Cladrastis and Maackia.

BY

H. TAKEDA, D.I.C.

With Plates XXVI-XXVII.

THESE two small genera of Leguminosae belong to the tribe Sophoreae and are more or less related to each other, so that *Maackia* has even been united with the other genus by some authors.[1] There are, however, several good reasons for regarding them as distinct genera.

The genus *Cladrastis* was established by Rafinesque in 1825 on the N. American plant which had formerly been known as *Virgilia lutea*, Michx. f. A second species was added to the genus in 1893 from China called *C. sinensis*, Hemsley,[2] and a third, *C. shikokiana*, Makino[3], from Japan. In 1872 Maximowicz published a new subgenus of *Sophora* under the name of *Platyosprion*, which the author raised to the generic rank soon afterwards.[4] In 1901 Makino transferred with right, though giving no reason, *Platyosprion* into the genus *Cladrastis*. Thus there have been known four species of this genus from Japan, China, and N. America. In the present paper I regard *Platyosprion* as a subgenus of *Cladrastis* ; the reason will be discussed later.

While *Cladrastis* is an Asiatico-American genus, *Maackia* is an exclusively Asiatic one, being distributed over Japan, Korea, China, and Amurland. The genus was instituted in 1856 by Ruprecht and Maximowicz in compliment to Richard Maack, who was then teacher of natural history at the gymnasium of Irkutzk, and who visited Amurland in 1855 on commission of the Siberian Section of the Imperial Geographical Society in St. Petersburg. Bentham, while compiling the Genera Plantarum, reduced this genus to *Cladrastis*, apparently without examining

[1] Bentham, in Benth. et Hook, Gen. Pl. i, pt. ii, p. 554, and followed by many others.

[2] Hemsl., in Journ. Linn. Soc., Bot., xxix, p. 304.

[3] First named as *Sophora shikokiana*, Makino, in Tôkyô Bot. Mag. (1892), p. 53, and described in the same publication (1900), p. 56, and afterwards transferred to the present genus by the same author in the same periodical (1901), p. 62.

[4] *Sophora platycarpa*, Maxim., in Bull. Acad. Imp. Sc. St. Petersb., xviii, p. 393, and afterwards as *Platyosprion platycarpum*, Maxim., *ibid.*, xxii, p. 262.

[Notes, R.B.G., Edin., No. XXXVII, Nov. 1913.]

any actual specimen or consulting the original description, but depending simply on the figures given in Maximowicz's Primitiae Florae Amurensis.[1] At that time there was known only one species in each of these two genera, which seems to have impelled even Maximowicz later to consider that the characteristics of *Maackia amurensis* were only of specific difference but not of generic value.[2] All the species of this unfortunate genus published later have been described therefore under *Cladrastis*. The examination of all known species of *Maackia* and *Cladrastis* has led the present writer to the conclusion that *Maackia* should be retained as an autonomous genus, being characterised above all by the axillary unenclosed bud, opposite and subcoriaceous leaflets with few veins, strictly erect and compact racemes with small bracteate flowers, 4-lobed calyx, the standard very much thickened at the base, connate stamens, and strongly veined pod.

As to the *Platyosprion* there seem to be no reasons to regard it as a subgenus of *Sophora* or to retain it as a distinct genus. The bud enclosed in the swollen base of the leaf-stalk suggests at first glance that the plant would belong to *Cladrastis*, and the thin non-moniliform pod forbids the placing of it in *Sophora*. On the other hand, the only marked points which might separate *Platyosprion* from *Cladrastis* are the stipellate leaf and winged pod. These seem to me, however, of no generic value, since all other characters agree very well with those of *Cladrastis*. Maximowicz says [3] that the stamens of the *Platyosprion* are shortly connate at the base. This statement is, however, an erroneous one, since the dissection of the co-type specimens has shown that they are quite free at the base.

The genus *Cladrastis* is defined by the following characters :—

Cladrastis, Rafin. Neogenyton, p. 1 (1825) ampl.

Arbores magnae. Folia alternata, petiolata, imparipinnata, foliolis alternatis, membranaceis, pluricostatis, exstipellatis vel stipellatis. Inflorescentia terminalis saepe pendula, paniculata, bracteata, bracteis caducis, floribus conspicuis laxe dispositis, ebracteatis. Calyx cylindrico-campanulatus, 5-lobatus, lobis subaequalibus. Vexillum orbiculatum, emarginatum vel integrum, tenue, recurvum ; alae oblique oblongae, biauriculatae ; carina leviter incurva, petalis dorso arcte imbricatis, liberis, oblongis, semisagittatis. Stamina 10, libera, antheris versatilibus, quadrato-ellipticis. Ovarium stipitatum, pauci-ovulatum ; stylus leviter incurvus, subulatus, stigmate minuto, terminale. Legumen vel lineari-lanceolatum, exalatum atque margine tantum subincrassatum, vel oblongum atque utrinque alatum, plano-compressum,

[1] Published in 1859.
[2] Maximowicz, in Bull. Acad. Imp. Sc. St. Petersb., xviii, p. 400.
[3] *Ibid.*, p. 399.

vix vel haud dehiscens. Semina oblonga, compressa, vix strophiolata, testa tenue, membranacea, brunnea. Gemma basi petioli inflatae innata.

The genus is further subdivided into two subgenera :—

Eucladrastis. Takeda. Folia exstipellata, subtus glauca. Legumen exalatum, margine tantum subincrassatum.

Platyosprion, Maxim., in Bull. Acad., Imp. Sc. St. Petersb., xviii, p. 398 (Sophorae subgenus). Folia stipellata, subtus viridula. Legumen secus utrumque marginem alatum, indehiscens.

KEY TO THE SPECIES.

1. Legumen exalatum. Folia exstipellata, subtus glauca . . . . . 2.
   Legumen utrinque alatum. Folia stipellata, supra pilosula, subtus viridula, tenuiter membranacea acuminata . 4. *C. platycarpa,* Makino.

2. Legumen longe stipitatum, maturum glabrum . . . . . 3.
   Legumen breviter stipitatum, maturum hirsutum. Foliola elliptico-lanceolata, obtusa vel acutiuscula, subtus juvenilia tomentosa adulta glabrescentia . 3. *C. sinensis,* Hemsl.

3. Folia plerumque 3-juga, foliolis ovatis vel late ovatis, breviter cuspidatis, obtusis, subtus parce pilosulis. Gemma ferrugineo-tomentosa . . . 1. *C. lutea,* C. Koch.
   Folia plerumque 5-juga, foliolis ovato- vel elliptico-lanceolatis, subtus ad costam mediam pilosulis. Gemma aureo-tomentosa . . . 2. *C. shikokiana,* Makino.

ENUMERATION OF THE SPECIES.

1. **C. lutea,** C. Koch, Dendrol. i (1869), p. 6 ; Sargent, Gard. and Forest, ii, p. 375 ; Sylva of N. Am., iii, p. 57, tab. cxix, cxx.

SYN.—*Virgilia lutea,* Michx. f. Arb. Am., iii (1813), p. 266, tab. iii; *C. tinctoria,* Rafin. Neogen. (1825), p. 1.; DC. Prodr., ii, p. 98.

HAB.—N. America ; Hills near Nashville, Tennessee (A. Gattinger, fl. fr. Hb. Kew, Hb. Brit. Mus.), ad rupes prope Painted Rock, Tennessee (Rugel, Aug. 1842, fr. Hb. Kew), banks, Kentucky river (R. Petter, May, 1833, fl. fr. Hb. Kew), V. C. to Ga. and Fl. (S. B. Buckley, ex Hb. A. Gr., Hb. Brit. Mus.), calcareous cliffs of the Kentucky river (C. W. Short, fl. Hb. Kew).

OBS.—A tall tree with very showy flowers. Often cultivated in gardens. In its native country it is rare and local, being known in a wild state only from certain districts in eastern parts of the country.

2. **C. shikokiana,** Makino, in Tôkyô Bot. Mag. (1901), p. 62.

SYN.—*Sophora shikokiana,* Makino, l.c. (1892), p. 53 (nomen); (1900), p. 56.

HAB.—Japan, Mt. Tateyama, prov. Etchû (R. Yatabe, July 1884, steril. Hb. Kew, ex Hb. Coll. Sc. Imp. Univ. Tôkyô), Mt. Tsurugi, prov. Awa, Shikoku (T. Makino, in Hb. Yokohama Nurs. Comp., Aug. 1909, Hb. Edinb.); Mt. Mitsumine, prov. Musashi (Y. Yabe, Oct. 1900, fr. ex. Hb. Tôkyô).

OBS.—When describing this species under *Sophora,* Makino placed this in subgenus *Platyosprion,* which is not correct. The species is very closely related to the preceding, from which it is, when sterile, not easily distinguished. The flower has not yet been collected, but it is almost sure that its colour is purplish.

PLATE XXVI, figs. 14–15.

3. **C. sinensis,** Hemsl., in Journ. L. S., xxix (1893) p. 304.

HAB.—China: Western China (E. H. Wilson, n. 2392, fl., n. 2392a, fr. juv. Hb. Kew), Mt. Omi, W. China (E. H. Wilson, n. 4832, fl. Hb. Kew), West Szechuen, near Tachien lu (A. E. Pratt, n. 129, fl. defl. Hb. Kew), Central China (E. H. Wilson, n. 2398, fl. fr. Hb. Kew).

OBS.—According to the collectors the flower of this species is white. The pod has a comparatively short stalk and is covered with short hairs. The inflorescence sometimes reaches a large size, and its rachis and branches are covered with short, fine, rusty-coloured hairs.

PLATE XXVI, figs. 1–6.

4. **C. platycarpa,** Makino, in Tôkyô Bot. Mag. (1901), p. 62. C. K. Schneider, Illust. Handb. Laubholzk., ii, p. 16, fig. 10, l.q.

SYN.—*Sophora platycarpa,* Maxim., in Bull. Acad. Imp. Sc. St. Petersb. xviii (1872), p. 398; *Platyosprion platycarpum,* Maxim., l.c. xxii, p. 262.

HAB.—Japan: Fijiyama (Tschonoske in Max. Iter Secund., 1864, fl. fr. Hb. Kew ex Hb. Petrop.), prov. Awa in Shikoku (T. Makino, in Hb. Yokohama Nurs. Co., Aug. 1909, fr. Hb. Edinb.).

OBS.—The concolorous, stipellate leaflets and the winged pod distinguish this species from any other of the genus.

PLATE XXVI, figs. 7–13.

The genus *Maackia* is characterised as follows :—

Maackia, Rupr. et Maxim., in Bull. Phys.-Math. Acad. Imp. Sc. St. Petersb., xv (1856), p. 143, cum fig. anal. ; *Buergeria,* Miq. Prol. Fl. Japon., p. 241.

Arbores parvae vel magnae. Folia alterna, petiolata, imparipinnata, foliolis plerumque appositis, exstipellatis, subcoriaceis, pauci-costatis, subtus pallidioribus. Inflorescentia terminalis, racemosa, simplex vel basi ramosa, bracteata, bracteis deciduis, floribus multo atque dense dispositis, bracteatis. Calyx subinflatus, 4-lobatus, dente superiore majore. Vexillum orbiculato-obovatum, vel obovatum, vel cuneato-oblongum, emarginatum aut integrum, recurvum, basi incrassatum ; alae oblique oblongae hastatae ; carina leviter incurva, petalis dorso subcoalitis, liberis, oblongis, semisagittatis. Stamina 10, basi brevissime connata, antheris versatilibus, quadrato-ellipticis. Ovarium subsessile, pauci-ovulatum, dense hirtum ; stylus leviter incurvus, subulatus, stigmate minuto, terminali. Legumen subsessile, venosum, secus suturam ventralem alatum, planocompressum, vel lanceolatum, vel oblongum, vel ellipticum, vel ovatum, vix dehiscens, hirsutum. Semina oblonga, compressa, testa tenui strophiolata, brunnea. Gemma axillaris, libera.

On examination of the co-type specimens, I reduce Miquel's *Buergeria,* which was established on a single species, *B. floribunda.*

KEY TO THE SPECIES.

1. Flores circiter 10 mm. lg. . . . . 2.
   Flores infra 7 mm. lg., foliola infra 5 cm. lg. 3 cm. lt. . . . . 4.

2. Folia 4-6-juga, foliolis semper mediocribus longit. 4 cm., latit. 2 cm. raro excedentibus, oblongo- vel elliptico-ovatis, basi truncato-rotundatis, apicem versus sensim attenuatis, acutatis, subtus juvenilibus hirtis, adultis glabris . 2. *M. Fauriei,* Takeda.
   Folia 3–5-juga, foliolis variabilibus, aut parvis, aut magnis et usque ad 8 cm. lg. 5 cm. lt., aut ellipticis aut ovatis, basi vel cuneatis vel rotundatis . . . . 3.

3. Foliola adulta subtus glabra, basi saepe cuneata . 1. *M. amurensis,* Rupr. et Maxim. *α. typica.*
   Foliola adulta subtus hirta, basi saepe rotundato-ovata . 1. *M. amurensis,* Rupr. et Maxim. *β. Buergeri.*

4. Folia adulta glabra . . . . . 5.
Folia juvenilia utrinque adulta subtus hirta, foliolis ovalibus, basi cuneatis. Legumen ellipticum vel ovale, breve . 4. *M. Tashiroi*, Makino.

5. Folia juvenilia subtus hirta adulta glabra, foliolis ovatis vel ellipticis basi plus minus cuneatis. Flores breviter bracteati, bracteis brevissimis pedicello brevioribus. Legumen ut videtur submembranaceum, oblongum usque ad 6 cm. lg. 1 cm. lt., late alatum . 3. *M. floribunda*, Takeda.
Folia semper glabra, foliolis ovalibus basi cuneatis. Flores longe bracteati, bracteis subulatis, pedicello subduplo longioribus. Legumen coriaceum, ellipticum vel ovale, ad 3 cm. lg. ad 14 mm. lt., anguste alatum . 5. *M. australis*, Takeda.

ENUMERATION OF THE SPECIES.

1. **M. amurensis,** Rupr. et Maxim. *α.* **typica,** C. K. Schneid. Illust. Handb. Laubholzk., ii, p. 16, fig. 11, l—s.

SYN.—*M. amurensis,* Rupr. et Maxim., in Bull. Phys.-Math. Acad. Imp. Sc. St. Petersb., xv, p. 128.; *Cladrastis amurensis,* Benth., in Benth. et Hook., Gen. Pl., i, p. 554. K. Koch, Dendrol. i, p. 7. Maxim., in Bull. Acad. Imp. Sc. Petersb., xviii, p. 400.

HAB.—Amurland : Amur (Radde, fl. Hb. Kew, Maximowicz, fl., fr. Hb. Kew, Augustinowicz, Hb. Kew), Korbeckan, Amur (Maximowicz, 1859, fl. Hb. Brit. Mus.), Ussuri, Cap Chackzole (Maack, fl. Hb. Kew, Edinb.). Manchuria : coast, lat. 44–45 N. (C. Wilford, 1859, fl. Hb. Kew), Manchuria chinensis, fl. Amur, circa Tachalien (Karo, July 1905. fl. Hb. Brit. Mus.). Korea ; Seoul (Dunn, Sept. 1906, fr. Hb. Kew), fl. Jalu super. vallis Un-czchen-gan (Komarov, 1 July 1897, fl. Hb. Brit. Mus.), without exact locality (J. H. Veitch, 1892, fl. Hb. Kew).

PLATE XXVI, figs. 16–27.

β. **Buergeri,** C. K. Schneid., l.c., excl. syn.

SYN.—*Cladrastis amurensis* var. *Buergeri,* Maxim., in Bull. Acad. Imp. Sc. St. Petersb., xviii, p. 400, excl. syn.; *C. amurensis* var. *floribunda,* Maxim., apud Fr. et Sav., Enum. Pl. Japan., i, p. 113, excl. syn Shirasawa, Icon. Essenc. Forest, Japan, i, tab. 50, figs. 1–12.; *C. amurensis,* var. *Vidalii,* Fr. et Sav., l.c., ii, p. 327.

HAB.—Japan : Hondo, without locality(Savatier, n. 404, fl. Hb.

Kew), Yokohama (Maximowicz, 1862, fl., fr. Hb. Kew, Brit. Mus.), Fukujima, prov. Shinano (ex. Hb. Yokohama Nurs. Co., Aug. 1906, fl. Hb. Edinb.), Yezo, Hakodate (Maximowicz, 1861, fol. Hb. Kew, Albrecht, 1861, fl. Hb. Kew, Faurie, n. 5461, fr. immat. Hb. Brit. Mus.), Otaru (Faurie, n. 3303, fr. Hb. Kew, n. 6106, fr. Hb. Brit. Mus.), Satporo (Tokubuchi, Sept. 1890, fr. Hb. Kew, Takeda, Sept. 1907, fr. Hb. Edinb.).

PLATE XXVII, figs. 28–38.

OBS.—This species is very plastic with regard to the shape and size of leaflets, and even sometimes of petals. Sometimes leaflets are elliptical and cuneate towards the base, sometimes ovate and nearly truncato-roundish at the base. Their size varies exceedingly even in the same leaf. Franchet and Savatier, also Schneider, intend to distinguish varieties by the character of leaves, which seems to me to be quite impossible. The only point which separates the variety is the presence of the appressed brown persistent hairs on the under side of leaflet. It is rather singular that this species has not been recorded from Saghalien.

2. **M. Fauriei,** Takeda, comb. nov.

SYN.—*Cladrastis Fauriei,* Lévl., in Fedde, Repert., vii (1909), p. 230.

HAB.—Korea : Mt. Hallaisan, 1200 m., Quelpaert (Faurie, n. 1692, fl. Hb. Brit. Mus.).

OBS.—Among the known species this comes close to the preceding one, but differs by its leaf having 4–8 pairs (usually 6–) of leaflets smaller and uniform in size, truncato-roundish at the base, gradually tapering towards the apex, and its shorter calyx which does not exceed 3 mm. in length. The bract is very minute, measuring about 0·7—1 mm. long.

PLATE XXVII, figs. 39–43.

3. **M. floribunda,** Takeda, comb. nov.

SYN.—*Buergeria floribunda,* Miq., Prol. Fl. Japon., p. 241.

HAB.—Japan : probably Kyûshû, but without precise locality (ex. Hb. Lugduno-Batavo, fl., fr. Hb. Kew).

OBS.—Maximowicz wrongly reduced this species to *M. amurensis* as a variety, which caused some confusion in nomenclature later. This species is well characterised above all by the pod, which is the largest amongst the known species with a broad wing on the ventral suture, and, as far as the present material shows, thin in texture. The leaf has 4–6 pairs of leaflets which are elliptical or ovate, more or less cuneate at base, hairy underneath when young and glabrous afterwards, and uniform in size. This appears to be a rare species, for it has not been rediscovered since Miquel's time.

PLATE XXVII, figs. 44–50.

4. **M. Tashiroi,** Makino, Tôkyô Bot. Mag. (1902), p. 34.

SYN.—*Cladrastis Tashiroi,* Yatabe, in Tôkyô Bot. Mag., vi (1892), p. 345, tab. x.; *Derris chinensis,* Benth., in Journ. L. S., iv, Suppl., p. 104, et Fl. Hong Kong., p. 94, quoad spec. fructif.

HAB.—Japan: Fukuyejima, prov. Hizen (Makino, in Hb. Yokohama Nurs. Comp., Sept. 1908, fr. Hb. Edinb.). Loochoos: Ôshima (C. Wright, 1853,–56, fr. Hb. Kew, Faurie, n. 3910, fl. Hb. Brit. Mus.).

OBS.—Bentham (l.c.) hesitatingly refers the specimen collected by Wright in Ôshima to his *Derris chinensis,* which was established on a flower-bearing specimen gathered by Hance in Hong Kong. Even Hance's specimen has recently proved to be identical with *Millettia pulchra,* Benth., so that *Derris chinensis* can no longer exist. *M. Tashiroi* is an interesting species, and is distributed over Kyûshû and the Loochoos. The pod is elliptical or sometimes oval, which is brought about by the basal and terminal ovules being unfertilised.

PLATE XXVII, figs. 51–56.

5. **M. australis,** Takeda, comb. nov.

SYN.—*Cladrastis australis,* Dunn, in Kew Bull. Addit. Ser. x (1912), p. 86.; *C.* sp., Forb. et Hemsl., Ind. Fl. Sin., i, p. 201.

HAB.—China: without precise locality (Millett, fl. Hb. Kew), N.W. River, Kwantong (Lo Guai, comm., S. T. Dunn, Aug. 1890, fr. Hb. Kew).

OBS.—A remarkably glabrous species, and closely related to the preceding, from which it differs by the long bract which attains 5 mm. in length and is nearly twice as long as the pedicel, and by the calyx shorter and more deeply toothed. The leaflet is oval and mucronulate at the apex. The pod is elliptical in the typical case. The plant must have been introduced into this country many years ago, as I have seen a specimen in the Kew Herbarium from the garden of the Royal Horticultural Society London, collected in 1835.

PLATE XXVII, figs. 57–62.

The present study has been carried out in the Herbarium, Royal Botanic Gardens, Kew. All the specimens preserved in the Herbarium of the British Museum have also been consulted. Prof. Bayley Balfour has been so kind as to send all the specimens of the Edinburgh Botanic Garden for examination. Mr. S. Matsuda of the Botanical Institute, Imperial University, Tôkyô, has also generously given me valuable information, and sent me specimens of *C. shikokiana,* and the co-type specimen of *M. Tashiroi.*

EXCLUDED SPECIES.

There is a plant described by Franchet as *Dalbergia Delavayi*,[1] which was subsequently excluded by Prain from this genus and relegated to *Cladrastis*.[2] So far as the writer can make out from Franchet's description, the plant, if it is a *Cladrastis*, resembles *C. sinensis*, Hemsl., differing, however, by the length of the pedicel and the size of the fruit. However, his description of the androecium [3] would not admit of its being a *Cladrastis*. For the present the writer is inclined to leave out this plant from consideration until the original specimen is closely examined.

ADDITAMENTUM.

After I had finished writing the present article Mr. W. G. Craib of Kew kindly placed in my hands specimens of the two genera I have been describing, collected by E. H. Wilson in Western China. Examination of them has convinced me that each of the genera is enriched by a new species.

The new *Cladrastis* (*C. Wilsonii*, Takeda), so closely resembles *C. shikokiana*, Makino, that it is not an easy matter to distinguish the two by foliage alone. The Chinese species possesses, however, a pod very shortly stipitate, broader than in the other species (10–12 mm.), and hirsute. The flower is almost as large as that of *C. lutea*, Koch, and as far as I can judge from the dried material, is pale purplish, and the standard is marked with a yellow spot.

The *Maackia* (*M. chinensis*, Takeda) is to be placed between *M. amurensis*, Rupr. et Maxim., and *M. Fauriei*, Takeda, and is more closely allied to the latter by its foliage. It differs from its nearest ally in having a slightly larger flower, longer bract, and densely hirsute leaf (the full-grown leaf is hirsute only underneath). The fruit, which affords a good distinguishing character, is unfortunately unknown. The ovary contains about 6 ovules.

The full descriptions of these two new species will be published in the "Plantae Wilsonianae."

[1] Franch., Pl. Delav., p. 186 (1889).
[2] Prain, in Ann. Roy. Bot. Gard., Calcutta, x, p. 109 (1905).
[3] "Stamina 9 (10 ?) monadelpha."

EXPLANATION OF PLATES XXVI–XXVII.

Illustrating H. Takeda's Paper on Cladrastis and Maackia.

All figures of leaflets and pods are of natural size.

FIGS. 1– 6. *Cladrastis sinensis*, Hemsl.: 1 =keel, ×4; 2 =wing, ×4; 3 = standard, ×4; 4 =ovary, ×4; 5 =leaflet; 6 = pod.

FIGS. 7–13. *Cladrastis platycarpa*, Makino: 7 =pod; 8 =wing, ×4; 9 =keel, ×4; 10 =standard, ×4; 11 =calyx laid open, seen from inside, ×4; 12 =ovary, ×4; 13 =leaflet.

FIGS. 14–15. *Cladrastis shikokiana*, Makino: 14 =pod; 15 =leaflet.

FIGS. 16–27. *Maackia amurensis*, Rupr. et Maxim., *α typica.*, 16 =keel, ×5; 17 =wing, ×5; 18 =standard, ×5 (Maack, Amur); 19 =wing ×5; 20 =keel, ×5; 21 =standard, ×5 (Veitch, Korea); 22 =leaflet (Radde, Amur); 23 =wing, ×5; 24 =keel, ×5; 25 =standard, ×5 (Maximowicz, Amur); 26 =leaflet (Augustinowicz, Amur); 27 =pod.

FIGS. 28–38. *Maackia amurensis*, Rupr. et Maxim., *β. Buergeri*: 28 =flower, ×5; 29 =keel, ×5; 30 =wing, ×5; 31 =standard, ×5 (Albrecht, Hakodate); 32 =keel, ×5; 33 =wing, ×5; 34 =standard, ×5 (Savatier, Japan); 35, 38 =leaflets near apex of the leaf (Maximowicz, Yokohama); 36 =do., near apex of leaf (Albrecht, Hakodate); 37 =do., near base of the leaf.

FIGS. 39–43. *Maackia Fauriei*, Takeda: 39 =wing, ×4·5; 40 =petal of keel, ×4·5; 41 =standard, ×4·5; 42 =calyx, ×4·5; 43 =leaflet.

FIGS. 44–50. *Maackia floribunda*, Takeda: 44 =flower, ×6; 45 =keel, ×6; 46 =standard, ×6; 47 =wing, ×6; 48 =pod; 49, 50 = leaflets.

FIGS. 51–56. *Maackia Tashiroi*, Makino: 51 =flower on inflorescence, ×6; 52 =pod; 53 =standard, ×4·5; 54 =wing, ×4·5; 55 =keel, ×4·5; 56 =leaflet.

FIGS. 57–62. *Maackia australis*, Takeda: 57 =flower, ×5; 58 =keel, ×5; 59 =wing, ×5; 60 =standard, ×5; 61 =leaflet; 62 =pod.

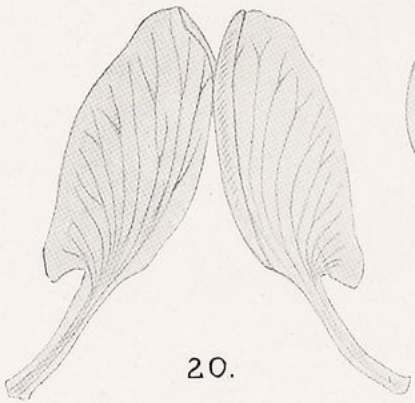
1.

16.

17.

18.

6.



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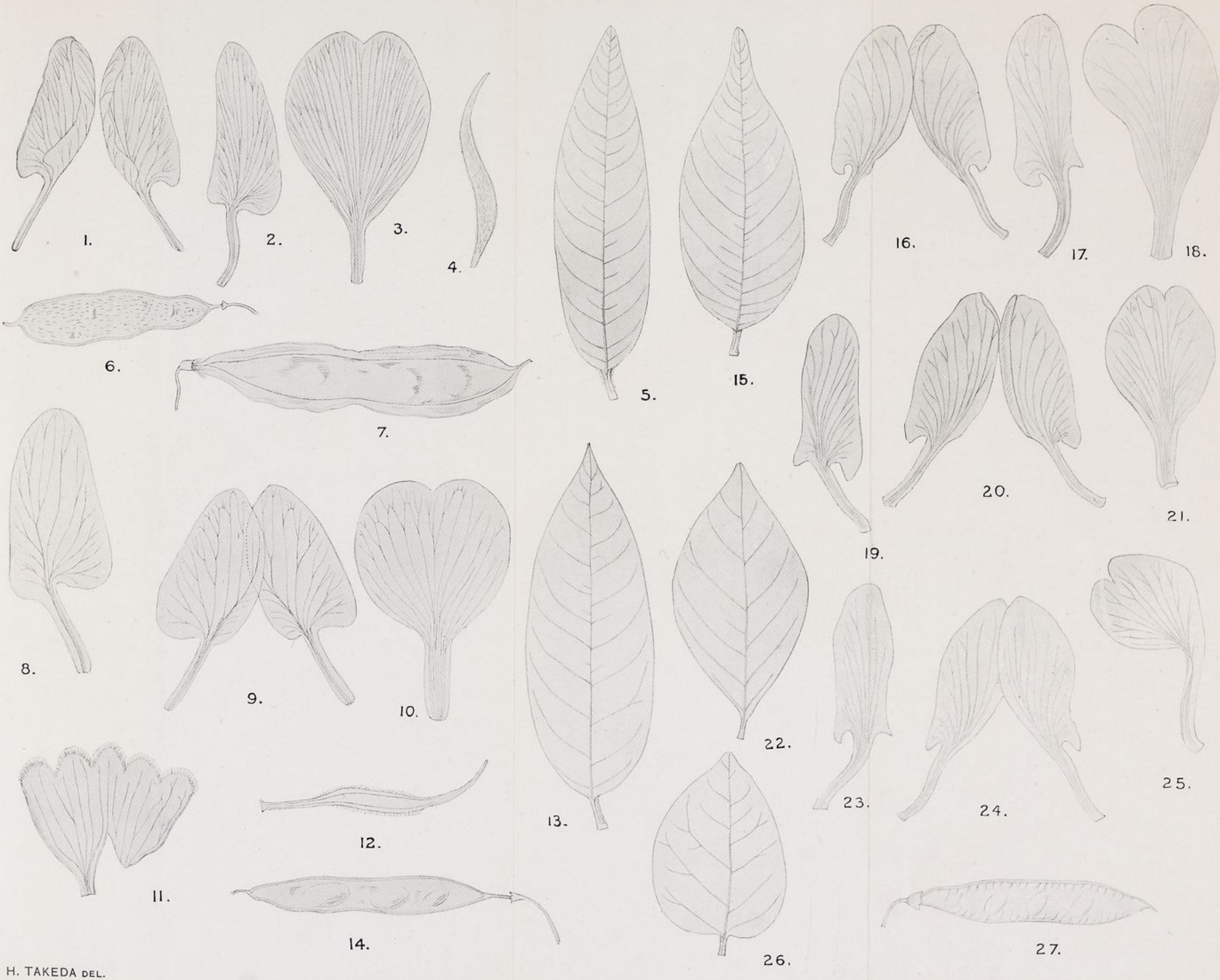
27.

H. TAKEDA DEL.

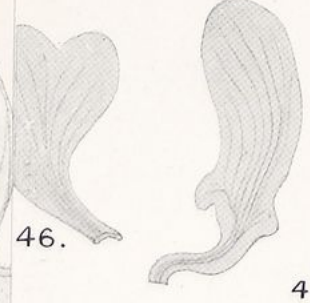
FIGS. 1-6, CLADRASTIS AMURENSIS, RUPR. ET MAXIM.



H. TAKEDA DEL.

FIGS. 1-6, CLADRASTIS SINENSIS, HEMSL.; 7-13, C. PLATYCARPA, MAKINO 14-15, C. SKIKOKIANA MAKINO; 16-27, MAACKIA AMURENSIS, RUPR. ET MAXIM.

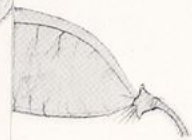
28.

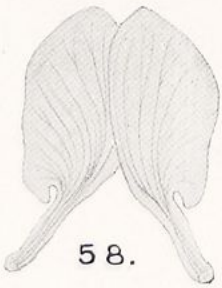


46.

47.

57.





58.

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59.

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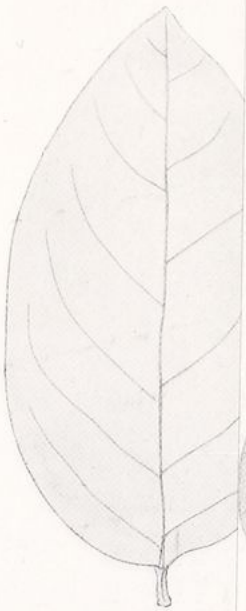
55.



36.

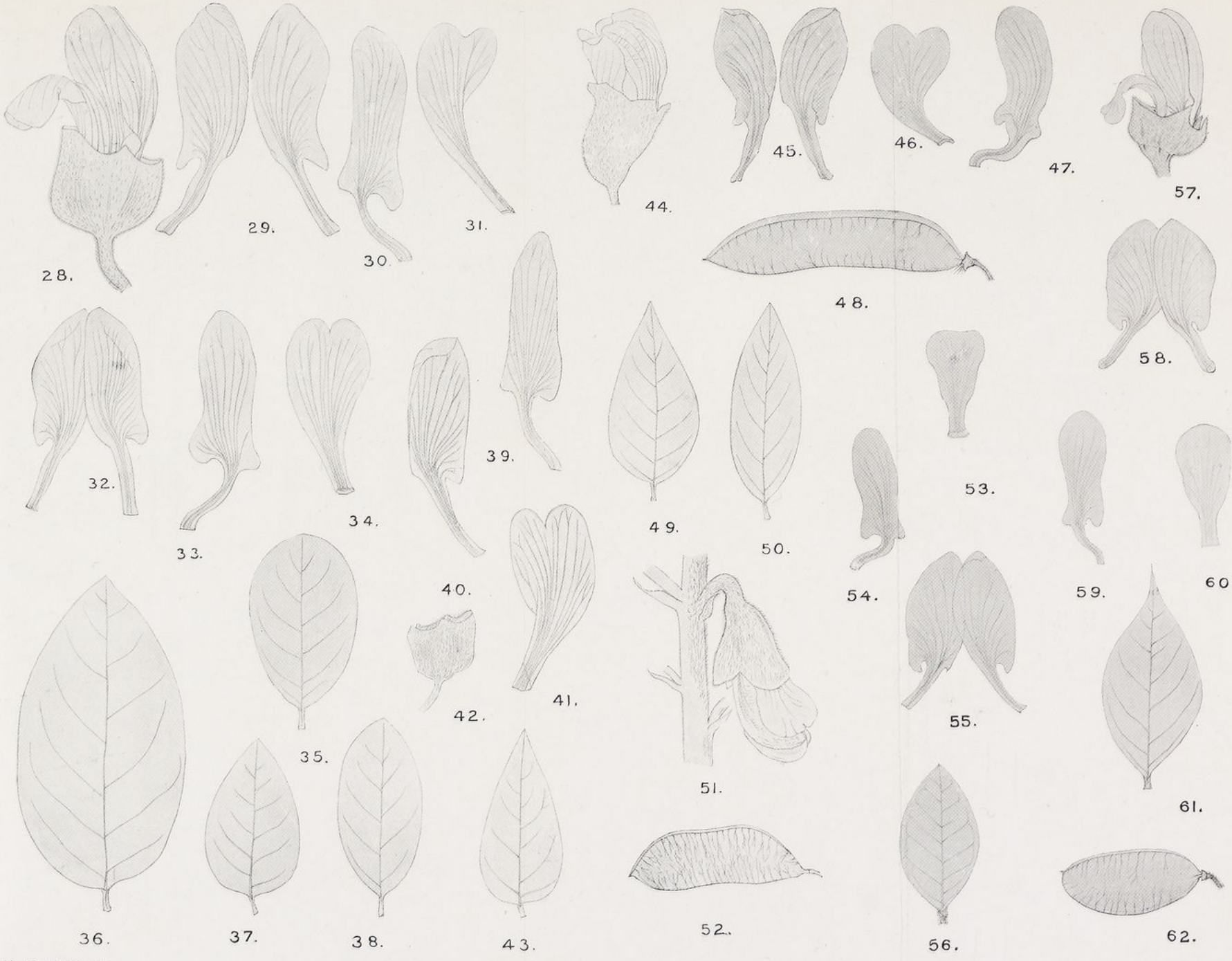
56.

61.

62.

H. TAKEDA DEL.

F M. FLORIBUNDA, TAKEDA



H. TAKEDA DEL.

FIGS. 28-38, MAACKIA AMURENSIS, RUPR. ET MAXIM., β. BUERGERI; 39-43, M. FAURIEI, TAKEDA; 40-50, M. FLORIBUNDA, TAKEDA 51-56, M. TASHIROI, MAKINO 57-62, M. AUSTRALIS, TAKEDA.