

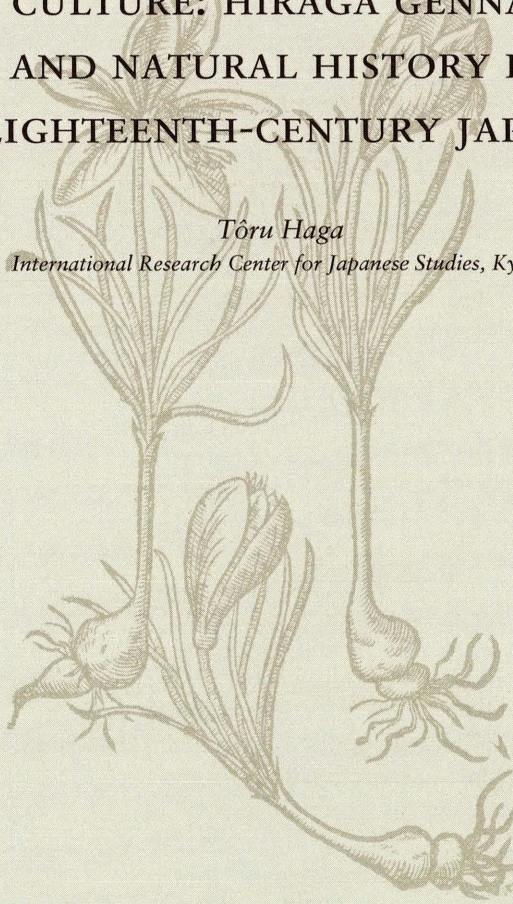
Dodonaeus and Tokugawa Culture : Hiraga Gennai and Natural History in Eighteenth-Century Japan

著者	HAGA Toru
会議概要（会議名，開催地，会期，主催者等）	Translation of Culture and Culture of Translation, ベルギー，ルーヴァン・カトリック大学，1998年10月12日-15日
page range	241-261
year	2001-12-01
シリーズ	International Symposium in Europe 1998
URL	http://doi.org/10.15055/00001539

DODONÆUS AND TOKUGAWA
CULTURE: HIRAGA GENNAI
AND NATURAL HISTORY IN
EIGHTEENTH-CENTURY JAPAN

Tôru Haga

International Research Center for Japanese Studies, Kyoto



平賀源内

This paper examines the influence of Dodonæus on Tokugawa culture, in particular the importance of his work for Hiraga Gennai (1728-1779) and the study of natural history in eighteenth-century Japan. Dodonæus' herbal is impressive both by its physical voluminosity and its cultural importance. The sheer size and weight of the book must have had a deep cultural and psychological impact on the Japanese mind, when the eighth Shogun, Tokugawa Yoshimune, opened it for the first time in 1717, in a reading room of Edo castle. Yet it was not until fifty years later that Hiraga Gennai, an ex-samurai and scholar of natural history, purchased a copy of the same book for his own collection in the spring of 1765, in a drawing room of the Nagasakiya inn in the middle of the city of Edo.

長崎屋

The edition of Dodonæus' book I examined, was published in Leiden in 1618. The book measures 34 by 22 centimetres, is about 14 centimetres thick and weighs at least three kilograms. It contains 29 pages of preface and table of contents, 1,495 pages of description of plants with innumerable wood-block print illustrations and 56 pages of alphabetical index, totalling 1,580 pages. No Japanese nor other Asian scholar had ever laid eyes on such a bulky and heavy book before, nor imagined that any publication could be of such a dignified format. The sheer magnitude of the book must have aroused the interest and imagination of Tokugawa intellectuals, and surely reflected the prominence of the European tradition of scientific scholarship.

Once the Japanese turned over the leather cover, they must have been even more impressed by the intriguing beauty of the copperplate print title page. At the very bottom of the page we find in tiny characters the mention *W. Swan fecit* 1608. This refers to the Leiden engraver Willem Swanenburgh (1580-1612), who designed this lovely picture. The illus-

tration shows a magnificent porch or gate with a heavy roof supported by four marble pillars through which a beautiful herb garden, laid out in perfect symmetry, is visible in linear perspective. On the top of the roof, there are garlands of exotic flowers and fruits, which hold the cartouche with the inscription *Cruydtboeck van Rembertus Dodonæus* from behind. Furthermore, at the entrance of the gate there are two cornucopias supporting a cartouche with the name of the publisher, François van Rafelingen. Portraits of the author, Dodonæus, and another great Flemish humanist scholar, Carolus Clusius (1526-1609), whose descriptions of exotic plants were supplemented to the original edition, are shown at the base of the front pillars on either side of the gate. We can only speculate whether the Japanese scholars understood that the triangular shape in the middle of the garden was not a bird-cage, but a fountain.

We can, however, easily imagine how deeply impressed the Tokugawa scholars must have been at their first look at this title page when they opened the huge book. The view in perspective of the herb garden with its alignment of shadowy trees must have seemed to allure and entice them into the remote depths of European scholarship. Even at present one feels tempted to enter and stroll in this quiet garden of science. In fact, it is my intention to use the entire picture for the title page of my next book, replacing only the title and names of author and publisher. Hiraga Gennai did the same thing for his book on the thermometer, adopting the title page of an unknown European book. Odano Naotake, a disciple of Hiraga Gennai in western-style painting, followed his suit for his illustrations of the famous *Kaitai shinsho*, the *Ontleedkundige tafelen*, using the title page of Juan de Valverde's anatomy *Vivae imagines partium corporis humanis aereis formis expressae* (Antwerp, 1566).

Hiraga Gennai purchased Dodonæus' book in the spring of 1765, in the third month of the second year of the Meiwa period. This is obvious from a list of Western books on natural products in his collection entitled *Bussan shomoku*, which he drew up in the year 1769 and probably presented to someone of higher rank. All eight books on the list, except one, Emanuel Sweerts's (ca. 1552-1612) *Florilegium, tractatus de variis floribus et aliis Indicis plantis ad vivum delineatum* (Amsterdam, 1631), were purchased in the third month of different years during the 1760s. This implies that between the second and the sixth year of the Meiwa period (1765-1769), Gennai was regularly

物産書目

present at what was referred to as “conversations with the Dutch” (*Oranda taiwa*) at the Nagasakiya inn in Edo. It was in this inn that the members of the Dutch factory of Nagasaki and their Japanese interpreters stayed during their annual visit to the Shogun, which usually coincided with the season of cherry blossoms in the capital. Therefore the arrival of the Dutch later came to be used as a seasonal reference in *haikai* (haiku) poetry. From around the late 1750's on, the Hollanders and their Japanese interpreters made it a habit to bring a sampling of Dutch books with them to show at this annual meeting with a circle of Edo scholars.

Hiraga Gennai, a humble ex-samurai who had forsaken his lord in order to be able to devote himself to the study of natural history, was probably one of the best clients of the Dutch book trade. After purchasing Dodonæus' *Cruijdeboeck* in 1765, he consecutively acquired Georgius Rumphius' *D'Amboinsche rariteitkamer ...* (Amsterdam, 1705)¹ in 1766 (Meiwa 3), Jan Swammerdam's *Historia insectorum generalis ofte Algemeene verhandeling van de bloedeloose dierkens* (Utrecht, 1669) in 1767, and in 1768 (Meiwa 5), three books at one time, namely Francis Willughby's *De historia piscium* (Oxford, 1686)²; Isaac Bruckner's³ *Zee-atlas* and *Nieuwe Atlas* (1759); and another huge and important work, Jan Jonston's fauna entitled *Naeukeurige beschryving van de Natuur der Viervoetige Dieren, Vissen en Bloedloze Water-Dieren, Vogelen, Kronkel-Dieren, Slangen en Draken* (Amsterdam, 1660). Finally in 1769, he managed to lay hands on Noel A. Pluche's *Schouwtoneel der natuur, of Samenspraaken over de bysonderheden der natuurlyke histori ...* (*Spectacle de la nature*, 14 vols.).⁴

About Sweerts's *Florilegium* of 1631, Gennai mentioned that he acquired the book in the summer of 1761 (Hôreki 11). It may have been a gift sent from Nagasaki by the Dutch surgeon Bauer, who had agreed to exchange it for a Japanese *slangensteen* ('snake stone'), which Gennai had shown and presented to him at a session of “conversations with the Dutch” in the spring of the same year.

Gennai's list of Western books is of great interest since it bears testimony to a history of encounter by a representative Edo intellectual with European scientific scholarship. How should one appraise this list of works? One could remark that an ignorant samurai in isolated Japan fell victim to the shrewdness of the Dutch traders, who sold him useless old books dating from the sixteenth and seventeenth century,

which had become totally out-dated since the brilliant start of the taxonomy of nature by Carolus Linnaeus (1707-78) in the middle of the eighteenth century. But one could equally contend that thanks to the goodwill of the Dutch surgeon, Gennai, in the short period of four to five years, was able to constitute an excellent collection of the most basic European classics of natural history, a “canon” of European scientific tradition since the Renaissance.

We are inclined to opt for the latter claim. Gennai was well aware of the distance that these books had travelled in both time and space since their first publication. In the short comments he added to the list of European books on natural products, he noted down the number of years between the original publication date and his acquisition. For Jonston's fauna of 1660, for example, he commented that 108 years had passed before he bought it in 1768, and in the case of Sweerts's *Florilegium*, 135 years. This point of the time lag between the West and Japan is highly interesting for the study of the cultural and intellectual history of East Asia. Compared to the forty years of delay between the original Dutch edition of Johannes Adam Kulmus' book (1734) and its Japanese translation as *Kaitai shinsho* (1874), most of the European works in Gennai's collection lagged on average 100 years behind at the time of purchase; and 211 years had already passed since the publication of Dodonæus' herbal, if we count from its first original Flemish edition of 1554. Can the simple geographical distance to sail from Antwerp or Leiden to Edo via Batavia and Nagasaki explain this lag? Are the disturbing effects of political and economic isolation of Tokugawa Japan to be blamed, or rather the backwardness of Japanese scholarship in natural history?

Probably all of these factors played a considerable part, but Gennai's awareness of this time lag may be considered an important first step towards dealing with the problem. Kaibara Ekiken, the great encyclopaedic Confucian scholar of the late seventeenth and early eighteenth century, endeavoured to Japanise the up to that time China-centred herbal studies in Japan. Tokugawa Yoshimune, the eighth Shogun, wanted to promote a general survey of the nation's natural products by utilising Dodonæus and Jonston as a model. It was Hiraga Gennai's ambition, as a spiritual successor to these two individuals, to transform the whole system of research from pharmacopoeia to “natural history” by widely opening up the vista to European scholarship and even to foreign products. It can only be considered unfortunate for him that

貝原益軒

the European system of nature studies was further being transformed at a fast pace by the introduction of Linnaeus' system, just around the time that Gennai was trying to establish a new scholarship based on the works of Dodonæus, Jonston, Rumphius and others.

Compared to other books of natural history, the problem of time lag had decreased in importance when Gennai acquired Bruckner's atlases in 1768; he proudly and delightedly noted in his comment to the atlases: "This is a rare book of all times in which one can read all geographical details of the world, recently published in Holland nine years ago; last year, eight years after its publication, I could procure this precious thing from a place 13,000 *li* away."⁵ The same goes for Noël Pluche's *Spectacle de la nature* of 1748, which Gennai purchased in 1769, with a delay of twenty years. Profiting from one chapter of Pluche's book he managed to build a miniature windmill to the surprise of many.

As for Dodonæus' herbal, Gennai made good use of the work even before acquiring the book in 1765. A note in the short comment on Dodonæus in Gennai's list of Western books mentions that five copies of the herbal were imported at the time of Yoshimune. One was still in the possession of the Shogun, one was in the hands of Tamura Gen'yu, a naturalist and specialist of Korean ginseng in Edo, two were held by Nagasaki interpreters and lastly one was owned by Gennai himself. Gennai may have had a look at the giant book and admired it at the house of Tamura Gen'yu, who had been his closest friend and most respected master and mentor in herbal studies since his arrival in Edo in 1756. When in 1762 Gennai organised a nation-wide exhibit of natural products of the Japanese Islands, he already quoted the name of Dodonæus and the title of the book in a long manifesto that stated his ideas and announced his enterprise, saying that with the nation-wide collaboration of specialists and amateurs alike it would be possible to discover most items contained in Dodonæus and other Dutch herbals. The following year, selecting about 360 items from the 1762 exhibit and the preceding ones, Gennai published a large work of his own on natural history in Edo, entitled *Butsurui hinshitsu* ('An Examination into Natural Products').

物類品臨

Gennai's book was much less impressive than Dodonæus': it contained 186 folded sheets of paper, i.e. 372 pages according to the modern way of counting, including two prefaces, one by his teacher

Tamura Gen'yu, and one by a senior colleague of his. The book was divided into six unequal volumes, the last two being an appendix of wood block illustrations. The 360 kinds of natural products were classified into thirteen categories faithfully following the classical method of Li Shizhen (1518-93), the great Ming Dynasty herbalist whose important book *Bencao gangmu* (Jap.: *Honzô kômoku*, 'Elements of Pharmacopoeia,' 1590), was imported in Japan soon after its publication and exerted a long-lasting influence on Tokugawa herbals. Li's thirteen categories were

李時珍
本草綱目

247

1 WATER, 2 EARTH, 3 METAL, 4 JADE, 5 STONES, 6 GRASSES, 7 GRAINS, 8 VEGETABLES,
9 FRUITS, 10 TREES, 11 INSECTS, 12 SCALED ANIMALS AND 13 ANIMALS.

However queer this classification may appear in our view, it had the merit of being synthetic rather than analytic, and practical. Staying on the whole within this framework of traditional East Asian herbal scholarship, Hiraga Gennai gave each product its Japanese and Chinese names, its Dutch name or dialectical alias, if necessary, and explained its shape, colour, properties, benefits, usage and places where to find it. Entries are irregular in length, are often critical about the author's Chinese and Japanese predecessors and, even more interesting, sometimes contain references to the feelings he had when acquiring a product. Because one of the principles that guided Gennai while compiling his book, was to omit banalities and to prize the rather rare products that had been presented at previous exhibits, the category "water", for instance, has only one entry, that of "rose water". In the same category, *Yamato honzô* ('Japanese Herbal,' 1708) by Kaibara Ekiken (1630-1714), the great founder of Japanese herbal studies and natural history, lists not only "hot water" and "hot spring" but also "hail", "chalybeate", "salt" etc., while *Honzô kômoku keimô* ('Commentaries on *Bencao gangmu*,' 1803) by Ono Ranzan (1729-1810), a great scholar and educator of Kyoto, discusses "puddle", "ice of summer", "water in the hollow of a tree or bamboo" and even "rain leaking from the roof" as independent entries in the same category. Hiraga Gennai excluded all these queer, old-fashioned, albeit interesting, entries and preferred to show off himself as a new type of naturalist by choosing the unique and exotic "rose water" for the first page of his book. We will quote the entry as an example of Gennai's style of description:

大和本草

本綱目啓蒙
小野蘭山

"Rose water (Sôbiro): mentioned under the entry of "dew" in [Li's] *Bencao gangmu*. *Bara no tsuyu* in Japanese, *rôzu wâtoru* (rose water) in Dutch. The *Red-Haired* [Hollanders] call "rose" all sorts of thorny plants; *wâtoru* means "water". This is a liquid distilled from

rose flowers by an alembic. Among a variety of roses, the wild rose is said to be best suited [for distillation]. Li Dongbi says: "Barbarian countries produce rose water, which has a strong fragrance, and is said to be dewdrops gathered on rose petals, but we do not know whether this is correct or not." Again in the entry on fragrant hedge plants Li states that rose dew is a product of the Southern Barbarian countries, dew water of the rose, which has an unusual fragrance. Doctor Li wrote in this [vague] way since apparently he did not know anything about [the use of] alembic, which is an ingenious invention of the Westerners. The liquid has a remarkable efficacy in surgical treatment. The Hollanders always bring it with them to Nagasaki. In recent times [some] countrymen have learned how to make it and have tried to produce it. However, because of lack of expertise, the water stales easily and does not keep long. It can last for several decades if only a bit of sal ammoniac is added in the process of producing it. The same holds for distillations from Japanese plum and other flowers. In order to keep it, put it in a flask, then cork the flask and wrap its mouth in a sheet of paper. If cork is not available, seal the mouth with wax. Sal ammoniac and cork are explained under their respective headings.⁶

Although Hiraga Gennai began his entry with a quotation from *Bencao gangmu*, as was customary with Tokugawa herbalists, his reference was in reality intended to demonstrate that even the great Chinese scholar could no longer be considered an authority in the field as far as European products were concerned. Therefore he wrote: "Doctor Li wrote in this way since he apparently did not know anything about [the use of] alembic, which is an ingenious invention of the Westerners", while he himself was very proud of knowing not only this distilling agent, but also the flask, the cork and even such exotic-sounding chemical substance as sal ammoniac (though he mistakenly rendered it as "sal almoniac"). It is doubtful that he was well acquainted with these European recipients and chemicals: the entry on "sal ammoniac" in his *Butsurui hinshitsu*, for instance, is too brief and too superficial to allow us to draw any conclusion in that respect.

Yet, we still have to admit that these frequent references to things European were an apparent strategy used by the new-generation scholar Gennai in an attempt to unsettle traditional authorities of the China-oriented school of herbals and open up the much larger vista of natural history, by stimulating people's curiosity for the West. The

time was favourable for Gennai to put this plan into practice, as Sugita Genpaku (1733-1817), his best friend and colleague in both herbal studies and Dutch learning, recalls in his famous memoirs *Rangaku kotohajime* ('The Dawn of Dutch Studies in Japan,' completed 1815): "About this time [i.e. 1760's], people somehow began to be enamoured of anything Dutch. They would treasure imported vessels and other curious things. A dilettante, if worthy of the name, never failed to have a collection, large or small, of things Dutch. This was especially true at the time when the ex-lord of Sagara Tanuma Okitsugu, (1719-1788) held control over the government as a powerful councillor to the Shogun, and the people were extravagant and gay [...]. People flocked every spring to the inn where the Dutch party was staying."⁷

杉田玄白

249

田沼意次

Apart from "rose water" there were indeed almost forty kinds of "barbarian" products mentioned or discussed in *Butsurui hinshitsu*. Forty among a total of three hundred sixty items amounts to a very high percentage. It shows clearly the author's predilection for overseas products and constitutes a distinctive feature of the book among the multitude of other herbals in eighteenth century Japan. These foreign products were collected and examined, as we have noted above, in the course of five exhibitions, which he helped to organise, or organised himself in Edo between 1757 and 1762.⁸ In one case even a Dutch book was turned into a material for the explanation of a Western product. Following is the entry on "Prussian blue", the European pigment for oil painting which Gennai himself had presented at the fifth exhibition of 1762:

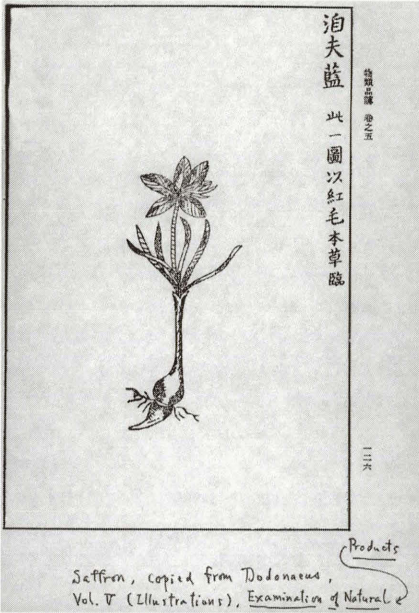
"Berein brau [Berlijns blauw]. The Red-Haired [Hollanders] brought this to Japan. Similar to *hensei* [Chinese blue], but lighter in substance, yet deeper and brighter in colour than *hensei*.

In my personal collection I have an illustrated book of Dutch flora that features several thousands varieties, each represented true to life in shape and colour. The blue pigment used in these illustrations appears to be Prussian blue. The colour is truly exquisite [...]."⁹

The book of Dutch flora referred to here is assumed to be a volume of Emanuel Sweerts's *Florilegium*. The large, beautiful book, the first to enter Gennai's collection of Western books, is supposed to have been presented to him by a Dutch surgeon named Bauer, as a token of gratitude, shortly after their meeting at the Nagasakiya inn in Edo in the spring of 1761, where Gennai had shown and presented to him a piece



ILL 1



ILL 2

of Japanese “slangensteen” (‘snake stone’ or ‘dragon’s bone’). At any rate, this was a very peculiar way of using a precious book: not to identify a flower but simply to refer to the colour, probably hand-painted, of its illustrations. It was similar to Gennai’s reference to Dodonæus’ book, which had not yet come into his possession at the time of compiling *Butsurui hinshitsu*. In the entry on saffron, for instance, Gennai criticises Li Shizhen’s description as erroneous and mentions Dodonæus: “in recent times a Dutch scholar named Dodonæus published a herbal in which he gave an extremely detailed illustration of saffron [...]. See the picture in the annex to the present book.”¹⁰

We do not understand why he selected here only saffron from that vast volume of Dodonæus: he may have come across the illustration of saffron when he was hastily turning the pages of the book during a visit to his teacher, Tamura Gen’yu, who already owned a copy. In any case, these references to Dutch books tell us how important the illustrations were for these men of insatiable curiosity, who understood no word of any European language, and who could at best decode a few letters of the alphabet.

Sugita Genpaku, Gennai’s close colleague, had a similar experience a few years before he seriously embarked upon the translation of Kulmus’ *Ontleedkundige tafelen* (commonly known in Japanese as *Tâheru anatomia*) in 1771. In his memoirs, Genpaku recalled that, when in 1765 Yoshio Kozaemon, the official Dutch interpreter from Nagasaki, proudly showed young Genpaku his new acquisition, Laurens Heister’s *Heelkundige onderwyzingen* (‘Instructions in Surgery,’ 1741), at the Nagasakiya inn, “the illustrations in the book looked markedly different from those in Japanese or Chinese books.” Thus, though not knowing a word of Dutch, “just viewing their exquisite precision, I felt as if being enlightened. So, I borrowed the book for some time as I wanted to copy at least the pictures [...].”

ターヘル・アナトミア

The appeal of the illustrations in these scientific books was not limited to a small circle of intellectuals in eighteenth century Edo. According to George Sarton, it was much the same in Europe, the home of Dodonæus. Sarton writes in a chapter on natural history in the Renaissance: “There is no doubt that the illustrations contributed very much to the popularity of these early herbals. Some readers in that age, as in our own, preferred looking at pictures to reading the text; this was especially true when the herbals were written in Latin, which put them

out of reach of all but the learned doctors. Love of plants and interest in herbs and roots was not by any means confined to scholars; even women might want to know more about them and to be able to recognise them in the fields. Hence the pictures were very welcome. This is shown by the publication of books with a minimum of text and a maximum of pictures.”¹¹

Only looking at, referring to or sporadically copying illustrations in Western books, however, did not satisfy the scholars of Edo. They were quite naturally eager to translate them or at least to have them translated for them into Japanese. Again Sugita Genpaku recalls those years of groping in the dark in his memoirs *Rangaku kotohajime*: “So often when I met Hiraga Gennai and others, we would say to each other: ‘The more we become aware of Dutch learning, the more strongly we are impressed by its empirical spirit. It would be a great benefit, if we would translate their books into Japanese. It is a pity that so far no one has tried it. Really, we must somehow find a way [...]. Even just one volume of them, if rendered into Japanese, would be of immense value to the nation!”¹²

It was in the early winter of 1770 that Hiraga Gennai finally left Edo for his second visit to Nagasaki, with the intention of realising his dream of translating into Japanese a book of European natural history with the help of interpreters in that open port. He carried in his travel bag the heavy volume of Dodonæus. But he was too much of a restless and mercurial mind: he tried his hand at many new pursuits and experimentations, including a Western-style oil painting, but he does not seem to have made any steady progress in the study of Dutch grammar during this one year stay in Nagasaki. When in 1772 he carried back his Dodonæus to Edo almost as intact as it had been at his departure, the translation of Kulmus’ *Ontleedkundige tafelen* by the group of Sugita Genpaku, Maeno Ryôtaku and Nakagawa Jun’an was already well underway. The Dutch books of natural history by Dodonæus, Jonston, Sweerts and others, fascinated and enthralled the inquisitive mind of the ex-samurai Hiraga Gennai, and led him to dream of writing at least ten volumes, covering the wealth of flora, fauna and minerals of the Japanese archipelago, a feat that would rank him with his European predecessors. His heroic ambitions and high-spirited actions strongly encouraged many scholars, writers and artists of his time to go beyond the received intellectual and cultural boundaries of Tokugawa Japan and opened the road to a new, modern style

D'AMBOINSCH E
RARITEITKAMER,

Behelzende eene BESCHRYVINGE van allerhande
zoo weeke als harde

SCHAALVISSCHEN,

te weete raare

KRABBen, KREEFTEN,

en diergelyke Zeedieren,

C2142

als mede allerhande

HOORNTJES en SCHULPEN,

die men in d'Amboinsche Zee vindt:

Daar benevens zommige

MINERAALen, GESTEENTEN,

en foorten van AARDE, die in d'Amboinsche, en zom-
mige omleggende Eilanden gevonden worden.

Verdeelt in drie Boeken,

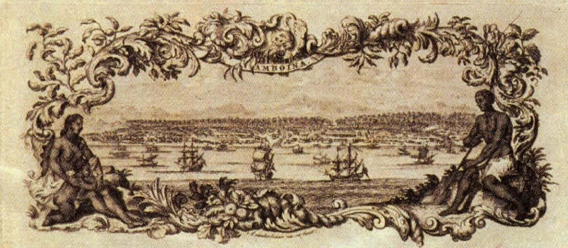
En met nodige PRINTVERBEELDINGEN, alle naar 't leven getekent; voorzien

Beschreven door

GEORGIUS EVERHARDUS RUMPHIUS;

van Hanauw, Koopman en Raad in Amboina, mitsgaders Lid van het Kyzerlyke kweekfchool der
onderzoekers van de Natuurkunde in 't Duitfche Roomfche Ryk opperecht onder den naam van

PLINIUS INDICUS.



T' A M S T E R D A M,

By **JAN ROMAN DE JONGE,** Boekverkoper, 1741.

of natural history as well as to the development of Dutch-European studies in Japan. But in 1780, at the age of 52, the protagonist himself, exhausted, was destined to be drawn into a deadly whirlpool he had created himself.¹³

ILLUSTRATIONS

- ILL 1 Saffron (Saffraen-cruyt met de bloemen) from Dodonæus' *Cruydt-Boeck*, 1618 edition, p. 329. Collection Katholieke Universiteit Leuven, Central Library, Tabularium, B 3998.
- ILL 2 Saffron plant with flower, as copied from Dodonæus' herbal in *Butsuri hinsiutsu* (1763), maki 5: illustrations (sanbutsu zue) (Irita Seizô, ed., *Hiraga Gennai zenshû* (original edition of 1932), vol. I, p. 126)
- ILL 3 Title page of Georgius Rumphius, *D'Amboinsche rareiteikamer, behelzende eene beschryvinge van aller bande zoo weeke als harde schaalvisschen, te weeten rare krabben, kreeften, en diergelijke zeedieren, als mede allerhande boortjes en schulpen, die men in de Amboinsche zee vindt: Daar beneven zommige mineraalen, gesteenten, en soorten van aarde, die in d'Amboinsche, en zommige omleggende Eilanden gevonden worden* (Amsterdam, Jan Roman de Jonge, 1741). Collection Université catholique de Louvain, Bibliothèque générale et de sciences humaines.
- ILL 4 Frontispice of Georgius Rumphius, *D'Amboinsche rareiteikamer ...*, (Amsterdam, François Halma, 1705, reprinted in 1741 edition by Jan Roman de Jonge). Collection Université catholique de Louvain, Bibliothèque générale et de sciences humaines.
- ILL 5 Title page of Johann Swammerdam, *Historia Insectorum Generalis, ofte Algemeene Verhandeling van de Bloedeloose Dierkens* (Utrecht: Meinardus van Dreunen, 1669). Collection Katholieke Universiteit Leuven, Central Library, Tabularium, BTAB A83299.
- ILL 6 Picture of insect: gatefold in Johann Swammerdam, *Historia Insectorum Generalis, ofte Algemeene Verhandeling van de Bloedeloose Dierkens* (Utrecht: Meinardus van Dreunen, 1669) between pages 136 and 137. Collection Katholieke Universiteit Leuven, Central Library, Tabularium, BTAB A83299.
- ILL 7 Title page and frontispice of Noël Pluche, *Le Spectacle de la Nature ou Entretiens sur les Particularités de l'Histoire Naturelle*, Tome premier, Paris, les Frères Estienne, MDCCCLIV (1754). Collection Université catholique de Louvain, Bibliothèque générale et de sciences humaines.
- ILL 8 Frontispice of Joh. Jonstoni, *Thaumatographia Naturalis, in decem classes distincta*. Amstelodami, Apud Joannem Janssonium à Waesberge, et Elyzeum Weyerstraet, MDCLXV (1665) Collection Université catholique de Louvain, Bibliothèque générale et de sciences humaines.
- ILL 9 Title page of Joh. Jonstoni, *Thaumatographia Naturalis, in decem classes distincta*. Amstelodami, Apud Joannem Janssonium à Waesberge, et Elyzeum Weyerstraet, MDCLXV (1665). Collection Université catholique de Louvain, Bibliothèque générale et de sciences humaines.
- ILL 10 Joh. Jonstoni, *Thaumatographia Naturalis, in decem classes distincta*. Amstelodami, Apud Joannem Janssonium à Waesberge, et Elyzeum Weyerstraet, MDCLXV (1665): classis septima in quod quadrupedum admiranda. Collection Université catholique de Louvain, Bibliothèque générale et de sciences humaines.
- ILL 11 Portrait of Hiraga Gennai (1728-80) by Kimura Mokurô, councillor to the Lord of Takamatsu, included in Kimura's book on Gesaku writers Gesakusha kôhoi (1845), reproduced in Irita Seizô, ed., *Hiraga Gennai zenshû* (original edition of 1932)
- ILL 12 Portrait of Hiraga Gennai (1728-80). This portrait was included in an autograph manuscript entitled *Sentetsu zôden*, attributed to Katsuragawa Hoshû. Before the war it was in the possession of the library of the Imperial University of Tokyo, but is since presumably lost. The portrait is alleged to have been a first-hand copy of an original attributed to Morishima Chûryô (alias Katsuragawa Hosan), a disciple of Gennai. It was reproduced in Irita Seizô, ed., *Hiraga Gennai zenshû* (original edition of 1932).

REFERENCES

- 1 Haga Tôru. *Hiraga Gennai* 「平賀源内」. Tokyo: Asahi Shinbunsha, 1981; paperback edition, 1989.
- 2 Irita Seizô, ed. *Hiraga Gennai zenshû* 「平賀源内全集」 ('The Complete Works of Hiraga Gennai'). Reprint edition. Meicho Kankôkai, 1970. All quotations of Gennai are from this edition.

- 3 Sugita Genpaku. *Dawn of Western Science in Japan*. trans. Matsumoto Ryôzô and Kiyooka Eiichi. Tokyo: Hokuseidô Press, 1969.
- 4 Sugita Genpaku, *Rangaku kotohajime* 「蘭学事始」. Ed. Ogata Tomio. Tokyo: Iwanami bunko, 1959; re-edition, 1982.

NOTES

- 1 Full title: *D'Amboinsche rariteitkamer, bebelzende eene beschryvinge van allerhande zoo weeke als harde schaalvisschen, te weeten rare krabben, kreeften, en diergelijke zeedieren, als mede allerhande hoorntjes en schulpen, ... die men in de Amboinsche zee vindt: daar beneven zommige mineraalen, gesteenten, en soorten van aarde, die in d'Amboinsche, en zommige omleggende eilanden gevonden worden.*
- 2 Full title: *De historia piscium libri quatuor, jussu & sumptibus Societatis regiae londinensis editi. In quibus non tantum de piscibus in genere agitur, sed & species omnes, tum ab aliis traditae, tum novae & nondum editae bene multae, naturae ductum servante methodo dispositae, accurate describuntur. Earumque effigies, quotquot haberi potuere, vel ad vivum delineatae, vel ad optima exemplaria impressae; artificii manu elegantissime in aes incisae, ad descriptiones illustrandas exhibentur. Cum Appendice historiarum & observationum in supplementum operis collatas complectente. Totum opus recognovit, coaptavit, supplevit, librum etiam primum & secundum integros adjecit Johannes Raius e Societate regia.*
- 3 Isaac Bruckner (1686-1762) was a cartographer, engraver and globe maker, appointed geographer to the court of Louis XV of France. He is the author of a *Nouvel Atlas de Marine* (Berlin, 1749). A Dutch translation was published in The Hague.
- 4 For a detailed analysis about the identification of these book titles see Haga Tôru, *Hiraga Gennai* (Tokyo: Asahi Shinbunsha, 1981), 302 ff.
- 5 Haga Tôru, *Hiraga Gennai* (Tokyo: Asahi Shinbunsha, 1981), 316.
- 6 *Butsurui binshitsu, maki no. 1*, Irita Seizô, ed., *Hiraga Gennai zenshû*, vol. I, 11-12.
- 7 Translation by Ryôzô Matsumoto, in: Sugita Genpaku, *Dawn of Western Science in Japan*, trans. Matsumoto Ryôzô and Kiyooka Eiichi (Tokyo: Hokuseidô Press, 1969), 16-17.
- 8 Described in detail in chapter 8 of Haga Tôru, *Hiraga Gennai* (Tokyo: Asahi Shinbunsha, 1981), 105-128. In his own account of the 1762 exhibition, entitled *Tôto yakuhin-kai*, he makes explicit reference to Dodonæus' *Cruydt-Boeck*.
- 9 *Butsurui binshitsu, maki no.2*, Irita Seizô, ed., *Hiraga Gennai zenshû*, vol. I, 35.
- 10 *Butsurui binshitsu, maki no. 3*, Irita Seizô, ed., *Hiraga Gennai zenshû*, vol. I, 61.
- 11 George Sarton, *Six Wings: Men of Science in the Renaissance* (Meridian Books, The World Publishing Company, 1966), 135.
- 12 Translation by Ryôzô Matsumoto, o.c., 25-26.
- 13 For fuller details of Hiraga Gennai's biography, see Hiraga Gennai nenpu, appended to Haga Tôru, *Hiraga Gennai* (Tokyo: Asahi Shinbunsha, 1981).




T AMSTERDAM. Gedrukt by FRANÇOIS HALMA Boekverkoper 1705.

JOHANNIS SWAMMERDAM
AMSTERDAMMER
Doctør in de Medicynen,
Historia Insectorum Generalis,
OFTE
Algemeene Verhandelng
VAN DE A 83299
Bloedeloofse Dierkens.

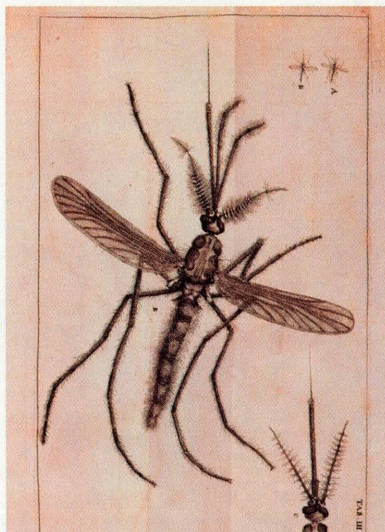
Waar in, de waeragtige Gronden van haare lingsame
daeruytgingen in Leedemaaten, klaarlijk werden voor-
gefelt; kragtiglijk, van de gemeene dwaaling der
Verreening, anders *Metamorphosi* genoemt, gefuyvert;
ende beknopetlijk, in vier onderscheide Ordenen van
Veranderingen, ofte natuurlijcke uyrtottingen in leeden,
begreepen.

Met uytgefige afbeeldingen varrijke.



UTRECHT,
By MEINARDUS van DREUVEN, Ordinarij Drucker
van de Academie. Anno 1669.

ILL 5



ILL 6

Frontispice du Tome Premier

Salomon a traite des plantes depuis le Cedre qui
est sur le Liban, jusqu'à l'Hysope qui sort de la mu-
raillle. Il a traite de même des animaux: de la Terre,
des oyseaux, des reptiles, et des poissons. s.L. de Boiss. 20.

ILL 7

LE SPECTACLE
DE
LA NATURE,
OU
ENTRETIENS
SUR LES PARTICULARITÉS
DE
L'HISTOIRE NATURELLE,
Qui ont paru les plus propres à rendre
les Jeunes-Gens curieux, & à leur
former l'esprit.

PREMIÈRE PARTIE,
CONTENANT CE QUI REGARDE
les Animaux & les Plantes.

TOME PREMIER, A33837

A PARIS,
Chez les Freres ESTIENNE, rue S. Jacques,
à la Vertu.

M. DCC. LIV.
Avec Approbation & Privilège du Roi.



JOH. JONSTONI
THAUMATO-
GRAPHIA
NATURALIS,

In decem Classes distincta,

in quibus

ADMIRANDA

- | | |
|------------------|-------------------|
| I. Cæli. | VI. Avium. |
| II. Elementorum. | VII. Quadrupedum. |
| III. Meteororum. | VIII. Exanguium. |
| IV. Fossilium. | IX. Piscium. |
| V. Plantarum. | X. Hominis. |

5A
13390



AMSTELODAMI,
Apud JOANNEM JANSSONIUM
à WAESBERGE,
Et ELIZEUM WEYERSTRAET.
M DC LXV.

THAUMATO-
 GRAPHIÆ
 NATURALIS
 CLASSIS SEPTIMA.

In quâ

QUADRUPEDUM
 ADMIRANDA.

Seneca l. 3. de Ira. cap. 30.

*Frivolis turbamur & inanibus. Taurum color
 rubicundus excitat, ad umbram aspis exur-
 git. Vrsos leonesque mappa proritat. Omnia
 qua natura fera ac rabida sunt, consternan-
 tur ad vana. Idem inquietis & stolidis inge-
 niis evenit : rerum suspitione feriuntur.*



ILL 11



ILL 12