

# The Tokugawa Bakufu's Policies for the National Production of Medicines and Dodonaeus' 'Cruijdeboeck'

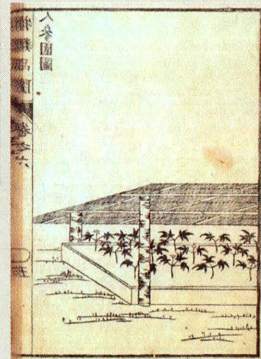
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THE TOKUGAWA BAKUFU'S POLICIES  
FOR THE NATIONAL PRODUCTION  
OF MEDICINES AND DODONÆUS'  
CRUIJDEBOECK

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## INTRODUCTION

Today the name of Dodoens has been all but forgotten in the West, but before Linnaeus founded the modern science of botany, he was considered a leading authority in the field of botany in Europe. The book he compiled under the title *Cruijdeboeck* was one of the best-known repositories of botanical information of his era. This important text was introduced in Japan by the Dutch traders in Nagasaki around the middle of the seventeenth century, and it was offered in tribute to the Shogun at that time. However, none of his subjects took interest in this book, written as it was in strange Western characters nobody could read or understand. Consequently, the book was put away in a Bakufu storeroom, where it gathered dust for many years. It was around 1740 that the book was rediscovered by the eighth Shogun, Tokugawa Yoshimune (1684-1751, reigned 1716-1745). I would like to start by explaining the background to this “rediscovery.”

### I SOCIETY IN THE GENROKU AND KYÔHÔ ERAS

元禄 The last decades of the seventeenth century, commonly referred to as the *Genroku* period (1688-1703), witnessed an enormous growth in production and trade. This led to a blooming mercantile economy, which pervaded throughout the whole of society, both in urban as well as rural areas. This had an enormous impact on society in many ways and brought about many changes. The cultivation of cash crops stimulated the growth of a market economy in which competition and profit became ever more compelling motives. At the level of the cultivators, the gap between rich and poor widened spectacularly. At one extreme were parasitic landlords and wealthy peasants who monopolised resources and farming land. At the other extreme were increasing

numbers of people who pawned their lands and became indebted to local landlords, or sought employment with wealthy farmers and merchants as indentured servants, or left for other lands and to the cities in search of employment.

All of these circumstances brought about structural changes on Japanese society. Social strains and turbulence developed in both urban and rural areas. Administrative and judicial responses to these unfamiliar problems became focal points of concern. The city of Edo expanded spectacularly in the seventeenth century, and in the *Kyôhô* period the population grew from 700,000 to one million. Due to the system of alternate attendance (*sankin kôtai*), *daimyô* and the retainers in their service came from throughout the country to live in Edo. To cater to the varied and voracious demands of the samurai, merchants, craftsmen, and day labourers, carpenters and workers in the building trade, grew steadily in number, and made their home in one of the wards of Edo. Further exacerbating the population problem were the impoverished farmers, who under increasing pressure from wealthy landowners, left their lands behind and flocked to Edo.

江戸  
享保

参勤交代

## II CURRENCY REFORMS AND THE NAGASAKI TRADE

In the *Genroku* period, the Bakufu devalued the gold and silver currencies at the order of the fifth Shogun, Tokugawa Tsunayoshi (1646-1709, reigned 1680-1709). Decreasing the amount of gold and silver in the coinage was originally intended to reap profits from re-minting the currency and thus make up for the deficits in the Bakufu treasury. Re-minting was also meant to boost the supply of currency in order to offset the increasing demands for currency in connection with the upsurge in trade at that time. However, the simple act of devaluing the currency proved to be a strong temptation in the light of the short-term windfalls it brought, and it was difficult to stop the practice. Enacted as these measures were without consideration for the economic needs of society, the result of the continued devaluation of the currency was outright inflation. The trading system lapsed into a state of dangerous confusion.

徳川綱吉

The resolution of the currency problem was one of the most important achievements of Yoshimune's reign. Even if the Bakufu succeeded in stabilising the amount of precious metal in the coinage at a fixed level and thereby staunch inflation, the demand for currency had



increased due to the development of trade and the commercialisation of society. At the beginning of the early modern period, Japan had been a leading country in terms of output of silver and gold. By the *Genroku* era, however, the output of its mines had dropped, and the enormous amounts of gold and silver that had already been mined were being drained out of the country through the port of Nagasaki into the foreign trade circuit.

In brief, the countrywide currency and economic crisis was linked to the issue of foreign trade. The initial measures that were taken to stop the outflow of currency from the country were reactive restrictions on trade. Later on, the focus of the efforts shifted to producing locally in Japan those goods that used to be imported, and proactive measures were enacted to systematically encourage domestic production. These measures were comparable to those that were enacted in the West with a view to promoting domestic production, a process that marked the shift from bullionism to mercantilism. In the West political and economic developments went hand in hand in a process that promoted and sped up modernisation. In eighteenth century Japan, the government of the eighth Shogun Yoshimune carried out similar policies, which proved to play a key role in Japan's modernisation in the political, economic and cultural fields. One of the most important of these policies was the long-term effort to produce medicinal plants in Japan.

### III ARAI HAKUSEKI'S ECONOMIC POLICY LINE

新井白石      Actually Yoshimune inherited these policies from Arai Hakuseki  
 徳川家宣      (1657-1725), the brain and *de facto* policy maker during the reign  
 荻原重秀      of the preceding Shogun, Ienobu (1663-1712, reigned 1709-1712).  
 正徳新例      Hakuseki fiercely opposed the policy of coinage debasement pursued  
                          by the senior councillor Ogihara Shigehide (1658-1713) in the late sev-  
                          enteenth century.<sup>1</sup> In order to stabilise the economic order, he advoca-  
                          ted the restoration of the currency standard. Keenly feeling the need  
                          to maintain adequate stocks of bullion, he enforced new rules for trade  
                          known as the *Shôtoku shinrei* ('New regulations of the *Shôtoku* era')  
                          in an effort to regulate and control the trade volume in the port of  
                          Nagasaki. In a further step Hakuseki laid out plans for import substitu-  
                          tion and stimulated the development of domestic production, replac-  
                          ing for instance imported raw silk by domestic produce. In addition he  
                          conceived the plan to substitute imported medicinal drugs, including  
                          ginseng, sugar and other imports by domestic production.<sup>2</sup>



Particularly noteworthy in Hakuseki's policies is the fact that they were aimed at promoting the interest and wealth of the whole country. This was a totally new concept, a radical departure from the customary Bakufu-centred approach. In Hakuseki's view the Bakufu policies were not just for the benefit of the Bakufu itself, but they had to serve a public purpose, i.e., the stability and welfare of the whole society. This concern is manifest in his monetary policy, which did not begrudge the expenditure of 130,000 *kan-me* (ca. 500,000 kg) of silver from the Bakufu's treasury in order to restore the currency debased by Ogihara.<sup>3</sup>

貫目

At the outset Hakuseki's economic policy views were inspired by the idea that the wealth of a nation lies in its gold and silver holdings, in other words by bullionism.<sup>4</sup> However, as he deepened his reflection he gradually reached the insight that the wealth of a nation lies in its economic products, such as raw silk, medicinal drugs, sugar and the like and he shifted his objectives towards their development. Hakuseki's political views were promising, but his power was short-lived, and he was forced to retire from the political stage before he could fully implement them.

#### IV THE KYÔHÔ REFORMS: NATIONAL WEALTH AND THE ENCOURAGEMENT OF THE DOMESTIC PRODUCTION OF MEDICINAL DRUGS

##### I AN OUTLINE OF THE POLICY FOR THE ENCOURAGEMENT OF DOMESTIC PRODUCTION OF MEDICAL DRUGS.

When Yoshimune took over the reins of government, many senior Bakufu councillors and hereditary vassals who had previously endorsed Hakuseki's policies, now began to reject them as too progressive. Yoshimune himself was also critical of the policies the advisor of the former Shogun had advocated. Hakuseki had devoted a lot of time and energy to the reception and entertainment of the Korean envoys as well as to the regulation of ceremonial functions and etiquette inside the Bakufu administration, but Yoshimune considered these matters to be inconsequential and merely cosmetic. However, as for Hakuseki's practical proposals regarding monetary matters, foreign trade and economic policy, Yoshimune found much in them to commend and carried them on. Especially the continuation of the *Shôtoku shinrei* became a major issue after Hakuseki's resignation. The majority of the Bakufu officials leaned towards abrogation, but when Yoshimune read the



大岡清相 memorial of the Nagasaki commissioner Ôoka Kiyosuke (1679-1717), he investigated the rules and regulations stipulated by the *Shôtoku shinrei* and concluded that they were good laws worth supporting and maintaining.<sup>5</sup>

In continuing Hakuseki's economic policies, Yoshimune became the inheritor of Hakuseki's economic policy line and concept of reform, and this would lead the Shogun to the actual implementation of Hakuseki's abortive policies for the promotion of domestic production, in particular the domestic cultivation of medicinal plants. At the heart of Yoshimune's policy concerning medicinal materials lay a concern akin to that of Hakuseki, i.e., the interest and the wealth of the country.

The countrywide venture aimed at producing medicinal plants inside Japan was a major undertaking covering almost the entire thirty years of Yoshimune's reign, and enacted under his personal guidance. The project focused on transplanting and growing Korean ginseng in Japan, as well as on stepping up the collection of medicinal plants growing in mountainous regions throughout the country.<sup>6</sup> Yoshimune valued medicinal plants highly. In the first place, medicinal plants are obviously indispensable to society and he sought to supply the people with valuable medicines at low prices. For that reason Yoshimune wanted to increase their cultivation and production. This policy was undoubtedly based on an idea of general welfare.

By the beginning of the eighteenth century, medicines had long been a valuable import item, and demand for them remained high in Yoshimune's time. One reason for this high demand was the economic development that Japanese society had witnessed during a century of lasting peace. There was also a widespread concern for better health and improved standards of living. Population in that period peaked at one million in Edo, and cities grew throughout Japan. The number of people living in urban areas rose dramatically, but sanitary conditions in these crowded cities were poor, and contagious diseases spread easily. Moreover, in contrast to rural villages where family and relatives all lived close at hand, life in the cities produced a situation where many more of the infirm and aged lived alone. All of these factors reveal the underlying causes of the high demand for effective medicines.<sup>7</sup> A second reason for indigenous production of medicinal plants was of a financial nature. Yoshimune wanted to stop the importation of foreign medicines. Ginseng was imported from Korea and most of the



other medicines came from China or the Netherlands.<sup>8</sup> This resulted in a huge outflow of Japanese currency overseas and scarcity at home. Consequently, the policies aiming at domestic production were also inspired by mercantilism.

Yoshimune's policy of promoting the domestic cultivation of medicinal drugs started around the fourth year of *Kyôhō* (1719), about four years after taking the helm of state affairs. It was implemented in two projects, which although interrelated, had distinct objectives. One was the domestic cultivation of ginseng, the other was the dispatch across the country of "herborizers" (*saiyaku-shi*), whose mission it was to detect and collect the medicinal materials that remained untapped everywhere in the country, with a view to developing domestic medicinal drugs of a quality equal to that of the imported products. The two most important officials involved in these projects were Hayashi Ryôki (1695-1722), physician in ordinary to the Bakufu, confidant and pharmacological advisor to Yoshimune, and Uemura Saheiji (1695-1777), inspector of the Bakufu and informer of the Shogun, who toured the country as "herborizer". Other people involved were amateur pharmacologists and private surgeons such as Niwa Seihaku [Shôhaku] (1691-1756), Noro Genjô (1694-1761), Abe Shôô (?-1753) and Tamura Ransui (1718-1776). In response to the appeal launched by the Edo city magistrate (*Edo-machi bugyô*) they had become Bakufu advisor for medicinal herbs. Other people involved included apothecaries of the three major cities, Edo, Kyoto and Osaka.<sup>9</sup>

採薬使

林良喜

植村左平次

丹羽正伯

野呂元文、阿部将翁

田村藍水

江戸町奉行

The year following his nomination to the position of Shogun, Yoshimune already manifested his interest in the problem of medical drugs, when he ordered the enlargement of the Shogunal herb garden at Koishikawa (in the sixth year of *Kyôhō*, this herb garden was enlarged to ten times its former size, covering now an acreage of 49.600 *tsubo*). In 1719 the Bakufu sent a letter to Lord Sô, daimyô of Tsumishima, requesting drawings of the ginseng root and information about its properties. This proves that the matter of domestic cultivation of ginseng was being taken in hand. Formally the Bakufu was not seeking to smuggle live ginseng roots out of Korea, since the Korean authorities maintained a ban on the export of the product, but in private Hayashi Ryôki was nevertheless relaying the above-mentioned request to Lord Sô.<sup>10</sup>

小石川

坪、宗、対馬

During the 1720's Niwa Seihaku was busy collecting herbs in Hakone. In addition he invited Noro Genjô, who hailed from the same

箱根



伊勢  
駿河、甲斐、信濃  
日光山

province of Ise to come over and assist him on a herborizing tour of the provinces of Suruga, Kai and Shinano. Uemura Saheiji was sent on a herborizing mission on behalf of the Shogun to Mt. Nikkô.<sup>11</sup> All these facts are testimony that the policy for the search and collection of indigenous medical drugs was coming into full swing.

本草綱目  
松岡恕庵  
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At the same time medicinal materials from sources at home and abroad were being tested and identified with the herbs and drugs listed in Chinese herbals such as the *Bencao gangmu* (Jap.: *Honzô kômoku*, 'Elements of Pharmacopoeia'). In connection with these activities pharmacologists and well-known physicians such as Matsuoka Joan (1668-1746) from Kyoto, as well as apothecaries from the Kami-gata area were one after the other being summoned to Edo, to give instruction and guidance in the vetting and selection of medical drugs. Lectures on medical books were organised in the residence of Hayashi Ryôki, not only attended by physicians in ordinary of the Bakufu but also by private surgeons. However, these lectures grew so popular that Hayashi Ryôki's study could no longer accommodate the audience, necessitating the lease of one of the buildings of the Bakufu for use as auditorium.<sup>12</sup> It is clear that Yoshimune's policy for the promotion of the domestic production of medical drugs was not just a government policy, but involved a great number of private persons as well, and could count on a strong interest and enthusiasm in society at large.

倭館  
釜山

As for the identification of the medical drugs, we learn from a recent study by Tashiro Kazui that in 1721 Hayashi Ryôki submitted to Lord Sô, daimyô of Tsushima, a list of drugs containing 104 Chinese and 74 Japanese names of medicinal materials, inquiring whether these existed in Korea or not, and asking to check the Japanese and Korean designations for these substances. At the same time a large-scale inquiry was reportedly being conducted from the Wakan (the residence of Japanese emissaries to Korea) in Pusan.<sup>13</sup> We may safely assume that similar inquiries for identification were being conducted through the Chinese merchants who came to Nagasaki.

和薬改会所

Identification and verification of indigenous drugs, as well as the assessment and control of their quality were handled by the *Wayaku aratame kaisho* (Japanese medicines vetting committee), which was set up in Ise-machi in Edo in 1722. This vetting committee was made up of 25 wholesale dealers of medicinal plants. Niwa Seihaku and other pharmacologists sat on this committee to vet medicinal herbs and min-



erals that were brought in by collectors from every region in the country.<sup>14</sup> This committee was to act as the driving force on the private sector side for the implementation of the domestic cultivation policy. The following year a similar committee was set up in Osaka. It did not limit its scrutiny to native medicines, but from 1724 onwards it also included medicines imported from China. The committee thus assumed the role of general inspectorate for pharmaceutical affairs. Its interest also included Western *materia medica*, which came to Japan via the Netherlands. We know that in 1725 Niwa Seihaku planted palm tree saplings and a number of Western medicinal herbs, which had been brought to Japan aboard a vessel of the Dutch East India Company.<sup>15</sup> These herbs were nursed in the herb garden of the Bakufu.

We know from previous research that as an extension of the policy for the development of medical drugs, sugar production and the cultivation of sweet potatoes were also taken in hand. Thus in various sectors of society all kinds of experiments and trials were undertaken towards the development of homegrown medical drugs. Some of these endeavours made a real contribution towards the practical use of the drugs, and succeeded in producing a quality that was not inferior to that of imported produce. In this context no issue was of greater importance than the domestic cultivation of ginseng.

## II THE DOMESTIC PRODUCTION OF GINSENG: THE DEVELOPMENT OF OTANE NINJIN.

As I have already stated, the plan to promote the domestic cultivation of ginseng constituted one of Yoshimune's major projects. He initiated it right from the beginning of his reign and it occupied him for most of the goodly thirty years that he held power. We know that implementation started as early as 1719. The Bakufu issued a secret order to Lord Sô, the daimyô of Tsushima, instructing him over a number of times to procure live ginseng roots from Korea, ignoring the official Korean ban on exporting them. This marked the start of a decade of test planting of the ginseng roots in selected locations such as the herb garden of the Bakufu at Koishikawa and Nikkô (present day Tochigi prefecture), whose climate and environment were believed to resemble those of the Korean Peninsula. However, the attempts at transplanting the roots ended in failure. For almost ten years Yoshimune tried on numerous occasions to procure and transplant ginseng roots, but the experiment was not crowned with success, and realisation of the plan looked more remote than ever.

日光、栃木県



On the Korean Peninsula, the homeland of the ginseng, one found either potting on a very small scale or collecting the seeds of wild ginseng and sowing them in the same spot (so-called *san'yô* or 'hillside growing'). Although the growing process could be aided by forcing techniques, generally speaking, cultivation outside of a natural setting was considered to be next to impossible and there was no precedent of growing them outside their wild habitat. Had it been possible, ginseng would not have been such an extraordinarily expensive product. It is only under strict conditions that ginseng seeds germinate, and even then the rate of germination is very low.<sup>16</sup> In addition, the conditioning of the soil, the extent of sunshine and the degree of drainage are all very delicate. If any of these factors is mishandled, the roots tend to wither at once. Moreover, ginseng is a perennial plant taking between four and five years to develop a root of sufficient size. As if all this were not hard enough, the root is an easy prey for rats, weasels and pests, and one had also to be careful about the use of fertilisers. In addition, because the root is grown in the shade to ward off the direct rays of the sun, or on the northern slopes of hills and mountains, bacteria and mould could easily develop in the soil, with the possible risk of bringing the labour of many years to naught. Thus the greatest care was needed not only to grow the ginseng itself, but also to maintain the complex surrounding conditions, such as the selection of the right soil and the control of its composition.

Yoshimune's policy for fostering domestic production of ginseng was a long and winding road of trial and error. By identifying the various difficulties that prevented the cultivation of ginseng, creating the conditions to overcome them, he finally succeeded in devising an adequate nursing technique. The question now is at what point in time and by what means success was finally achieved. Yoshimune attempted to have ginseng cultivated from seeds, even though this approach was not thought to be very likely to succeed. After several attempts over a period of almost eight years some of the ginseng took root and produced seeds. This occurred in 1738, and this small success was attributed largely to the efforts and perseverance of botanical specialists such as Tamura Ransui and Abe Shôô. The Bakufu then distributed seeds in many areas to people who wanted to cultivate ginseng, and furthermore issued manuals with instructions for their cultivation, which were based on the Bakufu's long experience. Thus the project finally succeeded under a nationwide movement around 1745 – nearly thirty years after Yoshimune had initiated it.



In a decree issued in the eighth month of the third year of *Enkyô* (1746), the Bakufu allowed the free sale of Japanese grown ginseng, cultivated from the seeds of ginseng (afterwards known as *otane ninjin*). Hence we know that the successful cultivation must be prior to that date, but that is about all we can say with any degree of certainty. Several hypotheses have been formulated, but none has remained untested. Imamura Tomo's book entitled *Ninjin-shi* ('The History of Ginseng'), the classic study on this topic, proposes as date the year 1733. That we find no mention of procuring live roots or seeds from Korea via Tsushima after the year 1728, is supposed to imply that the live roots and seeds had struck root and started to grow. That Uemura Saheiji is mentioned travelling to Nikkô in late 1733 for the outdoor cultivation of ginseng is assumed to prove that the experiment was proceeding according to wish.<sup>17</sup> Yasue Masakazu on the other hand draws our attention to the ginseng cultivation within the jurisdiction of the Bakufu commissioner of Sado Island (*Sadogashima*), and claims that the first yields were recorded in the year 1725, that in 1728 seeds were sown in cases and henceforth the harvests were steady and secure.<sup>18</sup>

Kumata Hajime claims that Uemura Saheiji and Tamura Ransui were sent as Bakufu experts to Nikkô in 1729 to start a round of growing experiments.<sup>19</sup> In old records preserved in the city of Utsunomiya, Kawashima Yûji has found evidence that in the year 1729 the Bakufu gave three ginseng roots to Ôide Denzaemon of Imaichi-machi in the foothills of Nikkô, instructing him to grow them. He surmises that these three roots were among the eight specimens Lord Sô of Tsushima had offered to the Bakufu the previous year. He contends that the three specimens planted by Ôide Denzaemon struck root and eventually led to the success of the ginseng-growing project.<sup>20</sup>

At any rate we find evidence in the records that around 1730 the Bakufu was distributing seedlings of ginseng to the daimyô that were related to the Tokugawa clan. This proves that by that time the experiments had at least reached the stage of nursing seedlings for the home production of ginseng. However, it is likely that in most cases the success was due to a stroke of good luck, and if we take into account that only a trifling quantity of seedlings and seeds was distributed, it is probable that the number of successful trials was limited and that a stable nursing technique was still a long way ahead.

According to the historical sources I will subsequently introduce, it

延享

御種人參

今村鞠

安江政一

佐渡島

熊田一

宇都宮

川島裕次

大出伝左衛門



would appear that the effort for breeding ginseng did not garner lasting success until the 1740's. We have a report dated 25th of the fifth month of the year 1737,<sup>21</sup> which proves that in 1736 the Bakufu had the Edo city magistrate's office distribute fifty ginseng seeds each to three horticulturists, with the instruction to try and breed them. One of the horticulturists, Botan'ya Hikoemon seems to have reported fairly good results. He had filled a box with a mixture of red earth and gravel and planted 25 seeds in it. The nursing went rather well and yielded forty roots. They measured 9 centimetres and grew trifoliate leaves. Even the remaining 25 seeds, which he had planted in the soil had yielded more than 20 roots. However, while the first trial had yielded a total of more than 90 roots, the subsequent yields had gradually dwindled, following a pattern that the other two horticulturists had reported. They were the gardeners Ihee of Somei and Shôemon of Akô. Itô Ihee of Somei was known as the best gardener of Edo, and it is interesting to note that he was selected for the nursing experiment, although he failed sorely. According to his report, he had planted the seeds in jars filled with earth that he had had brought from various regions in Japan. About thirty had struck root, but they had gradually started to wither and in the end only thirteen remained. Shôemon of Akô had prepared a special parterre filled with a mixture of red and black earth. Judging that the equinoctial week (*higan*) would be the right season for planting, he had planted his seeds in the middle of the eighth month, but so far not one had struck root. Shôemon had probably erred on the safe side and planted the seeds too late.

When the above results were reported to the city magistrate, the latter entrusted Botan'ya Hikoemon, the one of the three horticulturists who had returned a report of success, with another 200 seeds on the fifth day of the seventh month of 1737, for further trials. In that year 1736 the above-mentioned horticulturists were not the only ones to whom seeds were distributed; they were also supplied to the physicians in ordinary with the instruction to plant them. We also know that in 1737 seeds were given to the pharmacologist Tamura Ransui and around the same time the Bakufu distributed seeds to a number of daimyô with the instruction to plant and nurse them.<sup>22</sup> This series of facts proves that the technique for growing ginseng had not been firmly established yet and that it was still in the stage of trial and error. It is also noteworthy that, when handing over the 200 seeds to Botan'ya Hikoemon in 1737, the city magistrate found it necessary to add that they were being "entrusted" to him, whereas the previous year they

牡丹屋彦右衛門

伊兵衛、小右衛門  
赤穂、伊藤伊兵衛

彼岸



had simply been granted him. This too suggests that the ginseng seeds were certainly not a commodity in abundance. It is clear that the experiment of growing ginseng was not completed yet, and that the lessons learned from the breeding trials by Botan'ya Hikoemon, Tamura Ransui and many others indeed served as major stepping stones towards the accomplishment of the ultimate goal.

Although the harvesting of the seeds went well, the roots fell easily prey to vermin damage and blight. Maintenance and control of the soil mixture were difficult, and in order to guarantee a stable harvest of life roots, many technical problems still had to be overcome. In his book *Ninjin kōsaku-ki* ('On the Breeding of Ginseng') Tamura Ransui gives detailed proposals on methods to solve the problem of vermin damage, based on his experience with trial breeding around this period. Even after that date the Bakufu continued the distribution of seeds and the breeding trials. In 1743 it granted 100 seeds to Tamura Ransui, ordering him to grow them, and the following year it gave 515 seeds to Abe Shōdō, with the instruction to submit a monthly report on the progress of the nursing.<sup>23</sup>

人参耕作記

In view of what precedes, it would appear that the establishment of the breeding technique and the stable production of ginseng have to be dated after 1740, and that in effect we have to wait until around 1746, the year when *otane ninjin* were put on sale. If we take into account that it takes between three to five years for a ginseng root to fully grow, we may assume that the know-how gathered in the course of the many experiments undertaken by the public played a pivotal role in the realisation of the domestic production of ginseng root.

The cultivation of ginseng spread widely to various areas throughout Japan, which was ironic given the chronic shortage of ginseng in its native place Korea. This policy not only succeeded in providing ample income to the farmers who grew the ginseng, but it also met the medical demands for the plant, providing as it did an inexpensive and reliable product. The type of cultivated ginseng that Yoshimune developed was distinguished from the natural variety and called *otane ninjin*, and this is still its proper name today. The word *otane* means "seed" cultivated by the Shogun. That this variety of ginseng is named thus is largely in homage to Shogun Yoshimune who had it developed.

Yoshimune's policy for the encouragement of the domestic produc-



tion of medicinal drugs was implemented on a nationwide scale, including both the Bakufu domains and the fiefs, and pursued with concerted efforts for over three decades. It constituted one of the most important enterprises of his reign. Moreover, this policy was not just implemented in pursuit of financial profit for the Bakufu. It was devised to provide society with medical drugs in abundance at low price; to nurture the know-how to develop good quality drugs on a level with the hitherto imported products, and thus to stop the outflow of bullion into the channels of international trade. Seen from these angles Yoshimune's policy was intended to promote the interests and well being of the whole of Japanese society. Because it was targeted at such broad base it was also possible to enlist the cooperation of not just the Bakufu officials, but also of private surgeons and amateur pharmacologists, apothecaries and herb merchants, farmers throughout the country, as well as daimyô in the various regions and their retainers and surgeons. Their voluntary collaboration constituted a major driving force from below that propelled the project forward.

That the Bakufu forwent its own profit is clearly manifested by the way in which the *otane ninjin* were put up for sale. When in 1738 the Bakufu sold ginseng seeds throughout the country to all those who wished to grow them, it published the results of its yearlong experience with cultivating ginseng and distributed leaflets with instructions among the buyers of the seeds. This shows that the Bakufu had no intention of monopolising the cultivation of ginseng, but that on the contrary it wanted to take on this challenge on a nationwide level, using the experience and know-how of tillers throughout the land. In point of fact the Bakufu made no profit on the sale of the seeds. Thus in 1746 the seeds that had been harvested in Nikkô and other places in Japan were put on sale. On that occasion the Bakufu issued an order to the Edo city magistrate instructing him that trade had to be conducted at prices set freely by the apothecaries, but that, apart from the commission withheld by the apothecaries, the entire proceeds of the sales had to go to the farmers.<sup>24</sup>

Yoshimune skilfully employed these specialists in a variety of fields, allowing them to freely demonstrate their specialised skills. He thus facilitated the success of the countrywide project for the domestic production of medicines. If Yoshimune's policies had originally been enacted to produce medicinal plants in Japan, he subsequently expanded them to include the production of more general and useful



products. He stimulated interest in the natural products and goods to be found in the various regions of Japan. This was given concrete expression in the large-scale and comprehensive survey of domestic produce, known as the *Shokoku sanbutsu torishirabe*.<sup>25</sup> This survey reveals that at that time there was a keen interest in Japan in potential sources of national wealth.

諸国産物取調

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The members involved in these projects studied Chinese traditional pharmacology (*honzô*). After they had completed this study, Yoshimune wanted to acquire new knowledge from the Western world, and this brought Dodoens's *Cruijdeboek* to the intellectual forefront of the time.<sup>26</sup> Before that time Yoshimune had of course had no idea about who Dodoens might be. Yet, Dodoens's accurate reproduction of medicinal plants, carefully depicting in detail the petals, leaves, roots and fruit accorded with what Yoshimune knew from many years of actual observation of the real world. The illustrations in the *Cruijdeboek* were incomparable to the botanical illustrations in Chinese and Japanese books, and Yoshimune found this book to be of great value. Trusting his intuition, he decided to attempt to have the contents of this Western book translated for the benefit of the scholars involved in the project of domestic cultivation of medicinal plants. This endeavour was to have a lasting effect, laying the groundwork for Western learning in Japan.

本草

Consequently, a project to translate Western books was planned, but up to that time nobody had experience translating Western texts into Japanese. Obviously there was no dictionary and the task had to start from the absolute beginning. There were translators at Nagasaki, which was the station for trade with the Netherlands, but their proficiency was limited to conducting a conversation. Reading books in Dutch was beyond their grasp. The herbalists Noro Genjô and Aoki Kon'yô (1695-1769) both worked on this project. Noro Genjô called at the Nagasakiya, the inn in Edo where the head of the Dutch delegation to the Shogun was staying, with his attendants and his Japanese interpreter. Noro brought Dodoens's book along and questioned the Dutch about its contents. He started his study of Dutch in 1741 and worked on it for many years. After ten years he was able to present Yoshimune with his "translation", which is known as *Oranda honzô waga* ('Japanese Translation of the Dutch Herbal'), a book in eight volumes. In this work he determined the appropriate Chinese and Japanese equivalents for the Latin and Dutch names of a variety of plants.

青木昆陽

長崎屋

阿蘭陀本草和解



平賀源内、杉田玄白  
前野良沢  
蘭学

It was a very simple compilation and apart from the listing of Chinese and Japanese equivalents for Western terms, it only included notes on the medicinal uses of plants. This book may be called a rather primitive attempt at translation but it nevertheless marked the first if humble step in the enterprise of translating Western books into Japanese, which was to have a deep impact on the future course of Japan. The successors of Noro and Aoki, including Hiraga Gennai (1728-1779), Sugita Genpaku (1733-1817) and Maeno Ryôtaku (1723-1803) would all make important contributions to the field of Western studies. Thus *Rangaku* would come into full bloom in Japanese society during the latter half of the eighteenth century. This happened at the same time that the conditions for experiential and objective analysis that had appeared earlier were evolving into powerful catalysts for the development of modern learning.

Yoshimune's policy with regard to medical drugs achieved the desired end towards the end of his reign. By that time however it had transcended the narrow bounds of the drugs issue *per se* and come to encompass natural objects in general, in short all matters that pertained to human economy and natural history. There was a growing interest in all kinds of products and natural objects found in Japan, which stimulated research aimed at discovering new potentially useful products, and increasing their yield. Non-official exhibitions were organised to display the specialties and rare products of various regions. They made an important contribution towards practical learning and the development of industry. This paved the way for the activities of pioneering figures of the next generation such as Hiraga Gennai. Incidentally, the teacher of Hiraga Gennai was none other than Tamura Ransui, who was so instrumental in the development of a nursing technique for ginseng. Ransui and Gennai also initiated new ventures such as produce exhibitions. In this respect we are warranted to consider Gennai as the rightful heir of Yoshimune's policies.

Apart from the interest in the possibilities of industrialisation, the comprehensive investigation of products and natural objects throughout Japan also stimulated interest in natural history, which eventually evolved into a purely academic interest. People were fascinated by the multifarious attraction natural objects exerted on them and classified the different species.

Yoshimune's enlightened policies were not limited to medical drugs.



He also encouraged practical learning, which could be helpful in the development of industry in general, and in an effort to acquire new scientific and technological know-how, he loosened the ban on the importation of Chinese translations of Western books. He also set great store by the study of astronomy and geography. He employed Takebe Katahiro (1664-1739), a leading disciple of Seki Takakazu (?-1708), in order to have him draw up a highly accurate general map of Japan (*Nihon sô-ezu*), and promoted the reform of the calendar. Yoshimune himself did not try his hand at astronomical and meteorological observation and even designed an improved version of the simplified armillary sphere (*kantengi*). The series of policies pursued by Yoshimune were implemented in the ways described above. They were practical, rational and very successful. The contribution they have made towards Japan's modernisation cannot be overrated.

建部賢弘

関孝和

日本総絵図

簡天儀

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## NOTES

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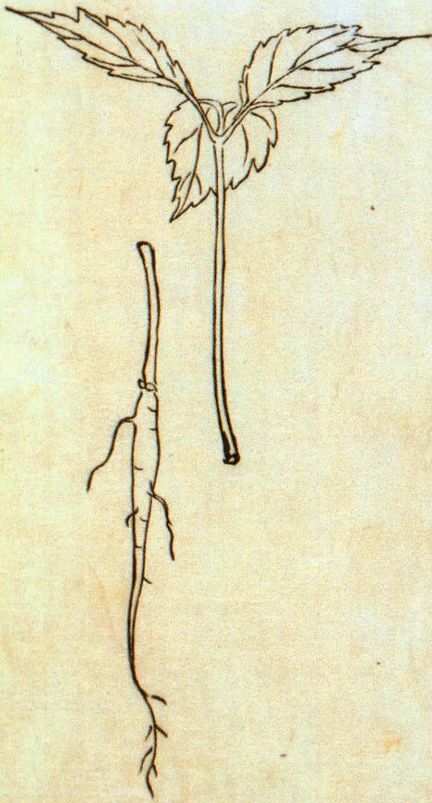
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## ILLUSTRATIONS

- ILL 1 Sprout of Korean ginseng. Hiraga Gennai, *Butsurui hinshitsu* (1763), maki 5 (zue: sanbutsu zue). Collection Université catholique de Louvain, Bibliothèque générale et de sciences humaines, Donation japonaise.
- ILL 2 Picture of ginseng root and plant, illustrated by Kusumoto Sekkei (So Shiseki). Hiraga Gennai, *Butsurui hinshitsu* (1763), maki 5 (zue: sanbutsu zue). Collection Université catholique de Louvain, Bibliothèque générale et de sciences humaines, Donation japonaise.
- ILL 3 Ginseng garden. Hiraga Gennai, *Butsurui hinshitsu* (1763), maki 5 (zue: sanbutsu zue). Collection Université catholique de Louvain, Bibliothèque générale et de sciences humaines, Donation japonaise.

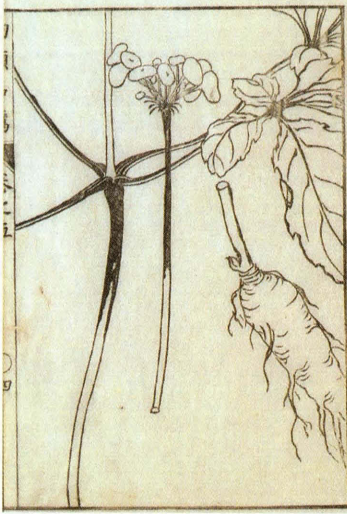


朝鮮種人參 四圖



初生圖

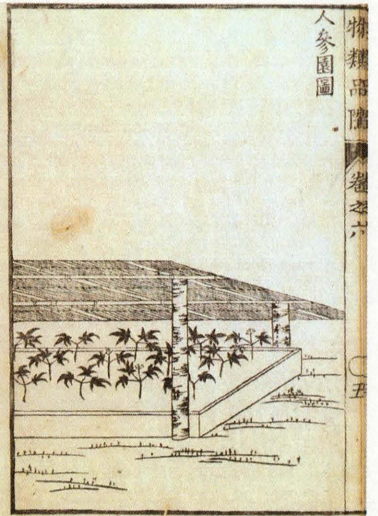
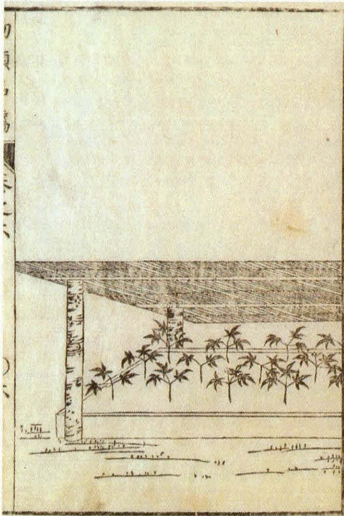




結實圖

物類品階 卷之五

ILL 2



人參園圖

物類品階 卷之六

ILL 3