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The discovery, naming and typification of *Wisteria floribunda* and *W. brachybotrys* (*Fabaceae*) with notes on associated names

Abstract

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Willdenow published the name *Glycine floribunda*, but it was not based on any dried or living specimen. This has led to problems concerning the identity of the plant that is native in Japan and Korea and is also cultivated as an ornamental vine in temperate zones world-wide. The discovery of this species by Europeans, placed in *Wisteria* by A. P. Candolle, its naming, nomenclature and typification are discussed. The identity of two later synonyms, *W. macrobotrys* and *W. multijuga*, is clarified. Lectotypes are chosen for them and for the distinctly different species *W. brachybotrys* as well as its widely used synonym *W. venusta*. In addition, a new combination is made for the associated taxon *W. brachybotrys* f. *albiflora*.

Additional key words: *Glycine*, *Leguminosae*, Houttuyn, Siebold, Thunberg, Willdenow, Vereenigde Oost-Indische Compagnie (VOC)

1. Introduction

The genus *Wisteria* Nutt. consists of six ornamental species including *W. japonica* Siebold & Zucc. (Valder 1995), a species that has been included in other genera. One species is native to North America and five species are to be found in eastern Asia. All species are twining woody vines with pinnate leaves with more than seven entire leaflets. The papilionaceous flowers are lilac-blue, purple, greenish yellow or white, borne on showy terminal or lateral racemes. Smooth seeds are carried in thick, leathery, sometimes velvety legumes.

The most widely cultivated *Wisteria* is undoubtedly the Chinese species *W. sinensis* (Sims) DC. (McMillan-Browse 1984). *W. floribunda* (Willd.) DC., however, has the largest number of cultivars. In the Japanese islands three species of *Wisteria* are native (e.g. Ohashi 2001), *W. floribunda* and *W. brachybotrys* Siebold & Zucc., which are the focus of this paper, and *W. japonica*. The first and

the third have been reported to occur in the wild also in Korea (Lee 2006; Park 2007).

Distinction between the three species can be simply summarised: *Wisteria floribunda* (Fig. 1) has climbing woody stems twining from left to right and long leaves with 11–19 leaflets. Terminal racemes that are loosely tapering and flowering acropetally are borne on the stems in spring. These vary from 30 cm to 1.5 m in length. The flowers are purplish blue or white. *W. brachybotrys* (Fig. 2) has climbing woody stems twining from right to left and leaves with 7–13 leaflets. Terminal racemes are 10–30 cm long, broad and flowering synchronously in spring. Although there is a purple flowered form of this species, it is the white flowered form that is more commonly encountered in Japan. *W. japonica* (Fig. 3) has climbing woody stems twining from left to right and leaves with 7–11 leaflets. Racemes are narrow and tapering 10–20 cm long, flowering acropetally from sev-

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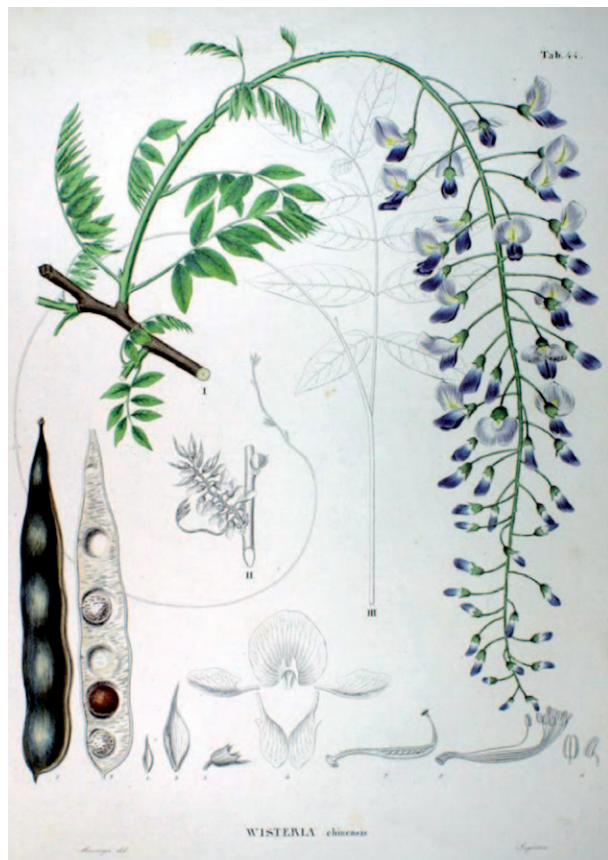


Fig. 1. *Wisteria floribunda*, coloured lithograph by W. Siegrist based on S. Minsinger, the latter based on Kawahara Keiga. – From Siebold & Zuccarini (1839: t. 44), London, British Library.

eral leaf axils per stem during summer. Flowers are pale whitish green, creamy white, pale yellow or rarely purple. This species has been placed in the separate genus *Millettia* Wight & Arn. by some workers, based on the absence of a pair of thickened callosities or auricles at the base of the standard petal, such auricles being present in other species of *Wisteria*. This is now considered to be an autapomorphic character for *W. japonica*. Recent studies (Hu & al. 2002) have shown that the genus *Callerya* Endl. is in fact the nearest relative to *Wisteria* based on nuclear DNA sequence data.

Wisteria floribunda was first described by Willdenow (1802) within the genus *Glycine* L., a genus now containing some 20 species possessing monadelphous stamens and trifoliolate leaves, which initially contained a large assemblage of bean-like twining species. Many species first placed in *Glycine* have since been classified in other genera. Candolle (1825) placed *G. floribunda* in the genus *Wisteria* on the basis of its being a scandent shrub (frutex scandens) that has diadelphous stamens (stamina diadelpa), unevenly pinnate leaves (folia impari-pinnata) and papilionaceous flowers (corolla papilionacea) with a pair of auricles on the standard petal (vexillum bicallosum), borne on terminal racemes (racemi terminales).



Fig. 2. *Wisteria brachybotrys*, coloured lithograph by W. Siegrist based on S. Minsinger, the latter based on Kawahara Keiga. – From Siebold & Zuccarini (1839: t. 45), London, British Library.

The exact identity of *Wisteria floribunda* has been in some doubt (Candolle 1825; Siebold & Zuccarini 1839; Rehder & Wilson 1916) due to early confusion of the Japanese vernacular names and to the fact that *Glycine floribunda* has never been typified. For example, Siebold & Zuccarini (1839) illustrated and described a good representation of *W. floribunda* with long racemes of flowers but called it *W. sinensis*, listing the significantly older names *G. floribunda* and *W. floribunda* in synonymy. The extreme rarity and fragmentary nature of old herbarium specimens, in particular the lack of mature leaves and complete inflorescences, were additional factors that contributed to the situation.

In order to fully appreciate the complex background of this confusion, we first trace the early records of *Wisteria floribunda* and *W. brachybotrys* by Europeans and then explain a possible solution to the typification problem with *W. floribunda*, which has been formally proposed elsewhere (Compton 2012).

By contrast no attempt is made to analyse the early records by Japanese authors and the pertinent pictorial and literary evidence, which have been dealt with admirably elsewhere (Valder 1995). Suffice it to say here, that the first written evidence for *Wisteria floribunda* appears to be in the “Kojiki” compiled in 712, that the plants



Fig. 3. *Wisteria japonica*, coloured lithograph by W. Siegrist based on S. Minsinger. – From Siebold & Zuccarini (1839: t. 43), London, British Library.

were highly esteemed at least since the Heian Period (794–1185) and cultivated by the Japanese for centuries (Valder 1995). Numerous cultivars have been selected and images prepared to document *W. floribunda* since the early phase of the Edo period (1603–1868), e.g. painted on silk scrolls and in cloisonné wares. There have even been wisteria-viewing sites in and near Kyoto and Edo [Tokyo] recorded for this period of Japanese history (Valder 1995).

2. Cleyer & Meister

The first Europeans to visit Japan were the Spanish and Portuguese traders and missionaries who arrived in the mid 15th century. These Jesuit missionaries initially had a very successful relationship with the Japanese, providing them with European products, in particular sugar, medicine and weapons, and receiving in return silver, ceramics, tea, camphor, lacquer and rice.

Unfortunately by 1633 overzealous proselytism undid much of the early goodwill and brought about “sakoku” or locked-in foreign policy, whereby the Japanese were not permitted to leave Japan and Europeans were prohibited from entry into it. The sakoku policy in Japan came into being in 1638 and remained in place until 1858. The only European nation to be exempted were the

Dutch who, having witnessed the expulsion of the Portuguese, adopted the principle of trade without religion and were permitted to continue their business with Japan from the port of Nagasaki.

The Dutch, who occasionally also hired non-Dutch native speakers, had started a trading post for their Vereenigde Oost-Indische Compagnie (VOC) or Dutch East India Company in Nagasaki in 1609. Even so, from the year 1641, they were restricted to an artificial island in Nagasaki harbour, built in 1636 to isolate the Portuguese, called Dejima, that was only 120 m by 75 m (9000 m²) in area. Dejima remained the only European trading post in Japan for the next 225 years. One condition of being granted leave to remain at Dejima was the annual hofreis or court journey of homage, demanded by the shogun, whereby the Chief Commissioner (Opperhoofd) of Dejima and his physician would travel to Edo in order to pay him their respects. This humbling of the Europeans by the sight of them crawling on their hands and knees to bow their heads to the floor was enough to satisfy the shogun. The hofreis was also the only way that Japan could gather news of what the Europeans were doing and what was happening in the outside world.

The first naturalist to study the plants of Japan was Andreas Cleyer (1634–1698). Born in Kassel (then Landgrafschaft Hesse-Kassel, Holy Roman Empire; subsequently abbreviated as HRE), Cleyer was a trader, botanist and physician who began his career as a soldier and proceeded to rise through the ranks of the Dutch East India Company (Bodart-Bailey & Massarella 1995). He became Chief Commissioner of the VOC trading post or “factorij” as it was called in Dutch, at Dejima in 1682–1683 (Michel 2001). Cleyer pretended to be Dutch so that he would be allowed to enter Japan during the sakoku and had been asked by the VOC to collect plants from Japan in order to study their potential medicinal and economic value. With this in mind, he brought with him his associate Georg[e] Meister (1653–1713) whom he had earlier employed as his gardener in Batavia, Java (now Jakarta). Meister, born in Brücken near Helme (then Landgrafschaft Hesse-Kassel, HRE) also accompanied Cleyer on his second period of duty as Chief Commissioner in Dejima in 1685–1686 (Hammer 2010). Cleyer, assisted by Meister, contributed to numerous articles published in Europe in 1686–1696, e.g. on *Camellia sinensis* in the journal “Miscellanea curiosa”, providing the first printed image of this plant (Lack 2006). Meister’s work “Der orientalische-indianische Kunst- und Lust-Gärtner” [The Oriental-Indian art and pleasure gardener], which appeared after his return to Dresden (then Kursachsen, HRE) in 1692, describes Japanese plants in chapter 10 “Japponische baumschule” [Japanese nursery] (Meister 1692). Cleyer was banished from Japan in 1687 by the Tokugawa authorities for failing in his duty to control smuggling (Bodart-Bailey & Massarella 1995). Cleyer’s botanical and Meister’s horticultural work is of interest as it is among the first European records of plants from

Japan. Only very few specimens collected by Meister in Japan have been preserved, all in the Sloane Herbarium at the Natural History Museum London (Dandy 1958).

Cleyer and Meister in 1678 had both become members of the *Academia Naturae Curiosorum* (Academy of the Curious in Nature; today *Leopoldina Nationale Akademie der Wissenschaften*, based in Halle) (Hammer 2010; Michel 2011) and corresponded with fellow enthusiasts of all kinds of nature throughout Europe (Michel 1991). Cleyer sent a collection of 1360 coloured illustrations of Japanese plants and birds undertaken by Japanese artists to Christian Mentzel (1622–1701), who was a botanist and personal physician to Friedrich III, Elector of Brandenburg and Duke of Prussia, later to become, as Friedrich I, the first King in Prussia (Michel 2002, 2011). Mentzel, who was also the Elector's librarian, had these bound as “*Flora japonica*” into one volume with a frontispiece added, and donated it in 1685 to the Elector. Today this work forms one of the treasures of the *Staatsbibliothek zu Berlin* (shelf mark *Libr. Pict. A 41–42*; e.g. Kraft 1982; Lack 1987). Cleyer, who was to die in Batavia in 1698, sent another set of 81 watercolour portraits of Japanese plants, which were shown to have originated from Meister (Muntschik 1984), to Nicolaes Witsen (1641–1717), the Mayor of Amsterdam and, from 1693, board member of VOC (Michel 2002). These illustrations were later acquired by Sir Hans Sloane and are now kept in the British Library as Sloane MS Add. 5018. One of the plant portraits on fol. 28r is entitled “*Fusinofana*” and is of a *Wisteria* with purple flowers. It is not possible to accurately identify the species from the illustration or the accompanying description, although this has been previously stated to be *W. floribunda* (Michel 1986). Clear identification of taxa from the illustrations of Japanese plants sent back to Europe by Cleyer and Meister is difficult in many cases and the descriptions (if available) tend to be highly ambiguous.



Fig. 4. *Wisteria floribunda*, drawing by Georg Meister, c. 1685. – Oxford, Sherardian Library, MS Sherard 253: f. 32 r.

Witsen's collections were sold after his death at auction in 1728. Among them were three further volumes of Japanese plant paintings. The auction listed these as “three large books of herbs being the Japanese herbarium, curiously painted” (Peters 1994). These are preserved today at the Sherardian Library at Oxford. Nicolaes Witsen's signature is to be found inside the front cover of each volume and two volumes are dated 1700. The books are numbered Sherard MS 253 with 181 folios, Sherard MS 254 with 125 folios and Sherard MS 255 with 404 folios. According to the manuscript catalogue of the Sherardian Library there is a bookplate “*E lib. J. Sibthorp*” which indicates that the three volumes had subsequently belonged to John Sibthorp (1758–1796), third Sherardian Professor of Botany at Oxford University, and were covered by his famous will (Lack & Mabberley 1999).

Sherard MS 253 f. 32r (Fig. 4) is a *Wisteria* that may well represent *W. floribunda* with long purple racemes. Sherard MS 255 f. 175r is a white flowered *Wisteria* that may represent *W. brachybotrys*. Sherard MS 255 f. 264r is also a white flowered *Wisteria* but the flowers are notably smaller and might possibly represent *W. japonica*. These illustrations of *Wisteria* from Japan must be among the first to have been seen in Europe.

3. Kaempfer

Engelbert Kaempfer (1651–1716), born in Lemgo (then the County of Lippe, HRE), was also a physician with the Dutch East India Company between 1685–1693. He is important in the history relating to *Wisteria floribunda* firstly because he provided in his “Amoenitates exoticarum politico-physico-medicae fasciculi V” (Kaempfer 1712) the first printed description of the species, which he knew under the Japanese name “Fudsi”, and secondly because his text is at the same time probably the most articulate of the early European descriptions. Thunberg (1784) cites this text abbreviated as “Kaempfer Am. ex fasc. V. p. 856” as a reference under his *Dolichos polystachyos* (see below).

Kaempfer stayed in Cleyer’s house in Batavia in 1689, undertaking duties for him as his secretary. He arrived in Nagasaki, Japan, in late 1690, where he remained as physician to the VOC until the end of 1692 (Bodart-Bailey & Massarella 1995). Kaempfer made two hofreis journeys to Edo during his Japanese sojourn. He garnered a reputation among the people he encountered as a good medical man as well as a keen botanist and wrote lengthy accounts of his time in Japan. His reflections on life there and the plants around him were mostly recorded in unpublished manuscripts, the exception being his work cited above. On Kaempfer’s death his unpublished manuscripts were bought by Johann Georg Steigerthal, physician to George I, King of Britain and Ireland, on behalf of Sir Hans Sloane and brought to England (Bodart-Bailey & Massarella 1995) where they were bound into volumes, found their way into the British Museum and have ended up in the British Library, London. Sloane’s Swiss librarian Johann Gaspar Scheuchzer (1702–1729) translated into English Kaempfer’s MS Sloane 3060 entitled “Heutiges Japan” [Japan today], calling it “The history of Japan” (Kaempfer 1727; Michel 2010). Scheuchzer’s translation was published in two volumes in 1727 (Michel & Terwiel 2001). A second edition came out in three volumes in 1906 (Kaempfer 1906) and an internet edition of the first edition is now available (see under Kaempfer 1727). Kaempfer’s text may be regarded as one of the most important works relating to Japan in the Age of Enlightenment (Michel 2002). Scheuchzer’s translation has been criticised for its over-embellishment of Kaempfer’s work, but Michel (2010) has argued that Scheuchzer’s translation, although containing certain florid amendments, did not differ greatly from Kaempfer’s intention.

One extract from Scheuchzer’s translation, viz. book V Chapter 1 p. 399 (Kaempfer 1727, after the internet edition 2007), gives an insight into Kaempfer’s ability to study plants under the strictures of sakoku on his first hofreis to Edo. This chapter is entitled “Preparations for our Journey, with a Description of the manner of travelling in this Country” and comprises the following text “I had for my own private use a very large Javan box, which I had brought with me from Batavia. In this box I privately kept a large mariner’s compass, in order to measure the directions of the roads, mountains, and coasts, but openly, and exposed to everybody’s view, was an inkhorn, and I usually filled it with plants, flowers, and branches of trees which I figured and described, nay under this pretext, whatever occurred to me remarkable”.

Kaempfer also reported on his first hofreis, transcribed by Michel (2002) from MS Sloane 3060, fol. 272r “alle Japanische Gefehrten, aller meist der bugjo mit seinen heschern haben mir bis auf den letzten tag unser reise, was ihnen rares von pflantzen vorgekommen, mir zu gebracht, und den wahren Nahmen und Character von kündigen leuten mit fleiß erforschet. So halten auch die Japaner, als vernünftige Menschen und besondere kenner und liebhaber der pflantzen, die Botanike vor ein unschuldiges studium, welches man nach dem Recht der Völker keinem wehren oder invidiren müße.” [“All our Japanese companions, and most of all the bugyo (Commander of the retinue) and his bailiffs, until the last day of our journey, brought me all the rare plants they could find and learned with diligence their correct names and properties from people familiar with them. The Japanese, as a reasonable people and exceptional specialists and lovers of plants, consider botany an innocent discipline, which according to the law of nations should not be obstructed or begrudged.”].

In MS Sloane 3060 there is only a single reference to “Fudsi” or *Wisteria*, in book V fol. 419. The entry reads “Darauf kamen wir in Osacca Firamatz, gleich von hier in einen Garten zur lincken hand, so mit Fudsi baumen trefflich blühend besetzt war“ [Subsequently we came to Osaka Firamatz (village of Firamatz) into a garden on our left, which was nicely planted with flowering fudsi trees] and refers to 12 May 1692. The chapter is entitled “Zweyte Rück Reise von Jedo bis Nagasaki” [Second return journey from Tokyo to Nagasaki] on p. 604 of the English internet edition 2007 (Kaempfer 1727). The “Fudsi” plant described by Kaempfer as flowering on 12 May could be either *Wisteria floribunda* or *W. brachybotrys*.

Kaempfer’s exquisite botanical drawings in MS Sloane 2914 were entitled “Delineatio plantarum japonicarum” and consist of 217 folios with Japanese plant names and cross references to MS Sloane 2915 and the “Amoenitatum exoticarum” fasc. V (Kaempfer 1712). Sir Joseph Banks in 1791 selected 59 of these drawings to form the basis of the uncoloured copper plates in the “Icones selectae plantarum”, but did not include an illus-

tration of a *Wisteria* species. On p. 135 of MS Sloane 2914, there is a single illustration of a *Wisteria*: t. CLVI entitled “Jamma Fudsi”. The following text has been written next to the illustration “MS Bot p. 198 and Ch 50 and Am 857”. Some translation of Kaempfer’s coding is necessary. The “MS Bot.” refers to the description and commentary in MS Sloane 2915, “Ch 50” is Kaempfer’s list of characters for each species in the MS, in this case character 50 refers to this particular fudsi, and “Am 857” is the page number in Kaempfer’s published work (Kaempfer 1712).

In MS Sloane 2915 p. 198 we find the following commentary on this illustration “Jamma Fudsi alternatur fl. albo”. The brief description of this plant by Kaempfer (1712: 857) reads as follows: “Jamma Fudsi. Eadem sylvestris, foliis flosculisque minoribus, stylis floridis surrectis” [Similarly woody, leaves and flowers both smaller, style of the flowers pointed erect]. Kaempfer is making the comparison here between the “Jamma Fudsi” on p. 857 and the “Fudsi” on the previous p. 856.

The illustration on MS Sloane 2914: p. 135, the description of it under the name “Jamma Fudsi alternatur fl. albo” in MS Sloane 2915 and the description on p. 857 in “Amoenitatum exoticarum” all refer to and illustrate the species *Wisteria japonica* but not *W. brachybotrys* as suggested by Valder (1995: 111) or *W. floribunda* as suggested by Hoppe (2003). Valder (1995: 111) misread the Latin phrase “foliis flosculisque minoribus” as “floculisque minoribus” which he translated as “leaves covered with down” instead of “leaves and flowers smaller”. Valder’s uncertainty as to why Kaempfer was stating that the flowers were smaller than those of “Fudsi” is hereby explained. Kaempfer was simply saying that his Jamma Fudsi, i.e. *W. japonica*, has smaller leaves and flowers than his Fudsi, i.e. *W. floribunda*.

Wisteria floribunda is well characterised on the previous page (Kaempfer 1712: 856) as “Too, vulgò Fudsi



Fig. 5. *Wisteria floribunda*, specimen from Japan, 1692, leg. E. Kaempfer. – London, Natural History Museum, Department of Life Sciences, Hortus Siccus 211, f. 83.1.

& Fúsji” with the Latin description “Folio imparitur pinnato integro, tenero, spithamali; Racemis seu spicis floridis, spithamalibus, sesquispithamalibus & longioribus ... pulcherrimo spectaculo pendulis” [Leaves unequally pinnate entire, approximately a spithame (23 cm) in length; racemes when in flowering spikes, half (11 cm) to full spithame (23 cm) in length or longer ... most beautifully and spectacularly pendulous]. Then further on in the description we read “Curiosi radicem stercorant faecibus cerevisiae, (sacki) sic florum spicas gignunt longissimas, aliquando trium et quatuor spithamarum” [The curious manure the root with sake in order that the spikes become very long, sometimes three to four handspans in length].

In short, Kaempfer had observed a plant bearing extremely long racemes of 69–92 cm in length. The Greek

handspan or spithame is generally considered to be two thirds of a foot long, i.e. 9 ins or 23 cm. Although Kaempfer attributed the length of the racemes to its rich mulching, it is clear that he was in fact observing *Wisteria floribunda* with a genetically determined length of the raceme. It is also assumed that Kaempfer must have regarded the plants with short racemes [sesquispithamali-bus, i.e. half-handspan long], which were later segregated by Siebold into *W. brachybotrys*, as being merely inferior variants of *W. floribunda*.

Kaempfer's Japanese plant collection acquired by Sir Hans Sloane (Hortus Siccus 211) and now in the Natural History Museum London (BM) contains 410 plant specimens on 111 folio sheets bound into one volume (Hinz 2001). This volume is entitled "Volumen plantarum in Japonia collectarum ab Engelberto Kempfero M. D. annis 1691 & 1692. Addita sub finem plantae aliquot ab eodem in Persia & insula Ceylan repertae". The Folio 83.1 has a *Wisteria* leaf with 13 leaflets, two separate leaflets and seven individual flowers (Fig. 5). The name "Fusji" is written on the sheet by Kaempfer, followed by what appears to be either "non" or "nom", the latter perhaps referring to its indigenous name. According to Hinz's list of unpublished data (Hinz 2001) the specimen is either ?*W. floribunda* (Willd.) DC. or *W. brachybotrys* Siebold & Zucc. The name "*Dolichos polystach.*" was written on the mounted part of the sheet by Daniel Solander, "*Glycine chinensis*" is written in pencil on the sheet itself, possibly by P. F. von Siebold according to Hinz (unpubl.). Judging by the lack of pubescence on the standard petals, this specimen appears to represent *W. floribunda*.

4. Thunberg

Carl Per Thunberg (1743–1828), born in Jönköping in the Kingdom of Sweden, was a pupil of Linnaeus and later one of his successors in the chair of botany at Uppsala University. Rather unsurprisingly a vast biographical literature exists on this outstanding scientist (summarised by e.g. Stafleu & Cowan (1986), Nordenstam (1993); on his stay in Japan in particular Stearn (1971, 1994)).

Like his teacher before him, Thunberg travelled to Amsterdam (then Republic of the Seven United Netherlands) in 1771, where he was commissioned by Johannes and his son Nicolaas Burman to make a visit to the Dutch colonies and Japan to collect specimens (Skuncke 2008). Thunberg spent three years in the Cape Colony in southern Africa studying the plant life there but importantly also learning to speak Dutch. Like Kaempfer before him, this was so that he could travel to Japan passing himself off as a Dutchman in order to avoid the Japanese isolation policy. Following once more in Kaempfer's footsteps, Thunberg was appointed physician of the VOC on Dejima accompanying the Chief Commissioner A. W. Feith (Thunberg 1784). Thunberg acquired many plant specimens while in Japan between 1775 and 1776, in particular on the long hofreis he made in 1776 to pay homage to

the shogun at Edo. Thunberg left Japan in 1776 returning to Amsterdam in 1778. On his way back to Sweden, he made a short visit to London in December 1778, where he met Sir Joseph Banks at the British Museum. While in London, Banks showed Thunberg Kaempfer's collections and manuscripts (Skuncke 2008).

After his return to Sweden, Thunberg wrote an account of the plants that he had encountered in his "Flora japonica" (Thunberg 1784). In it he described *Dolichos polystachyos* citing Linnaeus (1753) and repeating Linnaeus's description of that species. *Dolichos* L. is a genus of perennial, twining papilionaceous bean-like legumes producing leaves with three or five leaflets and frequently bearing short purple flowered racemes. It is now understood to contain c. 60 species distributed throughout the Old World. Thunberg believed that the pinnate-leaved species that he collected himself in Japan most closely fitted Linnaeus's *D. polystachios* despite the apparent fact that the latter had been reported from North America. Thunberg (1784) gained no Latin name for the species from Kaempfer because Kaempfer only used Japanese vernacular names or Latin polynomials to describe his plants. Thunberg (1784) also did not mention Houttuyn's use of the name *D. polystachyos* (Houttuyn 1779) or its use in the German edition of Houttuyn's work (Panzer 1782) (see Chapter 5) since the former became available to him only in 1787 (Wijnands 1993) and since he probably had no access to the latter.

Four years later Thunberg started publishing his travel account "Resa uti Europa, Africa, Asia förrättad Åren 1770–1779". In the third volume (Thunberg 1791) we find the following information on his *Dolichos polystachyos* "en årtväxt, som slingrar sig lika som Turkiske störbóner, var på mange ställen planterad til lefvande lusthus. Den var dertil icke allenast ganska tjånlig, utan åfven med sine blomor, som nedhånge på långa stånklar, och utslogo efter hand mycket prydelig" [a legume, which trails like Turkish runner beans, was in many places planted like a living gazebo. In that respect it was not only useful, but also very beautiful due to its flowers that hanged down on long stalks, and opened in sequence in a neat way] (translation from M. Hjertson, pers. com.); this text refers to Thunberg's stay in Nissaka (now Kakegawa, Shizuoka Pref.) in late May 1776.

Thunberg's *Dolichos polystachyos* in his "Flora japonica" was based in part on the lengthy description of "Fusji or Fudsi" as described by Kaempfer (1712) and he will also have seen the Kaempfer sheet (BM, Hortus Siccus 211: 83.1; see above and Fig. 5) labelled "Fusji" shown to him by Sir Joseph Banks in 1778.

Thunberg also collected specimens that he named *Dolichos polystachyos* himself whilst in Japan. Although there is no indication that Willdenow had seen any of Thunberg's Japanese specimens, Willdenow (1797) made special reference to the work of Thunberg and will have based his new species *Glycine floribunda* on the description provided by Thunberg (1784). Willdenow may have



Fig. 6. *Wisteria brachybotrys* and *W. floribunda*, specimens from Japan, 1776, leg. P. Thunberg. – Uppsala, Fytoteket, THUNB-16770.

taken Thunberg's description "racemus longus saepe pedalis" or racemes often a foot (30 cm) long as a diagnosis for the new species.

There are five sheets known to exist from Thunberg's collections annotated "*Dolichos polystachyos*" by his own hand. One of these is at the Linnean Society of London Herbarium (LINN) in the Smith Collection (HS 1216.4) consisting of two branches of a small flowered vine bearing short racemes from axillary branches. This specimen is identifiable as *Wisteria japonica*, not *W. floribunda*.

Three sheets are in the Thunberg collection at the University of Uppsala (UPS-THUNB). Sheet UPS-THUNB-16768 consists of three separate flowering branches. They are all short branched, small flowered vines that bear axillary racemes less than 15 cm long. The leaves bear up to 11 leaflets. The sheet is annotated in Thunberg's handwriting on the face bottom right "*Dolichos polystachyos*. α " and on the reverse "e Japonia C. P. Thunberg". All three branches are identifiable as *Wisteria japonica*. Sheet UPS-THUNB-16769 consists of a single much larger branch with several axillary flowering racemes and a separate small fruiting branch bearing two seed pods. The sheet is annotated in Thunberg's handwriting on the face bottom right "*Dolichos polystachyos*. β " and on the reverse "e Japonia C. P. Thunberg". "*Wisteria japonica*" is written in pencil on the sheet followed by "Det G[en-Iti] K[oidzumi]". These specimens represent the flowering and fruiting parts of *W. japonica*. Sheet UPS-THUNB-16770 (Fig. 6) consists of three inflorescence branches. Two bear short racemes each c. 10 cm long, each with large flowers that are all in full bloom. Both bear leaves with up to 13 leaflets. The third, much longer inflorescence measures 32 cm and has 10 basal flowers in full bloom and 76 flowers in bud. This specimen has leaves with up to 17 leaflets. The sheet is annotated in Thunberg's handwriting on the face bottom right "*Dolichos polystachyos*. γ " and on the reverse "e Japonia Thunberg". The central, shortest flowering branch has written next to it in pencil "*Wisteria brachybotrys*" and the longer right hand stem plus short raceme "*W. venusta*". The longest, left hand inflorescence has written next to it in pencil "*W. floribunda*" and on the bottom right of the sheet in pencil "Det. G. K.". The two branches bearing shorter racemes appear to both represent *W. brachybotrys*, for which the name *W. venusta* is a synonym. The longer flowering branch, however, is a readily identifiable specimen of *W. floribunda*.

For a fifth specimen annotated by Thunberg "*Dolichos polystachys*", preserved in the Burman herbarium (G), see Chapter 11.

In contrast to Meister and Kaempfer, Thunberg is not known to have taken home illustrations of Japanese plants. However, back in Uppsala, he arranged for monochrome drawings of some of his herbarium specimens from Japan to be prepared (Nordenstam 1994). They were acquired in 1871 by Carl Ivanovič Maximowicz (1827–1891) for the

library of the Botanical Museum of the Imperial Academy of Sciences (Bretschneider 1898; Grubov & Kirpicznikov 1993) and are now kept in the library of the Komarov Botanical Institute (LE) of the Russian Academy of Sciences in Saint Petersburg. The 315 pen-and-ink drawings with grey wash have only recently been published (Kimura & Leonov 1994). Their facsimiles make up a massive volume that necessitated two catalogues to enumerate them (Nordenstam 1994; Ohba 1994).

In our context no. 212 and no. 213 are relevant, the former based on UPS-THUNB-16769, the latter on UPS-THUNB-16770, both prepared by an unknown plant illustrator and both having been annotated by Thunberg as *Dolichos polystachyos*. Whereas no. 212 is a straightforward illustration showing *Wisteria japonica*, this is not the case for no. 213 (Fig. 7). In fact, an "iconohybrid" (Nordenstam 1994) had been produced, i.e. a plant combining characters from two different species, showing to the left a very long raceme with 49 flowers and to the right a short raceme with 13 flowers, mirroring to a degree, the specimens on the mixed sheet UPS-THUNB-16770 (Fig. 6). Maximowicz had already observed the hybrid make-up of no. 213 (Zabinkova 1994) even though he had misidentified the taxa involved.

The following note on no. 213 in one of the catalogues (Nordenstam 1994) clarifies the situation "Matches no. 16770, '*Dolichos polystachyos*. γ – Japon. Thunb.' The illustration is composed from two branches: the lower part corresponds to the lower right specimen = *Wisteria venusta* R. & W.; the apical part with the elongate inflorescence corresponds to the left specimen = *W. floribunda*. In addition, 1 or 2 leaves in the figure may be inspired from the third specimen = *W. brachybotrys* S. Z."

There is clear evidence that even Thunberg was misled by no. 213: he annotated the "iconohybrid" on the back as "Houttuyun [sic] 2. T. 64 f. 2." (Tchernaja 1994).

5. Houttuyn

Maarten Houttuyn (1720–1798), born in Hoorn (then the Republic of the Seven United Netherlands) and later based in Amsterdam, was "a collector and merchant of natural curiosities, one of the people who subscribed towards the expense of sending Thunberg to Japan" (Smith 1811). It was only logical for Thunberg to visit Houttuyn in 1778 on his way back to Sweden and afterwards the two men maintained an exchange of letters (Wijnands 1993). Thunberg had sent plant specimens from Japan via J. C. M. Radermacher, an administrator at Batavia, to Houttuyn. The later correspondence between Thunberg and Houttuyn provides insights as to how both authors worked and published, quite independently, on almost the same material (Wijnands 1993).

Willdenow's (1802: 1066) second reference "Houttuyn Lin. Pfl. Syst. 8: 563" refers indirectly to Houttuyn's "Natuurlijke Historie". It is an enlarged and amended translation of Linnaeus's "Systema Naturae ed.

12" (1767) (Stafleu & Cowan 1979) consisting of individual parts (deel) devoted to fauna and flora, the latter being devoted to plants (tweede deel). Houttuyn's *Dolichos polystachyos* was originally published in his *Natuurlijke Historie* 10: 156 (Houttuyn 1779). The reference in Willdenow (1802), however, refers to the German translation of Houttuyn's work, undertaken by Gottlieb Friedrich Christmann (1752–1836) and Georg Wilhelm Franz Panzer (1755–1829) (Stafleu & Cowan 1976). They translated Houttuyn's earlier work as "Vollständiges Pflanzensystem" and amended it with additional information and some new names and taxa. The entry *D. polystachyos* was undertaken by Panzer and published in volume 8 (Panzer 1782).

Houttuyn (1779) describes his *Dolichos polystachyos* as: "XXI *D. polystachyos* veelbloemige [The many flowered] Pl. LXIV fig. 2. / 21) Slingerboon met een blyvende Steng en zeer lange Aairen, die dubbelde Bloemsteeltjes hebben; de Haauwen gestpitst en samengedrukt." [Slingerboon with a persistent stem and very long spikes, which have double flower stalks; the siliquas acuminate and compressed.]

In his introduction to the list of *Dolichos* species, Houttuyn (1779: 142) uses the vernacular name "Slingerboon" [Twining Bean] for all species in the genus. Houttuyn mentions that Clayton had observed the plant in Virginia, having siliquas like pea pods, and that he had received under this name (*D. polystachyos*) a twig of a plant from Japan, illustrated in t. LXIV, fig. 2 (Fig. 8). He makes a point of the leaves being pinnate rather than trifoliolate as commonly found in the genus and describes the characters depicted in the plate. He makes a reference to the nine united filaments and the single filament as well as to the pair of calluses on the standard petal. Finally his description in Latin beneath the text reads "*D. volub.* Caule perenni, spicis longissimis, pedicellis geminis & c. GRON. *Virg.* p.106" [climbing *Dolichos* with perennial stems, flower spikes most long, pedicels borne in pairs. Gron[ovius, *Flora*] *Virg*[inica] p. 106].

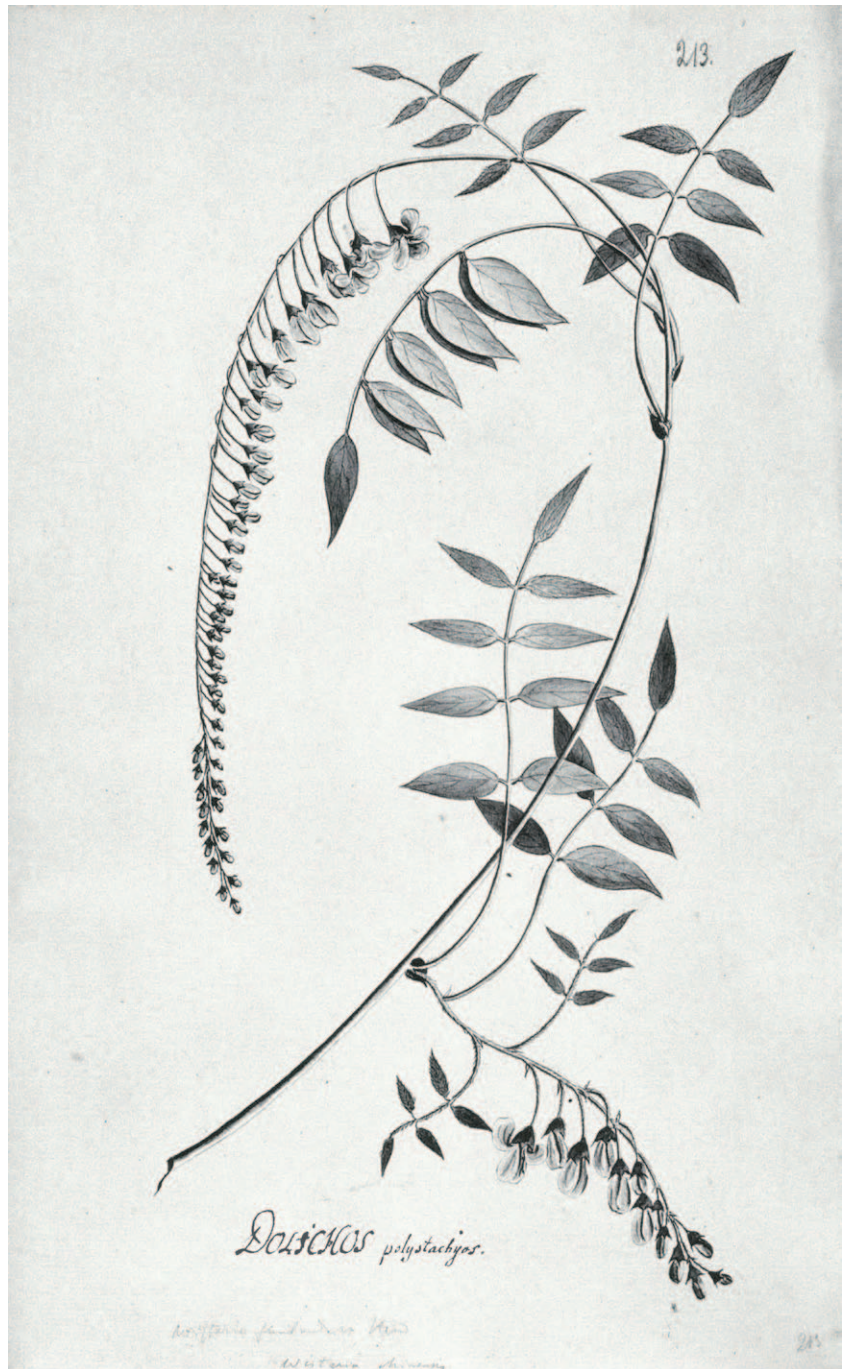


Fig. 7. "Iconohybrid", anonymous illustration showing characters of *Wisteria brachybotrys* and *W. floribunda*. – Saint Petersburg, Russian Academy of Sciences, Komarov Botanical Institute, Library, *Icones plantarum rariorum* f. 213.

John Clayton (1694–1773) was an English plant collector who settled in North America. Clayton collected extensively in Virginia and sent many of his plants and manuscripts to the Dutch botanist Jan Frederik Gronovius (1686–1762) in Leiden. Gronovius subsequently published his "*Flora virginica*" (Gronovius 1743) basing his plant descriptions largely on Clayton's notes and specimens but notably without Clayton's permission. Linnaeus also studied many of Clayton's specimens and it was from one of Clayton's collections described in



Fig. 8. *Wisteria* cf. *brachybotrys*, copper engraving. – From Panzer (1782: t. 64, fig. 2), Berlin, Freie Universität, Botanischer Garten und Botanisches Museum Berlin-Dahlem, Bibliothek.

Gronovius (1743) that he defined *Dolichos polystachios* L. (Linnaeus 1753). Houttuyn's reference to Gronovius is to *D. polystachios* in the second edition of the "Flora virginica" (Gronovius 1762). *D. polystachios*, known colloquially as 'Thicket Bean', is an herbaceous twining bean-like plant with small clusters of purple flowers. It is now recognised as *Phaseolus polystachios* (L.) Britton & al., bearing little resemblance to any species of *Wisteria*.

Panzer (1782) makes one or two amendments to Houttuyn's (1779) treatment of *Dolichos polystachios*. Panzer calls the plant "Langährige Faseln" followed by the description in German and then in Latin. He follows the description with his list of references, Linnaeus (1753, 1767) and the two editions of Gronovius (1743, 1762). These references all refer to the description of *D. polystachios* L. in those works. The illustration is reproduced from Houttuyn (1779). The most significant amendment that Panzer makes is the statement of flower colour: "Die Blumen, welche purpurfärbig, kommen übrigens vollkommen mit den angegebenen Gattungskennzeichen überein". [The purple flowers totally agree with the generic characters given]. Houttuyn (1779) did not refer to flower colour for this species in his work.

Houttuyn (1779) stated that he had received a twig of the plant depicted from Japan but he does not say from whom it had been sent. However, it is likely that a specimen has been sent or given by Thunberg (see Chapter 11).

The reference to pinnate leaves, diadelphous stamens and the pair of auricles on the standard petal make it unequivocal that Houttuyn was dealing with a *Wisteria* species.

There are though some ambiguous elements in both the description and illustration. Houttuyn (1779) clearly indicates in both text and plate the pairs of pedicels ("double flower stalks"). Some degree of artistic license could be inferred from Houttuyn's plate here. Houttuyn will have seen Linnaeus's description of *Dolichos polystachios* (Linnaeus 1753) in which he describes "pedicellis geminis" [pedicels in pairs] and refers to the same attribute in Gronovius (1743); however, this is not a feature of any *Wisteria* species. On the other hand, the inflorescence illustrated has a raceme with few flowers, apparently flowering synchronously. Aside from the ambiguous elements listed, the only other possible candidate for Houttuyn's engraving seems to be *W. brachybotrys*, a species that does have auricles on the standard petal and flowers synchronously. Clearly Houttuyn did not illustrate *W. floribunda* although this has recently been proposed (Wijnands 1990).

6. Willdenow

Carl Ludwig Willdenow (1765–1812) was a botanist and pharmacist based in Berlin (then Margraviate Brandenburg, HRE) with a particular interest in the geographic

distribution of plants. He became Director of the Royal Botanic Garden in Schöneberg near Berlin from 1801 until his death. Willdenow was responsible for several important botanical publications including the fourth, considerably enlarged edition of Linnaeus's "Species plantarum" after the latter's death in 1778. Willdenow published *Glycine floribunda* in volume 3 part 2 of that work (Willdenow 1802). In the preface to the first volume Willdenow (1797: vii) pointed out that by the use of the asterisk (stellula) next to the name of a genus or species he was indicating that Linnaeus had not already described it. He used the capital letter W to further enhance his claim to the new names. Throughout his work, Willdenow used the abbreviations "v.v." [vidi vivus] for having seen living material of the plants he was describing and "v.s." [vidi siccus] for those descriptions based on dried specimens.

Under his generic entry for *Glycine*, Willdenow (1802) in fact described 29 new species out of the 44 that he included. Willdenow also acknowledged the valuable sources of information that contributed to his work citing many earlier and contemporary workers. He made specific reference to the work of Thunberg (1784). Willdenow (1802: 1066) described his new species as: "* 41. GLYCINE *floribunda* W. / G. foliis impari-pinnatis undenis ovatis, racemis folio longioribus, caule frutescente volubili. W. / Dolichos polystachyos. Thunb. jap. 281. Houttuyn Lin. Pfl. Syst. 8. p. 563. t. 64. f. 2. / Blütenreiche Glycine W. / Habitat in Japonia. ♯ / A Dolicho *phystachyo* certe diversissima. W.". The translation of the Latin description reads: "*Glycine* with unevenly pinnate leaves bearing eleven ovate leaflets, racemes longer than leaves, stems woody and twining". It is evident from this description that Willdenow has based a great part of it on that of Thunberg (1784). Willdenow called his new species in German "Blütenreiche Glycine" or Rich Blooming Glycine. He cited two references both under the name *Dolichos polystachyos*, first that of Thunberg (1784), and secondly Houttuyn (1779) or to be more precise Panzer (1782).

The last sentence of the protologue has some ambiguities: "a *Dolicho phystachyo* certe diversissima" [from *Dolicho phystachyo* it assuredly most differs]. This includes what may be interpreted as a mistake made during printing, "*phystachyos*" should in all likelihood be "*polystachyos*". In this final statement terminated by the capital "W", Willdenow is making it clear that *Dolichos polystachios* L. is in his opinion not the same as his new species, even though both Thunberg and Houttuyn had used Linnaeus's name for it in their respective works.

7. Candolle

Augustin Pyramus de Candolle (1778–1841) was a botanist born in Geneva (then an independent state) who, like Willdenow, was also interested in phytogeography. His work was far ranging and involved the creation of

a new natural system of classification for plants (Gray 1863). Following his botanical studies in Paris, he was appointed professor of botany at Montpellier University, eventually returning to take up the post of professor of natural history in Geneva (Gray 1863). In 1824 Candolle started publishing his famous "Prodromus".

Candolle made his new combination *Wisteria floribunda* in the second volume of that great work (Candolle 1825: 390): "3. W? FLORIBUNDA, caulibus foliisque glabris. ♯ ◡ in Japonia. Too vulgo / Fudsi Kœmpf. am. 5. p. 856. Dolichos polystachyos Thunb. jap. 281. Houtt. / pflanz. syst. 8. p. 563. t. 64. f. 2. non Linn. Glycine floribunda Willd. spec. / 3. p. 1066. Racemi longi pulcherrimi. Corollæ purpureæ aut albæ."

In the description Candolle states that the leaves and stems are glabrous. He follows that with two symbols; the first symbol is one of the signs for the planet Saturn, a sign that symbolises woodiness. The second, the down-pointing circle segment, is a sign for a climbing plant. Candolle cites Kaempfer, Thunberg, Houttuyn and Willdenow ending with the brief description "racemes long and most beautiful. Corollas either purple or white".

Candolle admitted to having little knowledge of the species by placing it at the end of his entry for *Wisteria* after the other two species under the heading "† Species non satis nota" [species with insufficient features]. Judging from the Prodromus Herbarium kept in the Conservatoire Botanique in Geneva (G) he had indeed seen no specimen, just like Willdenow twenty-three years earlier. This uncertainty may have been exacerbated by the discrepancy highlighted by Willdenow between Linnaeus's and Thunberg's definitions of *Dolichos polystachyos* and is in a sense confirmed by Candolle's statement that his "*W.? floribunda*" is "*Dolichos polystachyos* non Linn.?" In addition, Candolle's uncertainty is clearly indicated by the insertion of a question mark behind the abbreviation of that genus name.

8. Siebold

Following in the erstwhile footsteps of his predecessors Cleyer, Meister, Kaempfer and Thunberg, Philipp Franz von Siebold (1796–1866) was borne into a family of physicians in Würzburg (then the bishopric of Würzburg, HRE) and became a physician himself. He was appointed military doctor on the Dutch frigate *Adriana* bound for Batavia, where he learnt to speak Dutch (Stearn 1971, 1993). Siebold was sent to Dejima as physician and scientist for the Dutch government following the disbanding of the VOC in 1798. He spent a total of 9 years in Japan. His first trip was between 1823 and 1829, a sojourn which terminated in his being expelled from Japan for being in possession of maps. The Japanese had stated to all Europeans that maps were expressly forbidden and Siebold's possession of some had encouraged the Japanese authorities to assume that Siebold was acting as a

spy for Russia. In 1858 the Japanese finally lifted the old sakoku policy and opened their borders to free trade. The Japanese authorities revoked their ban on Siebold and he was permitted to return to Japan for a further three years. In 1861 he entered into the service of the shogun in the role of promoting European science but soon fell out with both the Japanese authorities and the Dutch and was forced to return to Europe. During the course of his time in Japan, Siebold sent to Ghent in Belgium and Leiden in The Netherlands many thousands of herbarium specimens and many live plants and seeds.

Siebold wrote extensively on the plants and animals of Japan. His major botanical work, however, was the production of his “Flora japonica”, a work that he co-wrote with Joseph Gerhard Zuccarini, professor of agricultural botany at Munich University. It was started in 1835 but was not completed until 1870, four years after Siebold’s death.

Siebold and Zuccarini described two new species of *Wisteria* from Japan in the instalment no. 9–10 of their “Flora japonica” published in April 1839, i.e. *W. brachybotrys* and *W. japonica* (Siebold & Zuccarini 1839). They were also the first authors to have a clear view on the taxonomy of all three Japanese species (see Introduction), though not on their nomenclature. The detailed descriptions by Siebold & Zuccarini (1839: 88, 92) are accompanied by coloured lithographs (Fig. 1–3), based on watercolours by Kawahara Keiga (1786–c. 1862; for his other names see Ohba & al. 1993), with the dissections added by P. Minsinger (for an in-depth analysis see Tchernaja 1993). Thanks to Maximowicz, who acquired the watercolours from Siebold’s widow for the library of the Botanical Museum of the Imperial Academy of Sciences in Saint Petersburg (Bretschneider 1898), this most precious material is preserved today in the library of the Komarov Botanical Institute in that city. It has recently been made available in an exemplary manner firstly in the form of an annotated and illustrated catalogue (Ohba 1994) and secondly in the form of a selection of large-size, printed illustrations in colour (Kimura & Grubov 1993).

In our context, catalogue no. 458, 467 and 469 (referring to inventory no. 493, 494 and 495, cf. Alessina 1982; referring to printed colour plate no. 237, 238 and 239, cf. Kimura & Grubov 1993) are relevant. The three watercolours show *Wisteria japonica*, *W. brachybotrys* (except the fruit which belongs to *W. floribunda*) and *W. floribunda*, respectively (Ohba & al. 1993). The second (except for the fruit) and third (including the fruit from no. 467) are the exemplars on which t. 45 (Fig. 2) and t. 43 (Fig. 1) of Siebold & Zuccarini (1839) are largely based. In contrast to what has been stated in the catalogue, no. 458 does not form the basis of t. 44 (Fig. 3).

Curiously, Siebold and Zuccarini altered Kaempfer’s (1712) concept of the Japanese vernacular names for some of the species. This was done most probably because Siebold had not seen Kaempfer’s manuscripts and

illustrations that accompanied the names, moreover, the Japanese appear to have been inconsistent with their own application of the names.

For *Wisteria japonica* (Fig. 3) Siebold cited the Japanese names Ko-Fudsi qualifying that with “i.e. parva Fudsi” or Saru Fudsi. Kaempfer had called this species Jamma Fudsi.

For *Wisteria brachybotrys* (Fig. 2) Siebold used the Japanese name Jamma Fudsi qualifying that with “i.e. Fudsi Montana” and cited “Kaempfer Amoen. exot. 857”. Kaempfer saw this as the variant of “Fudsi” that bore short flowered racemes and merely included it along with the long racemed plants we now recognise as *W. floribunda*. As we have seen, Kaempfer (1712: 857) used the name Jamma Fudsi for *W. japonica* and not for *W. brachybotrys*.

Siebold & Zuccarini’s (1839) third species was placed under the name *Wisteria sinensis* and illustrated as t. 44 (Fig. 1). They listed *Glycine floribunda* Willd. and ?*W. floribunda* DC in synonymy, stated in the text, that the plant was a form cultivated in Japan originally introduced from China and applied a misspelling of *W. sinensis* (Sims) DC. (*W. chinensis*) to the plate, i.e. t. 44. The identification of the plate and the text as *W. floribunda* are unequivocal. The text furthermore states “les grappes nombreuses de fleurs bleues, souvent d’un mètre de longueur, ce qui produit un effet admirable” [the numerous racemes of blue flowers, often one metre in length, which produces an admirable effect]. The Japanese name for this plant is given as Fudsi, but Siebold & Zuccarini (1839) went on to say that if the flowers were purple the plant was called Beni-Fudsi or if they were white then it was Siro-Fudsi.

9. Neubert

Wilhelm Neubert (1808–1905) was a horticulturist from Württemberg who founded and edited a journal, known initially as “Dr. Neubert’s Deutsches Garten-Magazin” and later as “Deutscher Magazin für Garten- und Blumenkunde”, in Stuttgart. From the mid to late 19th century Neubert’s journal described and illustrated several species that were new to cultivation. The purpose of the journal was similar to that of “Curtis’s Botanical Magazine” in England, bringing the excitement of new plant introductions to the German-speaking reader. Neubert (1870) described and illustrated his new species “*Wisteria* (*Glycine*) *macrobotrys* Sieb. (mit Abbildung)” from one of Siebold’s Japanese collections that had been cultivated by the renowned nurseryman Lemoine near Nancy, France, and distributed from there. It is less than 300 km from Nancy to Stuttgart and it would not have been too difficult for Neubert to acquire the plant from the famous Lemoine nursery.

Neubert (1870) describes in some detail why he chose the name “macro” and “botrys” meaning “langtraubig” [long-trussed or long racemed]. He made comparisons

between the raceme length of his new species and those of other existing species of “*Glycine*”, in particular between *G. frutescens* and *G. chinensis*. In his description of *Wisteria macrobotrys*, Neubert points out “Exemplare[n] mehr als eine fuss lang” [specimens are more than one foot long]. However, Neubert makes no reference to *W. floribunda*. It is likely that he was unaware of the publication of *W. floribunda* as he listed no botanical references in the work. It is also possible that even if Neubert had known of the existence of the name he may have chosen to ignore it due to the uncertainty surrounding its application. There are no specimens of Siebold’s Japanese collections in the Nationaal Herbarium Nederland (L) that can be linked directly to Neubert’s plant (Gerard Thijsse, pers. com.). As pointed out above, Siebold (1839) had illustrated this species under the name of *W. “chinensis”*.

It is possible but unlikely that Siebold’s plant was introduced into cultivation from his first expedition to Japan during 1823–1829. Neubert (1870) stated that *Wisteria macrobotrys* had been cultivated by Lemoine at Nancy. Victor Lemoine had worked as an apprentice in Louis Van Houtte’s nursery at Ghent in Belgium during the 1840’s where it is known that many of Siebold’s plants had been sent (Spae 1847). It is also known that many of Siebold’s collections were sent to his own private garden in Leiden, The Netherlands, after 1830 (Rehder & Wilson 1916; Stearn 1971) and were distributed from there to nurserymen locally. Significantly Lemoine did not acquire his own nursery at Nancy in France until 1849. It seems more likely then that Neubert’s plant was collected from Japan on Siebold’s second sojourn in 1859–1861.

Neubert’s description and illustration should be seen for what it is, i.e. an attractive portrait of a spectacular new plant introduction. His illustration perfectly depicts a typical inflorescence of *Wisteria floribunda* and accords well with the raceme length of that species as shown in the Thunberg specimen at UPS. In short, the name *W. macrobotrys* is a heterotypic synonym and is relegated into the synonymy of *W. floribunda*.

10. Van Houtte

Louis Van Houtte (1810–1876), was a Belgian horticulturist and nurseryman who founded the horticultural journal “Flore des serres et des Jardins de l’Europe” in his nursery at Ghent in 1845. This journal was in many ways similar to Neubert’s on the other side of the river Rhine, describing and illustrating fascinating new species for the francophone community. Van Houtte illustrated and described *Wisteria multijuga* in volume 19 of his journal. The publication date of that volume, however, is 1874 not 1869–70 (Staffeu & Cowan 1986) as cited in many works. Van Houtte (1874) states in his brief description of his new species “Introduite du Japon dans nos cultures par le célèbre von Siebold, cette brillante espèce de *Glycine* ... elle se couvre de racèmes atteignant deux fois la longueur de la planche ci-contre” [Introduced from Ja-

pan into cultivation by the celebrated von Siebold, this marvellous species of *Glycine* ... is covered in racemes which attain twice the length of the plate opposite]. The length of the inflorescence in the “plate opposite” is c. 16 cm and so the length described by Van Houtte would be 32 cm. The short diagnosis on the length of the inflorescence is just adequate for valid publication of the name under Art. 32.1d of the Code (McNeill & al. 2006; John McNeill, pers. com.). The plate has “Japon. rustique” written at the bottom indicating the plant’s hardiness and Japanese origin. Van Houtte made no reference to *W. floribunda* or to Lemoine and Neubert (see Chapter 9) and so we must assume that he was unaware of the publication of both previously published names. He did, however, refer to the plant being a collection from Japan by Siebold. As we have already explained in relation to Neubert, it is possible that Van Houtte’s plant may have arisen from Siebold’s collections that arrived in Europe in 1830 (Spae 1847) but there is no evidence to support this and it may have arrived after his second journey to Japan in 1859–1861. The fact that Van Houtte’s nursery was in existence in the 1840s makes it slightly more plausible that he had acquired the plant from Siebold’s earlier collections and possibly from Siebold’s own garden near Leiden. There are no specimens at L that can be linked to Van Houtte’s plant (Gerrard Thijsse, pers. com.) nor any specimens in the Herbarium of Ghent University (GENT) (Marie-Stéphanie Samain, pers. com.). Van Houtte’s plate perfectly depicts a typical inflorescence of *W. floribunda*. The name *W. multijuga* is another heterotypic synonym of *W. floribunda*.

11. Typification of *Wisteria floribunda*

The question arises as to what Willdenow (1802) may have used as the basis for his new species. As we have already seen, species differentiation amongst Japanese *Wisteria* by the early workers was not well understood. Willdenow gave no indication that he had seen either a collected specimen of *W. floribunda* or a living plant. The only illustration that he saw was that in Panzer (1782) reproduced from Houttuyn (1779). This illustration refers to *W. brachybotrys*, moreover, the specimen on which it was most probably based can be interpreted with certainty as belonging to that taxon. It is preserved in the Burman herbarium, forming part of the Delessert herbarium (G), annotated in Thunberg’s hand “*Dolichos polystachyos*”, and has also a note “planta Japonica” (Fig. 9). In addition, this specimen is annotated with the complete legend accompanying t. 64, fig. 2 of Houttuyn (1779). Even more remarkable is the fact that the handwriting of this legend copied from “Natuurlijke Historie” (Houttuyn 1779) is identical to that of Houttuyn (cf. specimen of Houttuyn’s handwriting in Van Steenis & Veldkamp 1973). This makes it plausible that this specimen was collected by Thunberg in Japan and annotated by Houttuyn.

Clearly Houttuyn's copper engraving is the obligate lectotype of *Glycine floribunda* Willd. This would mean that *Wisteria brachybotrys* Siebold & Zucc. would have to be sunk into a re-circumscribed *W. floribunda* (Willd.) DC. and a replacement name would have to be taken up for *W. floribunda* as currently understood. In order to avoid this undesirable change in the names of two widely cultivated ornamental plants with an outstanding historical background (see Introduction), conservation of *Glycine floribunda* Willd. with a new type has been proposed elsewhere (Compton 2012: 882). In case of acceptance this would result in the following synonymy:

- Wisteria floribunda*** (Willd.) DC., Prodr. 2: 390. 1825, nom. cons. prop. = *Glycine floribunda* Willd., Sp. Pl. 3(2): 1066. 1802 = *Phaseoloides floribunda* (Willd.) Kuntze, Revis. Gen. Pl. 1: 202. 1891 = *Kraunhia floribunda* (Willd.) Taub. in Engler & Prantl, Nat. Pflanzenfam. 3(3): 271. 1894 = *Milletia floribunda* (Willd.) Matsum. in Bot. Mag. (Tokyo) 16: 64. 1902 = *Rehsonia floribunda* (Willd.) Stritch in Phytologia 56: 183. 1984. – Neotype (typ. cons. prop. in Compton 2012: 882): Japan, western Honshu, Prefecture Hyogo, Aoyama, Suma, Kobe city, alt. 100 m, in *Pinus* forest on hillside, flowers purple, 10 May 1967, *M. Hotta 16502* (K; Fig. 10; isoneotype: P; further duplicates, not seen by us, were distributed from KYO, according to the record read by Dr Hidetoshi Nagamasu, to A, AAU, C, CM, E, H, KRAM, L, MASS, MO, MSC, NSF, NY, OULU, PE, PR, TAI, TI, TNS, TUR, U, UC, US and WIS [pers. comm. H. Ohashi (Sendai)]).
- = *Wisteria macrobotrys* (Siebold) Neubert in Deutsch. Mag. Garten-Blumenk. 23: 7–8. 1870 = *Wisteria sinensis* var. *macrobotrys* Siebold in Siebold & Mater, Cat. Rais. 1856: 6, 19. 1856 [by reference to Siebold & Zuccarini, Fl. Jap. 1: 90. 1839] = *Wisteria floribunda* f. *macrobotrys* (Siebold) Rehder & E. H. Wilson in Publ. Arnold Arb. 4: 513. 1916 = *Wisteria floribunda* var. *macrobotrys* (Siebold) Verhaeghe in Taxonomania 11: 24. 2004. – Lectotype (designated here): Japan, Herb. Lugd.-Bat. 908.126–281, *Siebold* [s.n.] “*Dolichos polystachyos* Th. Fl. April 1829, specimina authentica quae inservire ad floram japonicam componendam, *Wisteria chinensis* Fl. Jap. t. 44 herb. ex Siebold 1829” (L 0170538).
- = *Wisteria multijuga* Van Houtte in Fl. Serres Jard. Eur. 19: 125. 1874 = *Wisteria sinensis* var. *multijuga* (Van Houtte) Hook. f. in Bot. Mag. 123: ad t. 7522. 1897. – Lectotype (designated here): [icon] illustration in Fl. Serres Jard. Eur. 19: 125. 1874.

12. Typification of *Wisteria brachybotrys*

Siebold and Zuccarini (see above) described *Wisteria brachybotrys*; the accompanying lithograph based on Kawahara Keiga's watercolour shows a plant with dark blue flowers (Fig. 2). As we have seen, this species has been included with *W. floribunda* by most early workers, until

Siebold collected material of the species in Japan. Zuccarini wrote most of the botanical descriptions for many of Siebold's major publications including descriptions of all taxa for the first section of the “Flora Japonica”. He used Siebold's own collections sent to him from Leiden as the basis for those descriptions. Siebold sent back to Leiden, from Munich, the specimens that Zuccarini had used in the first ten fascicles of the “Flora japonica” in 1839, according to correspondence from Siebold with the Director of the Rijksherbarium C. L. Blume, dated 9 July 1839 (original at the Naturalis Biodiversity Centre, National Herbarium of The Netherlands, i.e. L). That shipment included Siebold specimens from his personal herbarium and those collected by him in Japan from 1823 to 1829, that were originally kept under the seal of the Rijksherbarium (Gerard Thijsse, pers. com.). There is a specimen of *W. brachybotrys* at L with a label stating “*Wisteria brachybotrys* Fl. Jap. t. 45 Herb. de Siebold 1829”. Siebold stated in the protologue, co-authored with Zuccarini (Siebold & Zuccarini 1839: 92): “Sponte nascentem invenimus prope pagum Kosedo urbe Nangasaki vicinum” [we found it growing wild near the village of Kosedo outside the town of Nangasaki]. This specimen must have been collected before 1829, because Siebold's specimens were all sent to Batavia in Java at the beginning of 1829, prior to Siebold's house arrest and confinement on Dejima (Gerard Thijsse, pers. comm.). The sheet consists of a stem bearing three inflorescences as well as a separate inflorescence and a separate leafy branch (Fig. 11). It is conserved under the herbarium code Herb. Lugd. Bat. 908,126–283 and barcode L0176059.

H. J. Esser, Botanische Staatssammlung München (M), has located another specimen of *Wisteria brachybotrys* in Zuccarini's herbarium, collected by Siebold and annotated by Zuccarini. This specimen has a number of short inflorescences on it and many individual flowers in a large capsule. It is annotated “*W. brachybotrys* S. & Z., legit in Japonia de Siebold, ex Herbario Lugduno-Batavo, communicavit de Siebold anno 18”. This specimen, in Herb. Zuccarini, M-0153884, is undated and was not among those that were returned to Leiden in 1839.

Due to the complicated nomenclature associated with both *Wisteria floribunda* and *W. brachybotrys* and the fact that the latter, too, has never been typified, it seems sensible to do this here using the specimen conserved in the herbarium in Leiden, on the basis that it can be considered reliably as “original material”.

- Wisteria brachybotrys*** Siebold & Zucc., Fl. Jap. 1: 92. t. 45. 1839 = *Phaseoloides brachybotrys* (Siebold & Zucc.) Kuntze, Revis. Gen. Pl. 1: 202. 1891 = *Kraunhia sinensis* var. *brachybotrys* (Siebold & Zucc.) Makino in Bot. Mag. (Tokyo) 24: 76. 1910 = *Kraunhia floribunda* var. *brachybotrys* (Siebold & Zucc.) Makino in Bot. Mag. (Tokyo) 25: 18. 1911. – Lectotype (designated here): Japan, 1829, Herb. de Siebold [Fl. Jap.: t. 45] (L 0176059) – Fig. 11.
- = *Wisteria venusta* Rehder & E. H. Wilson in Publ.

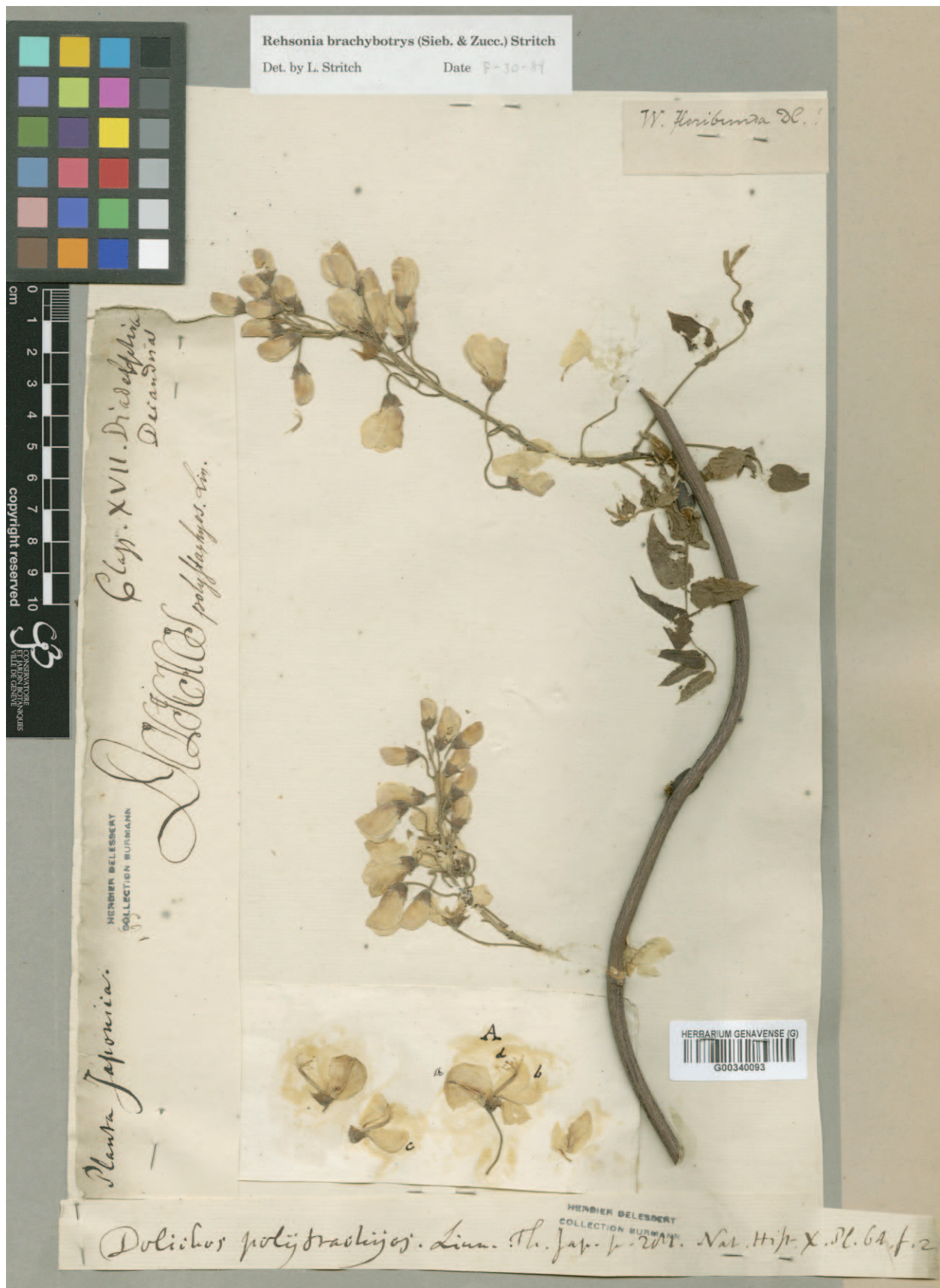


Fig. 9. *Wisteria brachybotrys*, specimen from Japan, 1776, leg. C. P. Thunberg. – Geneva, Conservatoire et Jardin botaniques, Herbarium Delessert.



Fig. 10. *Wisteria floribunda*, specimen from Japan, western Honshu, Prefecture Hyogo, Aoyama, Suma, Kobe city, 10.5.1967, M. Hotta 16502, proposed neotype. – Kew, Royal Botanic Gardens, Herbarium.



Fig 11. Lectotype of *Wisteria brachybotrys*, specimen from Japan, [s.l.], 1829, Herb. Siebold [Fl. Jap t. 45.], L 0176059. – Leiden, National Herbarium of The Netherlands.

Arnold Arbor. 4: 514. 1916. – Lectotype (designated here): Japan, Hondo [= Honshu], Musashi, [cultivated] Iris Garden, Kamata, 27.4.1914, *E. H. Wilson 6580* (GH); isolectotypes: K [as *E. H. Wilson 6580*, but dated 6.5.1914], US.

It is the white flowered form of the species, however, that is more commonly seen in cultivation throughout Japan and that was later described as a distinct species, *Wisteria venusta* (Rehder & Wilson 1916). These authors had assumed that *W. brachybotrys* was merely a form of *W. floribunda* with short racemes and blue flowers. Flower colour is the only significant difference between *W. brachybotrys* and the white flowered plant. In our opinion this does not justify species status and is best regarded at the rank of forma.

The white flowered taxon was validly named by Makino in the appropriate rank and recombined by him a year later (Makino 1910, 1911), in both cases within the genus *Kraunhia* Raf. There is no extant type material of Makino's collections at either TI (A. Shimizu and H. Ikeda, pers. comm.) or MAK (N. Murakami, pers. comm.). Makino (1910) cites Matsumura (1902) as a reference, however, and we hereby make the combination within *Wisteria brachybotrys* and designate a lectotype from a collection by Matsumura that explicitly states “ラフヂ” (shirafuji) in Japanese [which means white flowered *Wisteria*] and has Matsumura's (1902) name for the taxon, i.e. *Milletia floribunda* var. *brachybotrys* Matsum., non Siebold & Zucc. written by him on the sheet. Note that *W. brachybotrys* var. *alba* W. Miller in Bailey, Cycl. Amer. Hort.: 1989. 1902 is a nomen nudum and so is *W. brachybotrys* f. *alba* Ohwi in Acta Phytotax. Geobot. 12: 109. 1943.

Wisteria brachybotrys f. *albiflora* (Makino) J. Compton & Lack, **comb. nov.** ≡ *Kraunhia sinensis* f. *albiflora* Makino in Bot. Mag. (Tokyo) 24: 77. 1910 ≡ *Kraunhia floribunda* f. *albiflora* (Makino) Makino in Bot. Mag. (Tokyo) 25: 18. 1911. – Lectotype (designated here): Japan, Koishikawa Botanical Garden, 27.4.1880, *J. Matsumura* “シラフヂ (shirafuji)” (TI).

13. Epilogue

Admittedly the naming and typification of plant names is regarded by many as a sublime art. This paper demonstrates the need to always consider the full breadth of evidence available: not only the specimens and the printed descriptions but also what may be called auxiliary matter – manuscript notes, letters, travelogues and in particular published and unpublished illustrations. Without studying them we would have been unable to write this contribution.

Note — Unless otherwise indicated biographical and bibliographical information is taken from reference works,

notably Stafleu & Cowan (1976, 1979, 1981, 1983, 1985, 1986, 1988), Stafleu & Mennega (1992, 1993, 1995, 1997, 1998, 2000) and Dorr & Nicolson (2008–2009). Herbarium abbreviations follow Thiers (2008+).

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Unpublished sources

- Berlin, Staatsbibliothek zu Berlin, Orientabteilung
Libri Picturati A 41–42
- London, British Library, Department of Western Manuscripts
Sloane MS 2914, 2915, 3060
Sloane MS Add. 5018
- Oxford, University of Oxford, Bodleian Libraries, Sherardian Library
Catalogue of the manuscripts belonging to Oxford University, Department of Botany, deposited in the Bodleian Library Oxford, 1957 and referenced MSS. Sherard 1–478. http://www.bodleian.ox.ac.uk/_data/assets/pdf_file/0004/29929/Sherard_MSS_Catalogue.pdf [accessed 25 May 2012]
Sherard MS 253, 254, 255
- St Petersburg, Rossiskaja Akademija Nauk, Botanicheskij Institut im. Komarova, Biblioteka
Flora Japonica delineationibus ac picturis illustrate cura Ph. Fr. de Siebold, Icones plantarum rariorum (ineditae)

References

- Alessina A. M. 1982: Index nominum originalium Ph. Sieboldii. – Novosti Sist. Vyssh. Rast. **19**: 231–263 [in Russian].
- Bodart-Bailey B. M. & Massarella D. 1995: The furthest

- goal: Engelbert Kaempfer's encounter with Tokugawa Japan. – Folkestone: Japan Library.
- Bretschneider E. 1898: History of European botanical discoveries in China. – London: Low & Marston.
- Candolle A. P. de 1825: *Prodromus systematis naturalis regni vegetabilis* **2**. – Paris: Treuttel & Würtz.
- Compton J. A. 2012: Proposal to conserve the name *Glycine floribunda* (*Wisteria floribunda*) (*Fabaceae*) with a conserved type. – *Taxon* **61**: 882.
- Dandy J. E. 1958: *The Sloane Herbarium*. – London: British Museum.
- Dorr L. J. & Nicolson D. H. 2008–09: Taxonomic literature, ed. 2. Supplements 7–8. – *Regnum Veg.* **149**, **150**.
- Gray A. 1863: Augustin Pyramus de Candolle. – *Amer. J. Bot.* **1**: 107–120.
- Gronovius J. F. 1743: *Flora virginica* **1(2)**. – Leiden: Cornelius Haak.
- Gronovius J. F. 1762: *Flora virginica* **2**. – Leiden: L. Th. Gronovius.
- Grubov V. I. & Kirpicznikov M. E. 1993: Philipp Franz von Siebold's botanical drawings and herbarium specimens in Russia. – Pp. 27–39 in: Kimura Y. & Grubov V. I. (ed.), *Siebold's florilegium of Japanese plants. Florilegium plantarum japonicarum Sieboldii* **2**. – Tokyo: Maruzen.
- Hammer V. 2010: Meister Georg (George) in Schattowsky M. (ed.), *Sächsische Biografie*. – Publish at <http://saebi.isgv.de/biografie/2850> [accessed 25 May 2012].
- Hinz P.-A. 2001: The Japanese plant collection of Engelbert Kaempfer (1651–1715) in the Sir Hans Sloane Herbarium at The Natural History Museum, London. – *Bull. Nat. Hist. Mus. Lond., Bot.* **31**: 27–34.
- Hoppe B. (ed.) 2003: Engelbert Kaempfer. Zeichnungen japanischer Pflanzen. (Originalmanuskript in der British Library, London Signatur: Sloane 2914). – München: Iudicum [= Haberland D., Michel W. & Gössmann E. (ed.), *Engelbert Kaempfer Werke. Kritische Ausgabe* **3**].
- Houttuyn M. 1779: *Natuurlijke historie oft uitvoerige beschrijving der dieren, planten en mineraalen, volgens het samenstel van den Herr Linnaeus* **10**. – Amsterdam: Erwen van F. Houttuyn.
- Hu J.-M., Lavin M., Wojciechowski M. F. & Sanderson M. J. 2002: Phylogenetic analysis of nuclear ribosomal ITS/5.8S sequences in the tribe *Millettieae* (*Fabaceae*): *Poecilanthe-Cyclolobium*, the core *Millettieae* and the *Callerya* group. – *Syst. Bot.* **27**: 722–733.
- Kaempfer E. 1712: *Amoenitatum exoticarum politico-physico-mediarum fasciculi* **V**. – Lemgo: H. W. Meyer.
- Kaempfer E. (ed. Scheuchzer J. G.) 1727: *The history of Japan, giving an account of the ancient and present state and government of that empire [...] written in High-Dutch by Englebertus Kaempfer [...] translated from his original Manuscript, never before printed.* – London: printed for the translator [Internet edition by Michel W., published at <http://wolfgangmichel.web.fc2.com/serv/ek/hj/index.html> [accessed 1 June 2012]].
- Kaempfer E. (ed. Scheuchzer J. G.) 1906: *The history of Japan. Together with a description of the Kingdom of Siam 1690–92, ed. 2.* – Glasgow: James Maclehose & Sons.
- Kimura Y. & Grubov V. I. (ed.) 1993: *Siebold's florilegium of Japanese plants: Florilegium plantarum japonicarum Sieboldii* **1a, b, 2**. – Tokyo: Maruzen.
- Kimura Y. & Leonov V. P. (ed.) 1994: *C. P. Thunberg's drawings of Japanese plants. Icones plantarum japonicarum Thunbergii kept in the library of the Komarov Botanical Institute, a subsidiary of the Russian Academy of Sciences Library, St Petersburg.* – Tokyo: Maruzen Co.
- Kraft E. 1982: *Japanische Handschriften und traditionelle Drucke aus der Zeit vor 1868 im Besitz der Stiftung Preußischer Kulturbesitz.* – Wiesbaden: Franz Steiner Verlag [= Voigt, W. (ed.), *Verzeichnis der orientalischen Handschriften in Deutschland* **27(1)**].
- Lack H. W. 1987: 28 *Flora Japonica*, kompiliert von Andreas Cleyer. Nagasaki 1683. – Pp. 68–69 in: Lack H. W., Becker P. J. & Brandis T., *Staatsbibliothek Preussischer Kulturbesitz. 100 Botanische Juwelen, 100 Botanical Jewels.* – Berlin [= *Staatsbibliothek Preußischer Kulturbesitz Ausstellungskataloge* **30**].
- Lack H. W. (ed.) 2006: *Aus dem Land der blauen Hortensie. Japanische Pflanzen in Europa.* – Berlin: Botanischer Garten und Botanisches Museum Berlin-Dahlem.
- Lack H. W. & Mabblerley J. 1999: *The Flora Graeca story. Sibthorp, Bauer and Hawkins in the Levant.* – Oxford: University Press.
- Lee Y. N. 2006: *New Flora of Korea* **1**. – Seoul: Kyo-Hak Publishing.
- Linnaeus C. 1753: *Species plantarum – Holmiae: Laurentii Salvii.*
- Linnaeus C. 1767: *Systema naturae, ed. 12, 2.* – Holmiae: Laurentii Salvii.
- Makino T. 1910: *Observations on the flora of Japan.* – *Bot. Mag. (Tokyo)* **24**: 13–22, 28–35, 50–61, 71–84, 99–106, 124–130, 137–147, 165–167, 221–224, 227–234, 242–252, 290–307.
- Makino T. 1911: *Observations on the flora of Japan.* – *Bot. Mag. (Tokyo)* **25**: 9–18, 153–158, 227–235, 251–258.
- Matsumura J. 1902: *A conspectus of the Leguminosae.* – *Bot. Mag. (Tokyo)* **16**: 37–42, 61–86, 91–113.
- McMillan-Browse P. 1984: *Some notes on members of the genus Wisteria.* – *Plantsman* **6**: 109–122.
- McNeill J., Barrie F. R., Burdet H. M., Demoulin V., Hawksworth D. L., Marhold K., Nicolson D. H., Prado J., Silva P. C., Skog J. E., Wiersema J. H., & Turland N. J. (ed.) 2006: *International Code of Bo-*

- tanical Nomenclature (Vienna Code). – Regnum Veg. **146**.
- Meister G. 1692: Der Orientalisch-Indianische Kunst- und Lust-Gärtner – Dresden: by the author.
- Michel W. 1986: Die Japanisch-Studien des Georg Meister (1653–1713). – Dokufutsu Bungaku Kenkyu **36**.
- Michel W. 1991: Ein “Ostindianisches Sendschreiben” – Andreas Cleyers Brief an Sebastian Scheffer vom 20. Dezember 1683. – Dokufutsu Bungaku Kenkyu **41**: 15–98.
- Michel W. 2001: Anhang. – Pp. 757–828 in: Engelbert Kaempfers Werke **1(2)**. – München: Iudicum.
- Michel W. 2002: On the background of Engelbert Kaempfer’s studies of Japanese herbs and drugs. – Nihon Ishigaku Zasshi **48**: 692–720.
- Michel W. 2010: Johann Caspar Scheuchzer (1702–1729) und die Herausgabe der History of Japan. – Asiat. Stud. **64**: 101–137.
- Michel W. 2011: Glimpses of medicine in early Japanese-German intercourse. – Pp. 72–94 in: International Medical Society of Japan (IMSJ): The dawn of modern Japanese medicine and pharmaceuticals. The 150th anniversary edition of Japan-German exchange. – Tokyo: International Medical Society of Japan.
- Michel W. & Terwiel, B. J. (ed.) 2001: Engelbert Kaempfer. Heutiges Japan. – München: Iudicum [= Haberland D., Michel W. & Gössmann E. (ed.), Engelbert Kaempfer Werke. Kritische Ausgabe 1].
- Muntschik W. 1984: Ein Manuskript von Georg Meister, dem Kunst- und Lustgärtner in der British Library. – Medizinhist. J. **19**: 225–232.
- Neubert W. 1870: *Wisteria (Glycine) macrobotrys* Sieb. – Deutsch. Mag. Garten-Blumenk. **23**: 7–8.
- Nordenstam B. (ed.) 1993: Carl Peter Thunberg. Linnean, resenär, naturforskare 1743–1822. – Stockholm: Atlantis.
- Nordenstam B. 1994: The origins of Thunberg’s unpublished *Icones plantarum japonicarum*. – Pp. 371–406 in: Kimura, Y. & Leonov, V. P. (ed.), C. P. Thunberg’s drawings of Japanese plants. *Icones plantarum japonicarum Thunbergii* kept in the library of the Komarov Botanical Institute, a subsidiary of the Russian Academy of Sciences Library, St Petersburg. – Tokyo: Maruzen Co.
- Ohashi H. 2001: *Leguminosae (Fabaceae)*. – Pp. 213–279 in: Iwatsuki K., Boufford D. E. & Ohba H. (ed.), Flora of Japan **2b**. – Tokyo: Kodansha.
- Ohba H. 1994: A catalogue of C. P. Thunberg’s drawings of Japanese plants with some notes on botany in the Yedo period and Thunberg. – Pp. 407–453 in: Kimura Y. & Leonov V. P. (ed.), C. P. Thunberg’s drawings of Japanese plants. *Icones plantarum Japonicarum Thunbergii* kept in the library of the Komarov Botanical Institute, a subsidiary of the Russian Academy of Sciences Library, St Petersburg. – Tokyo: Maruzen Co.
- Ohba H., Tchernaja T. A. & Pankratova G. N. 1993: Catalogue of the Siebold collection of botanical illustrations in St. Petersburg. – Pp. 57–325 in: Kimura Y. & Grubov V. I. (ed.), Siebold’s Florilegium of Japanese plants **2**. – Tokyo: Maruzen.
- Panzer G. W. F. 1782: Des Ritters Carl von Linné Vollständiges Pflanzensystem, nach der dreyzehnten lateinischen Ausgabe und nach Anleitung des holländischen Houuttuynischen Werks übersetzt, und mit einer ausführlichen Erklärung ausgefertiget **8**. – Nürnberg: G. N. Raspe.
- Park C. 2007: The genera of vascular plants of Korea. – Seoul: Academy Publishing.
- Peters M. H. 1994: From the study of Nicolaes Witsen (1641–1717). His life with books and manuscripts. *Lias* **21(1)**: 1–49.
- Rehder A. & Wilson E. H. 1916: *Wistaria*. – Publ. Arnold Arbor. **4**: 509–515 [= Sargent C. S. (ed.), *Plantae wilsonianae* **2**: 509–515].
- Siebold P. F. & Zuccarini J. G. 1839: *Flora japonica* **1 (9–10)**. – Leiden: by the authors.
- Skuncke M.-C. 2008: Carl Peter Thunberg’s japanska resa i 1770-och 1780-talens medier [C. P. Thunberg’s Japanese voyage in the media of the 1770’s and 1780’s]. – Sjuttonhundratat **2008**: 44–62.
- Smith J. E. 1811: *Houttuynia*. – In [non paginated]: Rees A. (ed.), *The Cyclopaedia; or universal dictionary of arts, science and literature* **18**. – London: Longman, etc.
- Spae D. 1847: *Wisteria brachybotrys*. – Ann. Soc. Roy. Agric. Gand **3**: 49–50.
- Stafleu F. A. & Cowan R. S. 1976, 1979, 1981, 1983, 1985, 1986, 1988: Taxonomic literature, ed. 2, 1–3, 5–7. – Regnum Veg. **94, 98, 105, 110, 112, 115, 116**.
- Stafleu F. A. & Mennega E. A. 1992, 1993, 1995, 1997, 1998, 2000: Taxonomic literature, ed. 2, Supplements 1–6. – Regnum Veg. **125, 130, 132, 134, 135, 137**.
- Stearn W. T. 1971: Philipp Franz von Siebold and the lilies of Japan. – Lily Year-Book **34**: 11–20.
- Stearn W. T. 1993: The career of Philipp Franz von Siebold. – Pp. 1–7 in: Kimura Y. & Grubov V. I. (ed.), Siebold’s Florilegium of Japanese plants **2**. – Tokyo: Maruzen.
- Stearn W. T. 1994: Carl Peter Thunberg’s visit to Japan. – Pp. 347–351 in: Kimura Y. & Leonov V. P. (ed.), C. P. Thunberg’s drawings of Japanese plants. *Icones plantarum japonicarum Thunbergii* kept in the library of the Komarov Botanical Institute, a subsidiary of the Russian Academy of Sciences Library, St Petersburg. – Tokyo: Maruzen.
- Tchernaja T. A. 1993: Philipp Franz von Siebold’s *Flora japonica delineationibus ac picturis illustrata* and its history in notes and inscriptions on the illustrations. – Pp. 41–54 in: Kimura Y. & Grubov V. I. (ed.), Siebold’s Florilegium of Japanese plants: *Florilegium plantarum japonicarum Sieboldii* **2**. – Tokyo: Maruzen.
- Tchernaja T. A. 1994: The C. P. Thunberg collection, *Icones Plantarum Japonicarum (ineditae)* and its history in Russia. – Pp. 353–370 in: Kimura Y. & Leonov

- V. P. (ed.), C. P. Thunberg's drawings of Japanese plants. *Icones plantarum japonicarum Thunbergii* kept in the library of the Komarov Botanical Institute, a subsidiary of the Russian Academy of Sciences Library, St Petersburg. – Tokyo: Maruzen Co.
- Thiers B. 2008+ [continuously updated]: Index herbariorum: A global directory of public herbaria and associated staff. – New York Botanical Garden: <http://sweetgum.nybg.org/ih/>.
- Thunberg C. P. 1784: *Flora japonica*. – Lipsiae: J. G. Mülleriano.
- Thunberg C. P. 1791: *Resa uti Europa, Africa, Asia förättad Åren 1770–1779*, **3**. – Upsala: J. Edman.
- Valder P. 1995: *Wisterias: a comprehensive guide*. – Portland, Oregon: Timber Press.
- Van Houtte L. 1874: *Wistaria multijuga*. – *Fl. Serres Jard. Europ.* **19**: 125, t. 2002.
- Van Steenis C. G. G. J. & Veldkamp J. F. 1973: Note on Houttuyn's herbarium. – *Blumea* **21**: 151–152.
- Wijnand D. O. 1990: Correct author citation for the species described on material collected by Thunberg in Japan. – *Thunbergia* **12**.
- Wijnand D. O. 1993: The letters of Maarten Houttuyn to Carl Petter Thunberg (1780–1790). – *Proc. Kon. Ned. Akad. Wetensch., Biol. Chem. Geol. Phys. Med. Sci.* **93**: 77–95.
- Willdenow C. 1797, 1802: *Species plantarum* **1(1)**, **3(2)**. – Berlin: G. C. Nauk.
- Zabinkova N. 1994: Commentaries by C. J. Maximowicz regarding C. P. Thunberg's Japanese herbarium and unpublished *Icones plantarum japonicarum* [*Herbarium Thunbergianum*]. – Pp. 455–489 in: Kimura Y. & Leonov V. P. (ed.), *C. P. Thunberg's drawings of Japanese plants. Icones plantarum japonicarum Thunbergii* kept in the library of the Komarov Botanical Institute, a subsidiary of the Russian Academy of Sciences Library, St Petersburg. – Tokyo: Maruzen. [a transcript of Maximowicz's notes].