Springer

PLANTS PEOPLE
POSSIBILITIES

Phellodendron

Author(s): T. A. Sprague

Source: *Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew)*, Vol. 1920, No. 7 (1920), pp. 231-235

Published by: Springer on behalf of Royal Botanic Gardens, Kew

Stable URL: <http://www.jstor.org/stable/4107480>

Accessed: 26-06-2016 12:50 UTC

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at
<http://about.jstor.org/terms>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Springer, Royal Botanic Gardens, Kew are collaborating with JSTOR to digitize, preserve and extend access to *Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew)*

as Port Elizabeth. This, of course, does not mean that elements characteristic of other regions are absent from it; in fact, here and there, more or less large associations which seem to be foreign to the region occur, for instance, associations of forest plants and Karroo plants, as pointed out already. From the heights east of the Gamtoos River to the beginning of the Van Stadens Gorge we travelled through typical South-Eastern grass country with scattered bush such as we find near Bathurst, south of Grahamstown. The last point I would like to refer to is this. On a previous trip I had confirmed one of Ecklon's observations—unfortunately overlooked by Bolus and others—that karroid vegetation stretches from Port Elizabeth to the mouth of the Sundays River, thus forming a broad wedge between the South-Eastern and South-Western Regions. I noticed that this wedge consists, near Coega, partly of low karroid shrublets (including *Pentzia virgata*). On the trip here dealt with I travelled from Uitenhage to Coega, and I ascertained that there are extensive flats on this road covered with these karroid shrublets. Karroid-vegetation is also found all over the hill called the "Coega Kop," which is composed of Table Mountain sandstone, another of the numerous instances which we have of the secondary influence of geological formation on the distribution of plants in South Africa.

XXXIV.—PHELLODENDRON.

T. A. SPRAGUE.

The genus *Phellodendron* (*Rutaceae-Toddalieae*) was described by Ruprecht in 1857 from specimens collected by Richard Maack in Amurland.* An excellent detailed generic description is given in Sargent's *Trees and Shrubs*, i. p. 195 (1905); the following diagnosis may, however, be useful to those who are unable to consult that work.

Trees with opposite, imparipinnate leaves. *Axillary bud* concealed in a little pocket between the base of the petiole and the stem. *Leaflets* very finely crenulate-serrulate or subentire, dotted with pellucid glands along the margins. *Flowers* paniculate, dioecious, pentamerous. *Calyx* small, 5-lobed. *Petals* much larger, boat-shaped, greenish-yellow, slightly imbricate. *Disc* none. *Male flower*:—*Stamens* 5, hypogynous, alternating with, and about twice as long as the petals; anthers sagittate, introrse. *Gynophore* oblong, bearing 5 rudimentary villous pistils. *Female flower*:—*Staminodes* 5, very small. *Ovary* subglobose, glandular-punctate, 5-locular, with a very short thick style and depressed-capitate, 5-lobed stigma. *Ovules* solitary, pendulous. *Fruit* a drupe with aromatic flesh enclosing 5 pyrenes. *Endocarp* cartilaginous, translucent. *Seeds* with a thin layer of endosperm. *Embryo* large; cotyledons flat.

The type-species, *Phellodendron amurense*, Rupr., is a tree with extremely corky bark (whence the generic name, meaning "Cork

* Bull. Acad. Pétersb. xv. p. 353 (1857).

Tree’’), which is used by the native fishermen of the middle Amur for making floats for their nets. It has a wide distribution in Russian and Chinese Manchuria, and has also been recorded from Corea and Japan.

The form which occurs in the island of Sachalin has a smooth, not corky bark, and was described as var. *sachalinense* by Friedrich Schmidt, with the following diagnosis: “ramis junioribus omnino esuberosis, foli[ol]is latioribus brevioribus, seminibus quam in planta amurensi magis convexis minoribus.”* Schmidt cited a specimen collected by Albrecht, near Hakodate, in Japan, as apparently belonging to the same variety. In spite of careful investigation, he was unable to find sufficient differential characters to justify the separation of var. *sachalinense* as an independent species. Sargent, however, raised the variety to specific rank as *Phellodendron sachalinense*.† His description was drawn up, mainly, if not entirely, from trees which had been raised in the Arnold Arboretum in 1887 from seeds sent from Japan. According to him, *P. sachalinense* differs from *P. amurense* in the darker colour of the branchlets, the thinner, not corky bark, rufous-pubescent, instead of silvery-pubescent, winter buds, leaflets not lustrous on the upper surface, glabrous on the margins, and the glabrous inflorescence. The type specimen of var. *sachalinense* in the Kew Herbarium (Tunai, September, 1860, Schmidt) has, however, a distinctly pubescent inflorescence and infructescence, so that the last character does not hold good. The axillary buds are rufous-pubescent, and the leaflets have glabrous margins, but the remaining characters cannot be verified from the herbarium specimen.

According to Sargent, the Japanese tree which has hitherto passed under the name *Phellodendron amurense*, should be called *P. sachalinense*. He cited Japanese specimens of the latter species, but none of the former, and suggested that *P. amurense*, Franch. et Sav. Enum. i. p. 73, was a synonym of *P. sachalinense*.

Sargent’s views may be summarised in the following propositions: 1, that the Arnold Arboretum *sachalinense* is specifically distinct from *P. amurense*; 2, that it is identical with *P. amurense*, var. *sachalinense*, Fr. Schmidt; 3, that it occurs in a wild state in Japan, near Hakodate and Sapporo.

(1) The evidence for the specific status of *sachalinense* seems insufficient: trees raised at Kew from seeds received as *P. sachalinense* in 1904 from the Arnold Arboretum, agree with Sargent’s description in having a non-corky bark, but the leaflets are ciliate and lustrous on the upper surface, and the inflorescence is not glabrous. *Phellodendron* is dioecious, however, and the seeds may possibly have been the result of a cross with some other species or variety cultivated in the Arnold Arboretum. On the other hand, a tree received in 1910 from the Japanese Exhibition, and grown at Kew under the name *P. sachalinense*, also has a non-corky bark and ciliate lustrous leaflets, so that unless this also was a hybrid, the leaflets of *P. sachalinense* evidently do not

* Reisen in Amur-lande, p. 120 (1868).

† Trees and Shrubs, i. p. 199 (1905).

differ from those of *P. amurense* in being dull on the upper surface and having glabrous margins. Nor does there appear to be any marked difference between *sachalinense* and *amurense* in the colour of the branchlets. It seems desirable, therefore, to treat the cultivated *sachalinense* as a variety of *amurense*.

(2) Sargent's identification of the cultivated *sachalinense* with *P. amurense* var. *sachalinense*, Fr. Schmidt, may, on the other hand, be accepted. Both trees differ from typical *amurense* in having a non-corky bark, and relatively broader leaflets.

(3) The identification with var. *sachalinense* of the Japanese tree, hitherto known as *P. amurense*, is open to question. The leaflets of wild specimens from Japan certainly resemble those of var. *sachalinense* in shape, but the labels afford no information as to the nature of the bark, which furnishes the most important character of the variety. Furthermore, the figures of the bark of Japanese *amurense* given by Shirasawa, Ic. Ess. For. Jap. ii. t. 33, ff. 27, 28 agree, in the writer's opinion, with typical *amurense* rather than with var. *sachalinense*. The question is recommended to the attention of Japanese botanists, as it can be elucidated most satisfactorily by a study of the living trees.

It is, moreover, complicated by the existence in Japan of another variety or form of *P. amurense*, which Dode has described as an independent species, *P. Lavallei*, from a tree of Japanese origin cultivated in the Arboretum at Segrez.* This differs from *P. amurense*, according to Dode, in the leaflets, which are lanceolate-ovate instead of lanceolate, and have the nerves of the lower surface clothed with stiff white hairs. It has been in cultivation in England for about 40 years, and has hitherto passed under the names *P. japonicum* and *P. sachalinense*. Apart from the indumentum, it seems to differ in no respect from the usual Japanese form of *P. amurense*, and it may therefore be named *P. amurense* var. *Lavallei*.

A specimen in the Kew Herbarium, gathered by Tschonoski in 1865 in subalpine woods in the province of Nambu, Nippon, agrees with var. *Lavallei*. Sargent referred the corresponding specimen in the Gray Herbarium to *P. japonicum*, from which the Kew specimen differs in the cuneate base of the leaflets, and the nature of the indumentum.

Phellodendron japonicum, Maxim., appears to be confined to Fujiyama, and is well characterised by the thin bark which peels off in small scales, the shorter and broader leaflets, rounded at the base and softly pubescent on the lower surface with rather curly hairs, and the larger fruits.

A third species which is in cultivation at Kew is *P. chinense*, Schneider, of which *P. sinense*, Dode, is a synonym. This is a native of Hupeh, and may easily be recognised by its very compact inflorescence.

Phellodendron macrophyllum, Dode, and *P. Fargesii*, Dode, are known to the writer from description only, and do not appear to be in cultivation. The former has very large leaflets, up to 20 cm.

* Bull. Soc. Bot. France, lv. p. 648 (1909).

long and 9 cm. broad; and the latter has a small compact inflorescence, resembling that of *P. chinense*, from which it differs in the narrower leaflets. Both are natives of Szechuan.*

The cultivated species and varieties of *Phellodendron* may be distinguished as follows:—

Inflorescence compact; leaflets oblong-lanceolate with nearly parallel margins	3. <i>chinense</i> .
Inflorescence lax:	
Leaflets broadly ovate, rounded at the base, shortly acuminate, softly and rather densely pubescent on the lower surface; bark thin, peeling off in small scales	2. <i>japonicum</i> .
Leaflets ovate, ovate-lanceolate or lanceolate, not softly pubescent on the lower surface:	
Nerves more or less pilose on the lower surface; bark of trunk and old branches corky	1. <i>amurense</i> , var. <i>Lavallei</i> .
Only the base of the midrib pilose on the lower surface:	
Bark not at all corky	1. <i>amurense</i> , var. <i>sachalinense</i> .
Bark of trunk and old branches corky	1. <i>amurense</i> .

1. *P. amurense*, *Rupr.* in Bull. Acad. Pétersb. xv. p. 353 (1857); Maxim. Prim. Fl. Amur. p. 72, t. 4; Regel, Fl. Ussur. p. 42; Fr. Schmidt, Reisen in Amur-Lande, p. 37; Franch. Pl. David. p. 67, Komarov, Fl. Manshur. ii. p. 668; Franch. et Sav. Enum. Pl. Jap. i. p. 73; Shirasawa, Ic. Ess. For. Jap. ii. t. 33, ff. 16–30; Matsum. Ind. Pl. Jap. ii. pars. 2, p. 293; Nakai in Journ. Coll. Sc. Tokyo, xxvi. Art. 1, p. 117; Sarg. Trees and Shrubs, i. p. 197, t. 93; Schneider, Ill. Handb. Laubholz. ii. p. 125; Bean, Trees and Shrubs, ii. p. 131.

Distrib. Russian and Chinese Manchuria, Northern China, Corea, Japan.

The writer, for reasons already given, follows Franchet and Savatier, Shirasawa and Matsumura in recording *P. amurense* from Japan. Pritzl (in Engl. Jahrb. xxix. p. 424) cites several specimens of *P. amurense* from Central China. The one collected by Henry is evidently *P. chinense*, Schneider. The other specimens should be re-examined.

var. *sachalinense*, *Fr. Schmidt*, Reisen in Amur-Lande, p. 120 (1868); Palibin, Consp. Fl. Kor. i. p. 51; Nakai in Journ. Coll. Sc. Tokyo, xxvi. Art. I, p. 117; Miyake et Miyabe, Fl. Saghalin, n. 124.—*P. sachalinense*, Sarg. Trees and Shrubs, i. p. 199 (1905); Bean, Trees and Shrubs, ii. p. 132.

Distrib. Sachalin, Corea (fide *Palibin*).

* Bull. Soc. Bot. France, lv. pp. 648, 649 (1909).

This variety is cultivated in Japan, and may possibly be indigenous there. It differs from typical *amurense* mainly in the nature of the bark, so that it is hardly possible to recognise it from herbarium specimens unaccompanied by notes or samples of bark. Sargent records *P. sachalinense* from Szechuan (Pl. Wilson. ii. p. 136). The writer has not seen the specimens cited.

var. *Lavallei*, *Sprague*.—*P. Lavallei*, Dode in Bull. Soc. Bot. France, lv. p. 648 (1909).

Distrib. Japan: Province of Nambu, in subalpine woods, 1865, *Tschonoski*.

2. *P. japonicum*, *Maxim.* in Bull. Acad. Pétersb. xvi. p. 212 (1871); Mél. Biol. viii. p. 1; Franch. et Sav. Enum. Pl. Jap. i. p. 73; Matsum. Ind. Pl. Jap. ii. pars 2, p. 293; Hayata, Veg. Mt. Fuji, p. 75; Schneider, Ill. Handb. Laubholz. ii. p. 125; Bean, Trees and Shrubs, ii. p. 131.

Distrib. Japan: Fujiyama, in the deciduous broad-leaved tree-region.

According to Matsumura, *P. japonicum* is confined to Fujiyama. Sargent, Trees and Shrubs, i. p. 201, cited under *P. japonicum*, *Tschonoski*'s specimen from Nambu, which the writer refers to *P. amurense*, var. *Lavallei*; and Henry's no. 4003, from Hupeh, which is *P. chinense*, Schneider, as he himself subsequently recognised (Pl. Wilson ii. p. 137).

Pritzel recorded the occurrence of *P. japonicum* in Central China, which is highly improbable (Engl. Jahrb. xxix. p. 424).

3. *P. chinense*, *Schneider*, Ill. Handb. Laubholz. ii. p. 126 (1907); Sarg. Pl. Wilson. ii. p. 136; Bean, Trees and Shrubs, ii. p. 131. *P. sinense*, Dode in Bull. Soc. Bot. France, lv. p. 649 (1909). *P. amurense*, E. Pritzel in Engl. Jahrb. xxix. p. 424, non Rupr.

Distrib. China: Hupeh, *Wilson* 1972, 2739; Patung District, *Henry* 4003, 5202.

XXXV.—ON TWO SPECIES OF OVULARIOPSIS FROM THE WEST INDIES.

E. M. WAKEFIELD.

Since 1906 lists of fungus diseases of plants in the West Indies have contained references to a mildew on cotton, which has been called, for the sake of distinction, the "West Indian Leaf Mildew" of cotton, as it was apparently unknown from any other part of the world.* In the West Indian Bulletin, 1916, p. 118, the disease was briefly described as follows:—

"The disease occurs on both native and cultivated cotton. Leaves attacked by the fungus turn yellow or red in irregular

* It may be noted, however, that Dr. Butler in his book "Fungi and Disease in Plants," p. 363, has recorded the occasional occurrence of a similar disease in Bombay.