edition, Mar. 2021), 1. EBSCOhost, search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=134512320&site=ehost-live&scope=site.

[27] Mainly caused by a deficiency of vitamin B1, it was not until the early 20th century that the Dutch physician Christaan Eijkman identified the cause of the disease.

[28] Jacobs Bontius, *Oost en West Indische Warande* (Amsterdam: Jan ten Hoorn, 1694), 57

Besides, Radix China is also a remedy for oedema, jaundice and syphilis, all of which are common symptoms among Europeans in Asia.[29] Bontius commented:

> *Radix China is often mentioned and truly appreciated, and I can only add that this herb is not only used for syphilis, but for all chronic diseases. These are conditions that are quite common here, such as weight loss, lethargy, oedema, or what is known in East Indian medical experience as 'beriberi'. ..... Radix China is very effective for this. This is based on my own experience of suffering from this condition for four months, when I was unable to move my arms and legs before receiving this herb. There are many other examples of people who have suffered from this disease since then.*[30]

Maritime Asian Herbal Exchange

As mentioned earlier, Radix China was not among the 190-odd herbs that the authorities of the Zeelandia town requested from Batavia for replenishment in 1656. This was because Taijouan (the town of Zeelandia at Taiwan) was the most important trading port for the Dutch East India Company's purchase of Chinese medicines from China, such as Radix China. Since this root was supplied through Taiwan, there was certainly no need to ask the Batavian side to replenish it. The Radix China brought in by Xiamen merchants and re-exported from Taiwan was mostly supplied to the consumer markets of India and Iran. According to the records at that time, the annual quantity of Radix China shipped to Surat (India) between 1642 and 1662 ranged from 750 kg to 14,000 kg.[31] It can be imagined that every year after the fall, before the Dutch ships returned from Japan and docked in Taiwan, the warehouses in the Zeelandia fort were already full of Radix China to be shipped out in the season.

In the sixteenth century, the Portuguese not only introduced Radix China to Europe, but also brought it to many Indian Ocean ports. By the late sixteenth century, Radix China was gradually absorbed into the indigenous Ayurvedic medical tradition of India. Bhavamishra, the royal physician of Akbar the Great (r. 1556–1605) of the Mughal dynasty, explored the medical properties of Radix China, stating that it could be used to treat syphilis, and that it is "conductive of digestive fire and beneficial in Pains, Hysteria, Rheumatism, Insanity and pains in the body"[32]. Imported from India, it was also introduced to Iranian sicicans in the mid-sixteenth century. Imad al-Din Mahmud Shirazi (1515–1595), the royal physician of the Iranian Safavid dynasty (1501–1736), pointed out, in 1569, that Radix China could be prescribed as a treatment for syphilis. He asserted that Radix China "can cure malignant tumours, causeless fevers, depression, opium addiction, increase fertility, treat rheumatism,

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[29] Bontius, *Oost en West Indische Warande*, 86, 93.

[30] Bontius, *Oost en West Indische Warande*, 153. "Beri-beri" refers to a series symptoms resulted from insufficiency of vitamin B. A very brief account of how Dutch tropical medicine overcame this problem, see: Frans Hüsken, "Chapter 8: Who Invented Tropical Medicine? Eastern Origins or Western Discoveries?", Nordin Hussin ed., *The Easternization of the West:Europe meets Asia,* (Malaysia: University Publication Centre Universiti Teknologi MARA.Shah Alam, 2008), 163-176.

[31] Weichung Cheng, "Putchock of India and Radix China: Herbal Exchange around Maritime Asia via the VOC during the 17th and 18th Centuries", *Journal of Social Sciences and Philosophy* 30:1 (2018), 75-117, here 106.

[32] B. P. R. Perera, "A Study on the Plants Used as Chopachini", *Homeopathy & Ayurvedic Medicine* 3(4), 1-4.

alopecia, haemorrhoids, and skin diseases." His key assertion made Radix China a widely accepted panacea in seventeenth century Iran.[33]

The Zeelandia fort and town was not only an important port for the Dutch East India Company to purchase Chinese medicinals and to reexport them to India, but also an important transshipment point for the company's sale and supplying of Indian herbs and medicines to Xiamen. Every summer, ships from Batavia sailing to Taiwan also carried Indian herbs, such as putchock (*Saussurea Costus*), which were needed in China and Japan. Between 1642 and 1662, the annual shipments of putchock from India to Batavia ranged from 12,500 kg to 45,000 kg. Most of it was re-exported to Xiamen through Taiwan, while a few were re-exported to Nagasaki, Japan.[34] Putchock has been imported into China since the Liang Dynasty (502–557), mostly from India. Under the rule of Emperor Wu of the Liang Dynasty (502–549), the famous Daoist scholar and master, Tao Hongjing 陶宏景 (456–536), in the medical book *Bencaojing jizhu* 本草經集注 (Annotated Materia Medica Classic) claimed that "... now are imported from foreign boats, in Daquin 大秦 (usually referring to the Roman Empire) it was proved effective to eliminate swelling caused by poisoning."[35] In the Former Shu 蜀 kingdom (907–925) of the Five dynasties and Ten kingdoms, Li Xun 李珣 (ca. 855–930), specialising in overseas imports of medicinal drugs, also stated that it "grew in the Eastern Sea, in the Kunlun Mountains" in his *Haiyao bencao* 海藥本草 (Overseas Pharmacopoeia).[36]

In the official pharmacopoeia of the Song Dynasty (960–1279), *Taiping Huimin hojiju fang* 太平惠民和劑局方 (Prescriptions of the Imperial Pharmacy), the application of putchock has been abundant. For example, "putchock betel nut pill" has the effect of "promoting internal circulation, relaxing the chest, coughing up thick phlegm, reducing edema, helping digestion and eliminating constipation".[37] Until modern times, putchock was still an important ingredient in the famous Hong Kong "*Po Chai* [保濟] pills", which was used to treat abdominal pain and diarrhoea.[38]

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[33] Anna E. Winterbottom, "Of the China Root: A Case Study of the Early Modern Circulation of Materia Medica", *Social History of Medicine* 28:1 (2014), 22-44, here 29-32.

[34] Cheng, "Putchock of India and Radix China", 103.

[35] Tao Hongjing 陶宏景, Shang Zhijun 尚志均, Shang Yuansheng 尚元勝 et al. (eds.), *Bencao jing jizhu* 本草經集注, ca. 500 (Beijing: Beijing kexue jishu chubanshe, 2019), 148.

[36] Li Xun 李珣, Shang Zhijun 尚志均 (eds.), *Haiyao bencao* 海藥本草 (Beijing: Beijing renmin weisheng chubanshe, ca. 907–930, 1997), 14.

[37] Chen Qingping 陳慶平, *Taiping Huimin hojiju fang* 太平惠民和劑局方 (Beijing: Zhongguo zhongyiyao chubanshe, 1996), 91.

[38] For the history of the pill and its producer, see: Go Simon, *Hong Kong Apothecary: A Visual History of Chinese Medicine Packaging* (Hongkong: MCCM Creations, 2003), 186-187. For the ingredients and medical effects, see: " Medical Uses & Dosage", Hongkong Li Chung Shing Tong Po Chai Pills 香港李眾勝堂保濟丸, 2024, https://pochaipills.com/en/pro_MUD.asp. Accessed 16 Aug 2024. Although the website did not list the putchock as the pill's major ingredient, the British Royal Customs' investigation shows Po Chai pills did contain Putchock. See G. Cameron, S. Pendry, C. Allan and J. Wu, *Traditional Asian Medicine Identification Guide for Low Enforcers: Version II* (Cambridge, UK: Her Majesty's Customs and Excise, London and TRAFFIC International, 2004), 31, 110.

Putchock has long had a place in the Ayurvedic medical tradition of India, and has even spread to Iran and the Near East. Medieval European pharmacology was deeply influenced by Muslim medicine, and the aforementioned "Mitridatti ointment" includes the ingredient of putchock.

Because the VOC annually supplied Taiwan with large quantities of putchok for export purposes, there was no need to ask Batavia for a special supplement, as mentioned above. That is why putchock did not appear in the above-mentioned list of replenishment that was sent from Taiwan to Batavia in 1656.

In addition to putchock, other herbs listed in the 'Overseas Pharmacopoeia' were 'dragon's blood' (*qilin jie* 麒麟竭), corals (*shanhu* 珊瑚), nutmeg (*roudoukou* 肉荳寇), melilot (*lingling xiang* 零陵香), dill (*shiluo* 蒔蘿), rosemary (*miyi xiang* 迷迭香), amber (*hubo* 琥珀), agarwood (*chenxiang* 沉香), cloves (*dingxiang* 丁香), frankincense (*rutou xiang* 乳頭香), gamboge (*tenghuang* 藤黃), betel nuts (*binlang* 檳榔), benzoin (*anxi xiang* 安息香), borneol (*longnao* 龍腦), myrrh (*moyao* 沒藥), sappan wood (*sufang mu* 蘇方木) and pepper (*hujiao* 胡椒), as well as some others.[39] These are mostly medicinal herbs purchased by the Dutch East India Company from various parts of Southeast Asia, and then transported to Xiamen, China, via Taiwan. According to the *Dongxiyang kao* 東西洋考 (Authenticated Knowledge of the Eastern and Western Oceans), published in 1617, 'Dragon's blood' could be purchased at Banjarmasin, Jambi, Johor and Aceh.[40] Constantly, the VOC record shows that Batavian authorities shipped about 600 Dutch pounds (ca. 170 kg) of dragon's blood annually to Europe between 1631 to 1645, mostly purchased from Jambi.

Table 1: Dragon's blood exported by the VOC to Europe (Dutch pounds per book year)

Book Year	Dutch Pounds
1631/1632	610
1633/1634	660
1636/1637	358
1637/1638	858
1638/1639	743
1641/1642	(552)
1642/1643	642
1643/1644	(320)
1644/1645	585
1645/1646	671

Sources: Unpublished VOC Archives, VOC 1104.557v; 1107.113; 1116.50; 1112.303; 1131.299; 1142.335; 1144.6; 868.90; 1148.25; 1154.89. The numbers in the brackets estimated according to the amount dispatched to or received by Batavian authorities.

[39] Li Xun 李珣, Shang Zhijun 尚志均 (eds.), *Haiyao bencao* 海藥本草, 10, 27, 30, 33, 39, 40, 42, 41, 44, 53, 55, 58, 64.

[40] Zhang Xie 張燮, *Dongxiyang kao* 東西洋考, 1617 (Beijing: Zhonghua shuju, 1937), 36, 50, 54.

Unfortunately, as for Taiwan, only two entries of records show the amount shipped from Jambi in 1638 and 1641:

Table 2: Dragon's Blood Exported by the VOC to Taiwan (Dutch Pound per Book Year)

Book Year	Dutch Pounds
1638/1639	1200
1641/1642	163

Source: Unpublished VOC Archives, VOC 1131:299; 424; 751; 1140:277.

FIGURE 7. 'Dragon's blood', in*Tuxiang bencao mengquan* 圖像本草蒙筌 (1628), 4.34b
https://dl.ndl.go.jp/pid/2555695/1/38

The supply of dragon's blood reached 1,200 Dutch pounds in Taiwan and was probably sold out after the winter of 1640. Therefore, the Batavian authorities asked the Factory in Jambi to secure 100 piculs (12,200 Dutch pounds) of it in 1641. This quantity is about ten times larger than the amount sold in Taiwan in 1640.[41] The reason for this high demand was probably that

[41] VOC 865, Missive aenden opper Coopman Henrick van Gent in Jambij, Batavia, 11 June 1641, fol. 192.

in 1640 the Chinese Emperor had banned Chinese junks from visiting Southeast Asia and the factory in Jambi should substitute the amount supplied by the Chinese junks.[42]

After the end of 1640s, the VOC did not only not export dragon's blood back to Europe, there are also scant records of its export to China either. The VOC probably withdrew this medical herb from the Chinese market, because Chinese junks expanded their business in Southeast Asia at the time, and their advantages in the profit margin were reduced.[43] However, at present, the author is not yet able to find the definite reason behind this withdrawal.

From the above examples, it can clearly be demonstrated that during the heyday of commercial trade in Zeelandia town, a great variety and quantity of herbs and medicinals from China, Southeast Asia, Europe, and India was exchanged, and Zeelandia on Taiwan undoubtedly ranked among the top of the world's herbal trade centres during this brief period.

The Ministry and Medicine

Not much can be deduced about the storage and application of the herbs from the surviving data. However, in the summer of 1641, Batavia ordered a considerable amount of "violet syrup" from Rev. Robertus Junius (1606–1655), who was stationed in Taiwan, to supplement the needs of Batavian pharmacies. The order reads as follows:

Violet syrup 30 Dutch pounds.
Violet Flower 60 Dutch pounds.
Dried Violet Flower 20 Dutch pounds.
Galangal 20 Dutch pounds
Plantain herb water 30 Dutch pounds.[44]

According to the eighteenth-century London Pharmacopoeia, "violet syrup" was made as follows: "Take of Violet flowers fresh and picked, a pound; clear water made boiling, two pound: shut them up close together in a new glazed Pot a whole day, then press them hard out, and in two pound of the Liquor dissolve 4 pound and three ounces of white Sugar, take away the scum, and make it into a Syrup without boiling. Syrup of the juice of Violets is made with its double weight of Sugar, like the former."[45] Another book describes its effects: "Sirupe of violets doth break the acrimony of melancholy, tempereth the heat of the bowels,

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[42] VOC 1135, *Originele generale missives*, Batavia , 12 Dec.1641, fol. 81. It seems that the number of Chinese junks sailing abroad was greatly reduced in the spring of 1641.

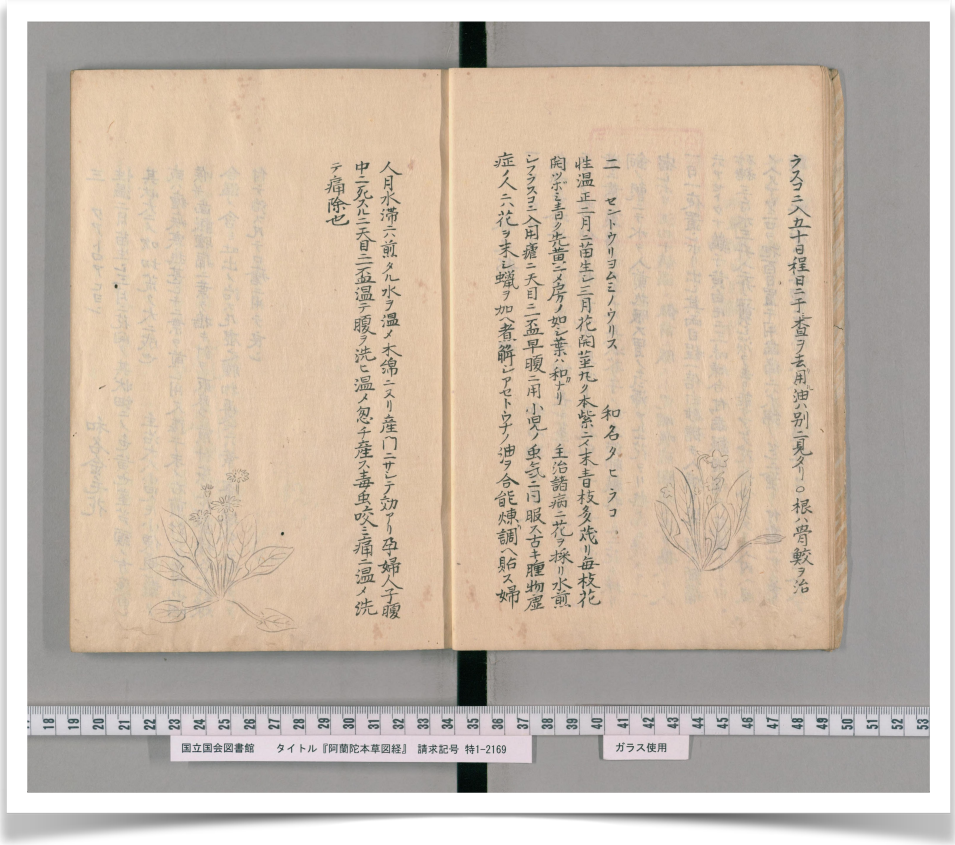
[43] In 1656, for example, 52 Chinese junks visited Nagasaki and brought 500 catties of 'dragon's blood' there. See VOC 1219, Sommarium van de Coopmanschappen die door de Chinesen met 52 Joncken van d'onderstaende gewesten zedert primo Februarij tot 25: Augustij 1656 in Nangasacqui vervolgens ter marckt gebracht ende vercocht zijn, Nagasaki, 25 Aug 1656, fol. 626v.

[44] VOC 865, Missive van Batavia [van Anthonio van Diemen] naer Taijouan aen den gouverneur Paulus Traudenius, per de fluyten Gulde Buijs en Castricum geschreven, Batavia, 26 June 1641, fol. 213.

[45] Nicholas Culpeper, *Pharmacopœia Londinensis: or the London dispensatory further adorned by the studies and collections of the Fellows, now living of the said College, etc.* (Boston: Printed by John Allen, for Nicholas Boone, 1720), 108.

bringeth down the belly by purging it, helpeth the diseases of the throat, as hoarsenesse, and the dry cough, and is a chief aide to the curing inflammations of the breast, against the plurisie, and quencheth thirst in fevers, and is cordial."[46]

FIGURE 8. 'Violet flower', in *Oranda honzō zukyō* 阿蘭陀本草図経 (1709)
National Diet Library



Taiwan's native medicinal violet is known as *Viola Philippica*, which grows in mountainous areas up to 2,000 meters above sea level. If Rev. Junius was able to fulfil the order in Taiwan, he must have received help from the indigenous people to obtain this raw material from the high mountains. It is also possible that he transplanted the violets from other places to Taiwan (perhaps the violets bloomed in the flatlands during the cooler temperatures of the Little Ice Age). In the aforementioned book "*scheeps-kist*", although "violet syrup" is included in the list of medicines, it is not listed as a major ingredient in the medicine chest, but rather as a minor, auxiliary ingredient.[47] As for the "Plantain potion", the "*scheep-kist*" says that it is "cooling and purifying, and is effective in treating eye diseases".[48] Since plantain (*Plantago asiatica L.*) grows all over Taiwan, it should not be difficult to obtain.

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[46] John Woodall, *The Surgeons Mate or Military & Domestique Surgery* (London: John Legate, 1655), 54.

[47] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 90.

[48] Verbrugge, *De Nieuwe Verbeterde Chirurgyns Scheeps-kist*, 13.

At about the same time that Rev. Junius received the aforementioned order for medicinal products, the company's authorities were already investigating which herbs could be obtained directly from Taiwan.[49]

FIGURE 9. 'Plantain', in *Oranda honzō zukyō* 阿蘭陀本草図経 (1709)
National Diet Library

In 1645, it was reported to the Batavian authorities that absinthe (*Absinthe, Gemeine/ Roomsche Alssen*), white marshmallow (*Malve, Witten Heemst*), dry cress (*Juffrouwmerk, Selderij*), and field scabious (*Betonie*) were already available in Taiwan and were of good quality. All of the above herbs are frequently listed in the basic catalogue of western medical chests. At the same time, the Taiwan authorities also suggested importing and transplanting some medicinal herbs to Taiwan, such as bugloss (*Ossentonge, Echium Vulgare*), pennyroyal (*Polei ,Poleye*), castor-oil plant (*Wonderboom*), rough horsetail (*Paerdestaert , Paerdestaert*), fennel (*Venkel*) and dill (*Dille*), kencur (*Galiga*), marshmallow (*Malve*), majoram (*Fijne Marjolein*), german chamomile (*Moeder-kruid*), costmary (*Munte*), catnip (*Kattekruid*), rue(*Wijnruit*), Spanish thyme (*Wilde Zygis*), field pennycress(*Luijcruijt*), various species of violets and Virginia creeper (*Wilde-wingard*), and many more.[50]

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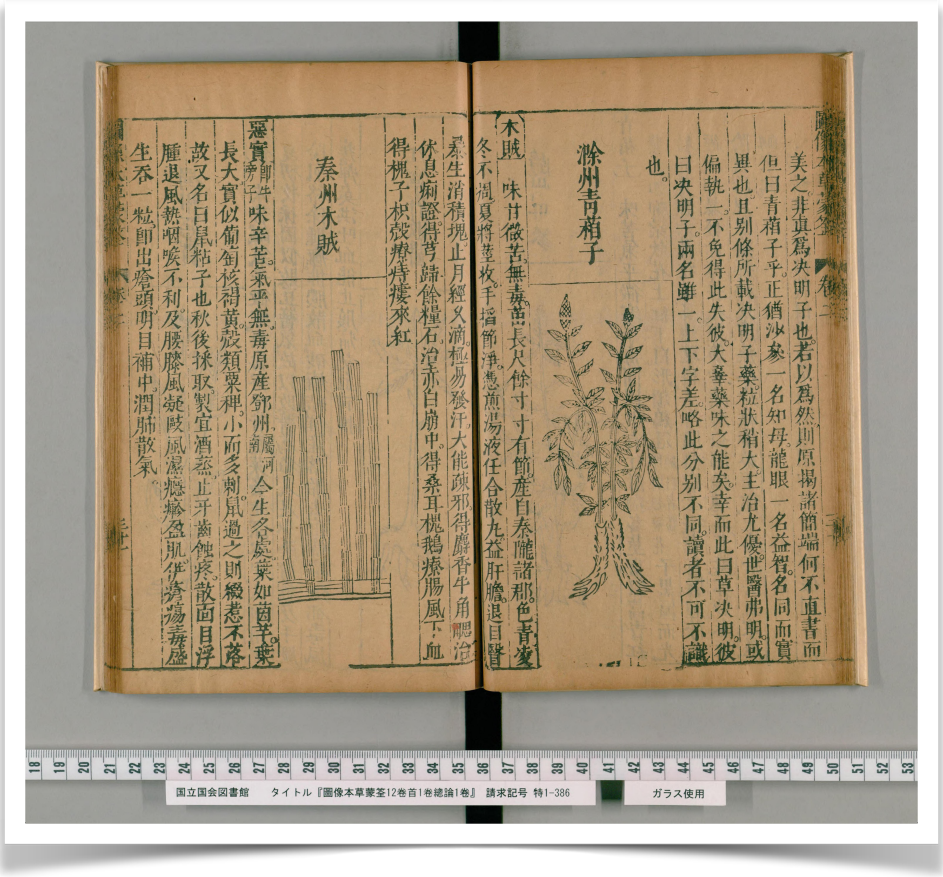
[49] Nakamura Takashi 中村孝志, *Helan shidai Taiwan shi yanjiu shangjuan* 荷蘭時代臺灣史研究上卷 (Taipei: Daoxiang, 1997), 45.

[50] Prof. Nakamura Takashi, who had not considered that the Dutch were looking for herbs for Western medicine chests according to a routine list, misread the records and thought that the list referred to the species existing in Taiwan at that time.

In the above list of suggested plants for transplantation, besides the common herbs and spices used in the Netherlands, there are also economic herbs such as *galangal* (*kencur,* see later), which have been discovered in nearby countries and were considered suitable of being transplanted into Taiwan's environment. Judging from the aforementioned order from Batavia to Rev. Junius, the transplantation of galangal and violets probably started a while ago.

FIGURE 10: 'Horsetail', in *Tuxiang bencao mengquan* 圖像本草蒙筌 (1628), 3.30b
National Diet Library



However, due to the scarcity of historical materials, it is difficult to tell whether these plants were cultivated in Zeelandia town, the Sakkam area where Fort Provintia was located, or among the tribes of the indigenous people. Considering the demand for syrup, the quantity of violets planted by Junius could not have been more than a few, but at least as much as a small flower garden could supply. In October 1643, the catalogue of the Church's book collection sent from Taiwan to Batavia included two "*Medecijn boecken*" (Books on Medicinal Herbs). This shows that the church staff was somewhat involved in medical practice at that time.[51]

In the aforementioned order for medicines from Rev. Junius, we read about plantain herbal potion. This herb was also recorded as "*cheqian cao*" 車前草 in *Taiwan fuzhi* 臺灣府志 (Local Gazetteer of Taiwan Prefecture), compiled by Jiang Yuying 蔣毓英 (in office ca.

[51] VOC 1146, Catalogus van de Kerckelijcke boecken in Taijouan, Taijouan, 4 October 1643, fol. 586v.

1679–1692) in 1685.[52] In this gazetteer, also mugwort (*Artemisia argyi*, *ai* 艾 which is very similar to absinthe) and galangal (*Zingiber kawagoii Hayata, Sannai* 三奈 which is usually referred as a kind of galangal) are mentioned.[53] Hollyhock (*Alcea rosea*) is documented as *Yizhang hong* 一丈紅, which can be referred to marshmallow in the version of *Taiwan fuzhi* compiled in 1695.[54] In the two above-mentioned books, dry cress is mentioned as *chiqin* 赤芹.[55]

FIGURE 11: 'Malve', in *Tuxiang bencao mengquan* 圖像本草蒙筌 (1628), 3.44b
National Diet Library

There is no record of field scabious in any of the gazetteers, but the chemical composition and therapeutic effect of *yimucao* 益母草 (*Leonurus artemisia*) in Jiang's *Taiwan fuzhi* is similar to that of field scabious, and it may have been mistaken by the Dutch for a similar plant.[56]

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[52] Jiang Yuying 蔣毓英, *Taiwan fuzhi* 臺灣府志 (Beijing: Zhonghua shuju, 1685/1985), 82.

[53] Jiang Yuying, *Taiwan fuzhi*, 77, 82.

[54] Gao Gongqian 高拱乾, *Taiwan fuzhi* 臺灣府志, 1695 (Taipei: Taiwan yinghang jingji yanjiu shi, 1960), 202.

[55] Jiang Yuying, *Taiwan fuzhi*, 72; Gao Gongqian, *Taiwan fuzhi* 臺灣府志, 199. The author assume it is *Lepidium virginicum Linn*.

[56] Jiang Yuying, *Taiwan fuzhi*, 77; 82.

In the list of plants suggested to be transplanted from elsewhere to Taiwan, castor (*Ricinus communis*) was recorded in Jiang's *Taiwan fuzhi* as *beimazi* 蓖麻子.[57] Rough horsetail (*Equisetum hyemale*) can also be found and is written as *muze cao* 木賊草.[58] Hence these herbs were probably successfully planted at the time. Dill (*Anethum graveolens*) is not found in any eighteenth-century gazetteers, but was recorded as early as in the Overseas Pharmacopoeia (as mentioned above), so it may not have been successfully planted. Virginia creeper (*Parthenocissus quinquefolia*) was not found at the time of the survey and was therefore listed as a plant that should have been introduced, although it was a native plant – probably because a similar native plant, thicket creeper (*Parthenocissus inserta*), was not known to the Dutch, or perhaps because it was known under a different name at that time. An alternative explanation is that the so-called "introduction" was only a matter of directing the plant to the company's garden beds. Given that the medicinal effect of Virginia creeper is to promote lactation, the so-called 'milkweed' (*rucao* 乳草), recorded in Jiang's *Taiwan fuzhi* may actually have referred to Virginia creeper, as the *fuzhi* documented its effects in promoting lactation. On the other hand, the plant *Asclepias syriaca*, which is now called *rucao* 乳草 in Taiwan, does not have this therapeutic effect and can, thus, not be the same '*rucao*' as referred to in *Taiwan fuzhi*. In other words, the Chinese term '*rucao*' is identical to two different plants, depending on the century we are talking about.

Conclusion

This article provides a concise overview of the herbal knowledge documented in the archival records left behind by the Dutch East India Company (VOC) during its rule of Taiwan. Taiwan served as a trading hub for the Company's trade with China, facilitating the exchange of goods from outside China in return for exotic Chinese products. Herbs were regarded by the company authorities as both practical and beneficial. Given the fact that the Company's personnel was stationed in a foreign country, it was crucial for the authorities to ensure their members wellbeing by providing appropriate medicines. Furthermore, herbs obtained through long-distance exchanges were also often profitable for the Company. From a practical health policy point of view, the information on the supply of herbs by the Company is mainly related to the medical kits it equipped. From a commodity point of view, a few herbs offered the opportunity to make significant profit. In Taiwan, operating herb exchanges between China and India was more in line with the Company's shipping strengths. In contrast, the exchange of herbs and medicinal drugs between China and Southeast Asia faced the competition from Chinese merchant ships. The Company's authorities were consequently not able to dominate the Southeast Asian trade in medicinal drugs. European medicines did not appear to have caught the attention of the Chinese market, and no Western European medicines have been imported into China. The examples provided above indicate that the Company did not actively engage in the herbs trade during the period when the Dutch established a trading post in Taiwan. Nevertheless, for a very short period of time, the town of Zeelandia was a place where medicines from all over the world could have passed through.

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[57] Jiang Yuying, *Taiwan fuzhi*, 78.

[58] Jiang Yuying, *Taiwan fuzhi*, 77.

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