

Type from Hunan, also known from Fukien, Kwangtung and Kiangsi.

The type of *V. Donianum* var. *brachybotrys* Franchet was not seen but I believe it is better here to follow Handel-Mazzetti (Anzeig. Akad. Wiss. Math.-Nat. Kl. 1925, p. 146 [Pl. Nov. Sin. Forts. 35, p. 4] [1925]) who has raised this to a species.

Xolisma ovalifolia (Wallich) Rehder var. **hebecarpa** (Franchet and Hemsley) Metcalf, comb. nov.

Pieris ovalifolia D. Don var. *hebecarpa* Franchet in litt. in Hemsley, Jour. Linn. Soc. xxvi. 17 (1889).

DISTRIBUTION: C h e k i a n g: Meichi (*Poli* ex Franchet) in Hemsley, l. c.; Ningpo, *Macgregor*, in 1908 (Arnold Arboretum).

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NOTES ON THE LIGNEOUS PLANTS DESCRIBED BY H. LÉVEILLÉ FROM EASTERN ASIA¹

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SAXIFRAGACEAE

Philadelphus pekinensis Ruprecht in Bull. Phys. Math. Acad. Sci. St. Pétersb. xv. 365 (1857); in Mém. Biol. II. 543 (1858).

Deutzia Chanetii Léveillé in Fedde, Rep. Spec. Nov. ix. 451 (1911);
synon. nov.

CHINA. C h i l i : "Montagnes de Kou-ping," very rare, *L. Chanet*, no. 416, June, 1909 (holotype).

Philadelphus Henryi Koehne in Fedde, Rep. Spec. Nov. x. 126 (1911).

Deutzia mollis var. *erythrocalyx* Léveillé in herb.

CHINA. Y u n n a n : "rochers du mont à Pe-long-tsin, alt. 3280 m." *E. E. Maire*, June (holotype).

The leaves of Maire's specimen are more densely pubescent beneath than in typical *P. Henryi*. I have been unable to find the place of publication of Léveillé's name, probably it is only a manuscript name.

Philadelphus Magdalenae Koehne in Mitt. Deutsch. Dendr. Ges. XIII. 83 (1904).

Philadelphus coronarius var. *chinensis* Léveillé, Fl. Kouy-Tchéou, 389 (1916), nom. nudum; **synon. nov.**

CHINA. K w e i c h o u : "Tou-chan," *J. Cavalerie* (herb. Bodinier, no. 2343), May 1898 (holotype).

Cavalerie's specimen represents apparently a glabrescent form of

¹ Continued from vol. x. 196 (1929).

P. Magdalenae Koehne. The leaves are rather densely setose-strigose above as in the type, but beneath they are glabrous except the setose-strigose veins.

Deutzia lancifolia Rehder in Sargent, Pl. Wilson. I. 147 (1912).—Léveillé, Fl. Kouy-Tchéou, 387 (1915).

Styrax Esquirolii Léveillé in Fedde, Rep. Spec. Nov. IX. 446 (1911); Fl. Kouy-Tchéou, 387 (1915), pro synon.

Deutzia Esquirolii Léveillé, Fl. Kouy-Tchéou, 387 (1915), pro synon.

Deutzia Chaffanjonii Léveillé, l. c. (1915), pro synon.

CHINA. K w e i c h o u : "Lou-tsong-kouan, Kien-tin-chan," *J. Esquirol*, no. 22, May 2, 1904 (holotype of *Styrax Esquirolii* and *Deutzia Esquirolii*); "environs de Kouy-yang, monts du Collège," *J. Chaffanjon* in herb. Bodinier, no. 2223, April 1898 (holotype of *D. lancifolia* [in herb. Paris] and of *D. Chaffanjonii* [in herb. Léveillé]).

Apparently neither *D. Esquirolii* nor *D. Chaffanjonii* which is based on the same number as *D. lancifolia* were published before Léveillé cited them as synonyms of *D. lancifolia*.

Deutzia cyanocalyx Léveillé in Fedde, Rep. Spec. Nov. X. 438 (1912); Fl. Kouy-Tchéou, 386 (1915).

CHINA. K w e i c h o u : Kouy-Yang, monts du Collège, *J. Cavalerie*, no. 1196, April 1903 (holotype).

This species is closely related to *D. lancifolia* Rehd., but differs chiefly in the much larger and broader leaves, up to 10.5 cm. long and 3 cm. broad, and in the larger flowers.

Deutzia coreana Léveillé in Fedde, Rep. Spec. Nov. VIII. 283 (1910).—Rehder in Sargent, Pl. Wilson. I. 22 (1911).—Nakai, Fl. Sylv. Kor. XV. 60, t. 16 (1926).

KOREA: in Monte des Diamants, *U. Faurie*, no. 364, June 1906 (holotype; isotype in herb. Arnold Arboretum).

This is a very distinct species constituting the subsect. *Coreanae* Rehd. of sect. *Eudeutzia* Engl.

Deutzia glabrata Komarov in Act. Hort. Petrop. XXII. 433 (1903).—Rehder in Sargent, Pl. Wilson. I. 24 (1911).—Nakai, Fl. Sylv. Kor. XV. 63 (1926).

Deutzia Fauriei Léveillé in Fedde, Rep. Spec. Nov. VIII. 283 (1910).

Crataegus Pomasae Léveillé in Fedde, Rep. Spec. Nov. XII. 189 (1913); synon. nov.

KOREA: "in rupibus Montis des Diamants" [Kogo-san], *U. Faurie*, no. 360, June 24, 1906 (holotype of *D. Fauriei*); Pomasa, *U. Faurie*, no. 362, May 21, 1906 (holotype of *Crataegus Pomasae*).

Hydrangea Davidii Franchet in Nouv. Arch. Mus. Paris, sér. 2, VIII. 227 (Pl. David. II. 44) (1885).

Hydrangea Arbostiana Léveillé in Bull. Acad. Intern. Geog. Bot. XII. 115 (1903).—Rehder in Sargent, Pl. Wilson. I. 41 (1911).

Hydrangea Davidi Franch. var. *Arbostiana* Léveillé, Fl. Kouy-Tchéou, 387 (1915).

CHINA. K w e i c h o u : Kouy-Yang, Mont du Collège ça et là dans la montagne," *E. Bodinier*, no. 1694, June and July 21, 1897 (holotype of *H. Arbostiana*); Pin-fa, Yuin-ou-chan, *J. Cavalerie*, no. 39, July 15, 1902 (paratype of *H. Davidi* var. *Arbostiana*); Mei-ting-chan, *J. Cavalerie*, no. 49, July 1902 (ex Léveillé; paratype of *H. Davidi* var. *Arbostiana*).

Hydrangea Arbostiana does not seem to differ at all from *D. Davidi* and can not be maintained even as a variety.

Hydrangea paniculata Siebold in Nov. Act. Acad. Leop.-Carol. XIV. pt. II. 690 (Syn. Hydrang.) (1829).

Hydrangea Kamienskii Léveillé in Bull. Acad. Intern. Geog. Bot. XII. 115 (1903); Fl. Kouy-Tchéou, 388 (1915).—Rehder in Sargent, Pl. Wilson. I. 41 (1911).—**Synon. nov.**

Hydrangea sachalinensis Léveillé in Fedde, Rep. Spec. Nov. VIII. 282 (1910); **synon. nov.**

S a g h a l i n : "in silvis Korsakof," *U. Faurie*, no. 439, Oct. 1908 (holotype of *H. sachalinensis*).

CHINA. K w e i c h o u : "monts de Lou-tsong-koan," *E. Bodinier*, no. 1661, July 12, 1897 (syntype of *H. Kamienskii*); "Gan-pin, environs de Touchang," *L. Martin & E. Bodinier*, no. 1661bis, Aug. 1897 (ex Léveillé; syntype of *H. Kamienskii*).

Hydrangea strigosa Rehder in Sargent, Pl. Wilson. I. 31 (1911).

Premna Merinoi Léveillé, Sert. Yunnan. 3 (1916); Cat. Pl. Yunnan, 278 (1917); **synon. nov.**

Hydrangea villosa Rehd. var. *Mairei* Léveillé, Cat. Pl. Yunnan, 254 (1917); **synon. nov.**

CHINA. Y u n n a n : "brousses des montagnes a Siai-Ho, 2700 m.," *E. E. Maire*, May-July 1912 (holotype of *Premna Merinoi*); "brousses des monts Io-Chan et Kiao-Me-Ti, 3100-3300 m.," *E. E. Maire*, July-Oct. 1912 (holotype of *H. villosa* var. *Mairei*).

The specimen of *Premna Merinoi* bears only young inflorescences with the small lanceolate deciduous bracts still present and conspicuous, which probably induced Léveillé to refer the plant to *Premna*.

Hydrangea Rosthornii Diels in Bot. Jahrb. XXIX. 374 (1900).—Léveillé, Fl. Kouy-Tchéou, 388 (1915).

Hydrangea Maximowiczii Léveillé in Bull. Acad. Intern. Geog. Bot. XII. 114 (1903).

CHINA. K w e i c h o u : "environs de Gan-pin, grand rocaille," *L. Martin & E. Bodinier*, July 11, 1897, July 1899 (ex Léveillé; syntypes of *H. Maximowiczii*); "environs de Tou-chan," *J. Cava-*

lerie, no. 22, July 1897 (syntype of *H. Maximowiczii*); Pin-fa, route de Tzai-kin, *J. Cavalerie*, no. 69, July 15, 1902.

I have not seen the specimen from Gan-pin, but Cavalerie's no. 22 and his 69 which is not cited in the original description, but in the Flore de Kouy-Tchéou, and bears on the original field label the name "*Hydrangea Maximowiczii* Lévl. ou sp. nov." and on another label the name "*Hydrangea Rosthornii* Diels," both in Lévillé's handwriting. Cavalerie's no. 22 resembles in its narrower oblong leaves (about 13 x 45 cm.) somewhat *H. strigosa*, but in the ciliate serration of the leaves and in the more villous pubescence it agrees with *H. Rosthornii*.

Hydrangea petiolaris Siebold & Zuccarini, Fl. Jap. i. 106, t. 54 (1835).—Rehder in Sargent, Pl. Wilson. i. 41 (1911).—Nakai, Fl. Sylv. Kor. xv. 71, t. 22 (1926).

Hydrangea tiliaefolia Lévillé in Fedde, Rep. Spec. Nov. viii. 282 (1910).

KOREA. **Q u e l p a e r t** : "in dumosis," *U. Faurie*, no. 358, Oct. 1906; "in rupibus Yang-keuni," *U. Faurie*, no. 809, May 14, 1908; "in silvis," *U. Faurie*, no. 1654, July 1907; (all syntypes of *H. tiliaefolia*).

Of no. 809 I have seen the original specimen in the Edinburgh herbarium with the name in Lévillé's handwriting; of the other two numbers there are isotypes in the herbarium of the Arnold Arboretum.

Schizophragma hydrangeoides Siebold & Zuccarini, Fl. Jap. i. 58, t. 26 (1835).—Nakai, Fl. Sylv. Kor. xv. 73, t. 24 (1926).

Hydrangea Taquetii Lévillé in Fedde, Rep. Spec. Nov. viii. 282 (1910).

KOREA. **Q u e l p a e r t** : "in muris agrorum Hognu," *E. Taquet*, no. 807, May 12, 1908 (syntype); "in silvis Yang-kami," *E. Taquet*, no. 808, May 10, 1908 (syntype).

Of both numbers there are isotypes in the herbarium of the Arnold Arboretum and of no. 807 I have also seen the original specimen now in the Edinburgh herbarium.

Dichroa febrifuga Loureiro, Fl. Cochinchin. 301 (1790).

Callicarpa Esquirolii Lévillé in Fedde, Rep. Spec. Nov. ix. 456 (1911); Fl. Kouy-Tchéou, 439 (1915); not Lévillé in Fedde Rep. Sp. Nov. ix. 325; **synon. nov.**

Dichroa Henryi Lévillé, Sert. Yunnan. 1 (1916); Cat. Pl. Yunnan, 254 (1917); **synon. nov.**

CHINA. **K w e i c h o u** : "Ouang-mou," *J. Esquirol*, no. 72, June 1904 (holotype of *Callicarpa Esquirolii*). **Y u n n a n** : Sze-mao, eastern mts., 5000 ft., *A. Henry*, no. 11050 (holotype of *D. Henryi*).

Of Henry's no. 11050 I have seen an isotype in the herbarium of the Arnold Arboretum and I also saw no. 11050B; both are identical,

but their leaves are denticulate and not "grosse dentata" as described by Lévillé. Nevertheless I consider *D. Henryi* identical with *D. febrifuga* which varies considerably in the shape, size, and serration of its leaves.

Itea yunnanensis Franchet in Jour. de Bot. x. 268 (1896).

Itea Bodinieri Lévillé in Fedde, Rep. Spec. Nov. ix. 457 (1911); Fl.

Kouy-Tchéou, 388 (1917), pro synonym. *I. Esquirolii* Lévl.; **synon. nov**

Itea Esquirolii Lévillé, Fl. Kouy-Tchéou, 388 (1917); **synon. nov.**

CHINA. K w e i c h o u : Kiang-ti, *J. Esquirol*, no. 1501; "environs de Gan-Pin, dans la grande rocaïlle près de ville," *L. Martin & E. Bodinier*, no. 1625 (ex Lévillé; syntype); "environs de Kouy-Yang, mont du Collège, à la grande Cascade," *E. Bodinier* [no. 1645 ?], May 26, 1899 (ex Lévillé); Pin-fa, *J. Cavalerie*, no. 1082, June 23, 1903 (ex Lévillé; all syntypes of *I. Bodinieri*).

In his Flore de Kouy-Tchéou the author changes without apparent reason the name *Itea Bodinieri* to *I. Esquirolii* and cites the former name as a synonym; the syntypes cited are the same. Lévillé distinguishes his species chiefly by the pilose flowers from *I. yunnanensis* which typically has a glabrous calyx and pedicels, but a form with short-pilose calyx and pedicels, while differing in no other character from the typical form, seems not uncommon. In the Arnold Arboretum herbarium I find 19 Yunnan specimens with glabrous calyx collected by *G. Forrest*, *C. Schneider*, *J. F. Rock*, *E. E. Maire* and *H. Handel-Mazzetti*, and only the following specimens with pubescent calyx: *A. Henry*, no. 9297, *Siméon Ten*, no. 91, *H. Handel-Mazzetti*, no. 10197, *J. F. Rock*, no. 3095 and *G. Forrest*, no. 19240. Besides there is one specimen from western Szechuan (*E. H. Wilson*, no. 325) with pubescent calyx. *Itea ilicifolia* Oliv. which does not seem to occur in Yunnan and western Szechuan has its calyx always glabrous.

Ribes laurifolium Janczewski in Bull. Acad. Sci. Cracovie, sér. Sci. Nat. 1910, p. 79 (1910).

Cavaleria enkianthoidea Lévillé in Fedde Rep. Spec. Nov. xi. 66 (1912);

Fl. Kouy-Tchéou, 389 (1917), pro synonym. *Ribes pachysandroideae*; **synon. nov.**

Ribes pachysandroidea Lévillé, Fl. Kouy-Tchéou, 389 (1917); non *R. pachysandroides* Oliver.

CHINA. K w e i c h o u : Kin-Tchen-Hia, depression de terrain *J. Cavalerie*, no. 3183, April 8, 1907 (holotype of *Cavaleria enkianthoidea*).

Lévillé in 1917 had reduced his *Cavaleria enkianthoidea* originally published as a new genus of Hamamelidaceae to a synonym of *Ribes pachysandroides* Oliv. which in turn is a synonym of *R. Davidi* Franch., but Cavalerie's no. 3183 belongs to *R. laurifolium* Jancz. and not to *R. Davidi* Franch.

PITTOSPORACEAE

Pittosporum glabratum Lindley in Jour. Hort. Soc. London, I. 230 (1846).—Léveillé, Fl. Kouy-Tchéou, 315 (1915).

Pittosporum Cavaleriei Léveillé in Fedde, Rep. Spec. Nov. XI. 492 (1913); Fl. Kouy-Tchéou, 315 (1915), pro synonym. *P. glabrati*.

Pittosporum trigonocarpum Léveillé in Fedde, Rep. Spec. Nov. XI. 492 (1913); **synonym. nov.**

CHINA. K w e i c h o u : "Pin-fa, près ruisseaux," *J. Cavalerie*, no. 1746, April 5, 1904 (ex Léveillé; holotype of *P. Cavaleriei*); bois à 100 kil. sud de Tin-fan, *J. Cavalerie*, no. 1857, Nov. 1904 (holotype of *P. trigonocarpum*).

Pittosporum truncatum E. Pritzl in Bot. Jahrb. XXIX. 378 (1900).

Euonymus provicarii Léveillé, Cat. Pl. Yunnan. 34 (1915); **synonym. nov.**

CHINA. Y u n n a n : "collines rocheuses de Pi-ka-tong," 2550 m., *E. E. Maire*, May 1912 (holotype of *Euonymus provicarii*).

The leaves of Maire's specimen are not quite typical for *P. truncatum*; they are generally oblong-obovate and rather larger, but the flowers agree well with those of *P. truncatum*.

HAMAMELIDACEAE

Distylium chinense (Fr.) Diels in Bot. Jahrb. XXIX. 380 (1900).—Handel-Mazzetti, Symb. Sin. VII. 53 in nota (1929).

Distylium Dunnianum Léveillé in Fedde Rep. Spec. Nov. XI. 67 (1912);

Fl. Kouy-Tchéou, 194 (1914); **synonym. nov.**

Myrica Seguini Léveillé in Fedde, Rep. Spec. Nov. XII. 537 (1913).

CHINA. K w e i c h o u : Lo-fou, *J. Cavalerie*, no. 3551, March 1909 (holotype of *D. Dunnianum*); without precise locality, *J. Cavalerie*, no. 3929 (holotype of *Myrica Seguini*).

In the shape of its leaves *D. chinense* shows considerable variation; in Hupeh the prevailing form has obovate to obovate-oblong leaves with one to three teeth near the apex on each side, while the form occurring in Kweichou here represented by the two specimens cited above and Handel-Mazzetti's nos. 10272, 10692 and 10810, has generally longer oblong to oblong-oblong entire leaves up to 7.5 cm. long, but Wilson's 2961 and 3537 (partly) from near Ichang also have entire narrower leaves though shorter, and approach the Kweichou form, besides they are more or less pubescent on the under side of the leaves. Cavalerie's no. 3929 is intermediate between the two forms, while his no. 3551 represents an extreme long-leaved form.

Corylopsis alnifolia (Lévl.) Schneider in Fedde Rep. Spec. Nov. XII. 379 (1913).—Léveillé, Fl. Kouy-Tchéou, 193 (1914).

Berchemia alnifolia Léveillé in Fedde, Rep. Spec. Nov. X. 433 (1912).

CHINA. K w e i c h o u : "route de Pin-fa à Kouy-Yang, mon-

tagnes," *J. Cavalerie*, no. 2712, April 1905 (holotype of *Berchemia alnifolia*).

Corylopsis Wilsonii Hemsley in Hooker, Ic. Pl. xxvii. t. 2819 (1906).

Corylopsis Cavaleriei Lévillé in Fedde, Rep. Spec. Nov. xi. 295 (1912); Fl. Kouy-Tchéou, 193 (1914); **synon. nov.**

CHINA. K w e i c h o u : Pin-fa, *J. Cavalerie*, no. 1098, June 23, 1903, arbre (holotype of *C. Cavaleriei*).

(*To be continued*)

A STUDY OF CHROMOSOME NUMBER IN TWO GENERA OF BERBERIDACEAE: MAHONIA AND BERBERIS

HAIG DERMEN

THE STUDY of the chromosome situation in both *Mahonia* and *Berberis* was undertaken to determine the cytological relationships between these two genera and among species in each genus. There are supposed to be some 50 species of *Mahonia* and 175 species of *Berberis*. Rehder (1927) describes 6 *Mahonia* and 48 *Berberis* species hardy in temperate North America. He also gives some interspecies hybrid forms, and one intergeneric form which has never been known to bloom. In the Arnold Arboretum there are 2 species of *Mahonia*, some 50 species of *Berberis* and the intergeneric hybrid just mentioned.

THE GEOLOGICAL HISTORY AND THE PRESENT DISTRIBUTION OF MAHONIA AND BERBERIS. Some five fossil species have been described that were unearthed from tertiary formation in the south of France, northern Italy and Switzerland which showed considerable resemblance to present forms, especially to *M. Aquifolium* and to other species similar to it (Engler & Prantl, 1891). It is a curious fact, that at present not a single species of *Mahonia* and one only of *Berberis*, namely *B. vulgaris*, is found in Europe. *Mahonia* species are found in North and Central America and Eastern and Southern Asia, and *Berberis* species in Eastern and Central Asia, in South America, a few in North America and North Africa and one in Europe (Rehder, 1927).

CYTOLOGICAL STUDIES. Two species of *Mahonia* and 42 species of *Berberis* were studied. Young anthers were smeared on slides in aceto-carmin solution and the chromosomes of pollen mother cells were stained and counted. The time of development of buds for study began in the early part of April and lasted until the end of May. Buds from *B. aggregata* were not ready until June 19.



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