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A REVISION OF RHODODENDRON

III. Subgenera Azaleastrum, Mumeazalea, Candidastrum and Therorhodion†

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ABSTRACT. Subgenus Azaleastrum comprises two sections, Azaleastrum and Choniastrum, with 5 and 11 species respectively. Two species are recognized in subgenus Therorhodion; the remaining subgenera, Mumeazalea and Candidastrum, each consists of only 1 species. The characters and distribution of all the species are recorded and their relationships discussed.

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GENERAL INTRODUCTION

This contribution continues the series of revisions of *Rhododendron* appearing in *Notes from the Royal Botanic Garden, Edinburgh* (Cullen, 1980; Chamberlain, 1982). It covers four of the six subgenera often referred to informally as the 'azalea complex', or as the choral subgenus Nomazalea of Seithe (1960).

The revisions of sections Azaleastrum and Choniastrum must still be regarded as tentative. Some of the species are not well defined and several are known from an inadequate number of collections. We would emphasize that the accounts of these sections are intended to consolidate what is known of these groups from European and American collections. Use has been made

† Parts I & II in *Notes RBG Edinb.* 39:1–207 (1980) and 209–486 (1982).

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of the publication of Professor Fang (1939), but we have not been able to examine the abundant material in Chinese herbaria. In our opinion, further progress in the understanding of this subgenus will come from intensive study in the field by Chinese botanists with adequate herbarium material at their disposal. We look forward to the publication of such studies and hope that this revision will be of use to future students of the group. A valuable beginning along these lines has been made by Professor Fang Wen-pei of Sichuan University, Chengdu and by Dr Tam Pui-Cheung of the South China Institute of Botany, Canton, who have recently published a number of new species (1939 and 1983 respectively). These have not been integrated into the present account because we have seen only single specimens, mostly incomplete, or none at all. These species are listed at the end of the relevant sections with some comments.

Subgenus **Azaleastrum** Planchon, Fl. des Serres, 9:75 (1853/4).
Syn.: Genus *Azaleastrum* (Planchon) Rydberg, Mem. New York Bot. Gard. 1:297 (1900) pro parte.

Evergreen shrubs or trees. Inflorescence lateral below terminal, or pseudo-terminal vegetative buds, with one to several flowers. Calyx lobes obsolete or large. Corolla rotate to tubular-campanulate. Stamens 5 or 10. Ovary subglobose or elongate, style impressed or not. Capsule subglobose or elongate. Seeds with or without appendages.
Type species: *R. ovatum* (Lindley) Maxim.
Distribution: China south of about 33°N (and small adjacent areas of Tibet and India), Burma, Hong Kong, Taiwan, Ryukyu Is., (Japan), Thailand, Laos, Vietnam, Cambodia, and the Malay Peninsula (Fig. 1).

The subgenus comprises two sections, the geographical ranges of which are similar (Fig. 1) and which are linked by the lateral position of the inflorescence buds below the vegetative buds and the frequent occurrence of single-flowered inflorescences. Section Azaleastrum differs from section Choniastrum in its larger calyx lobes, in having 5, not 10, stamens, the impressed style base and the short ovary and capsule. Other, less well-defined differences, are the shape of the corolla, the nature of the indumentum, especially on the ovary, and the occurrence of ornamented seeds in section Choniastrum.

1. Stamens 5, calyx lobes large ..... Sect. **Azaleastrum**
\+ Stamens 10, calyx lobes usually small ..... Sect. **Choniastrum**

Section **Azaleastrum** (Planchon) Maxim., Rhododendrons As. Or. 45 (1870) pro parte.
Syn.: Series *Ovatum* sensu Rehder in Stevenson (ed.), The Species of Rhododendron 559 (1930).
Section *Euazaleastrum* Sleumer, Bot. Jahrb. 74:552 (1949).

Evergreen shrubs; the leaf blades glabrous except for unicellular hairs on the mid-rib. Inflorescence buds lateral, below vegetative buds; flowers solitary. Calyx lobes large with margins fringed with stalked glands and/or hairs or glabrous. Corolla broadly funnel-shaped to rotate, rarely narrowly tubular-campanulate (*R. vialii*). Stamens 5. Ovary small, subspherical, bearing bristles and glandular hairs, 5-locular; style-base impressed. Capsule about equal in length to the persistent calyx. Seeds without appendages.
Type species: *R. ovatum* (Lindley) Maxim.

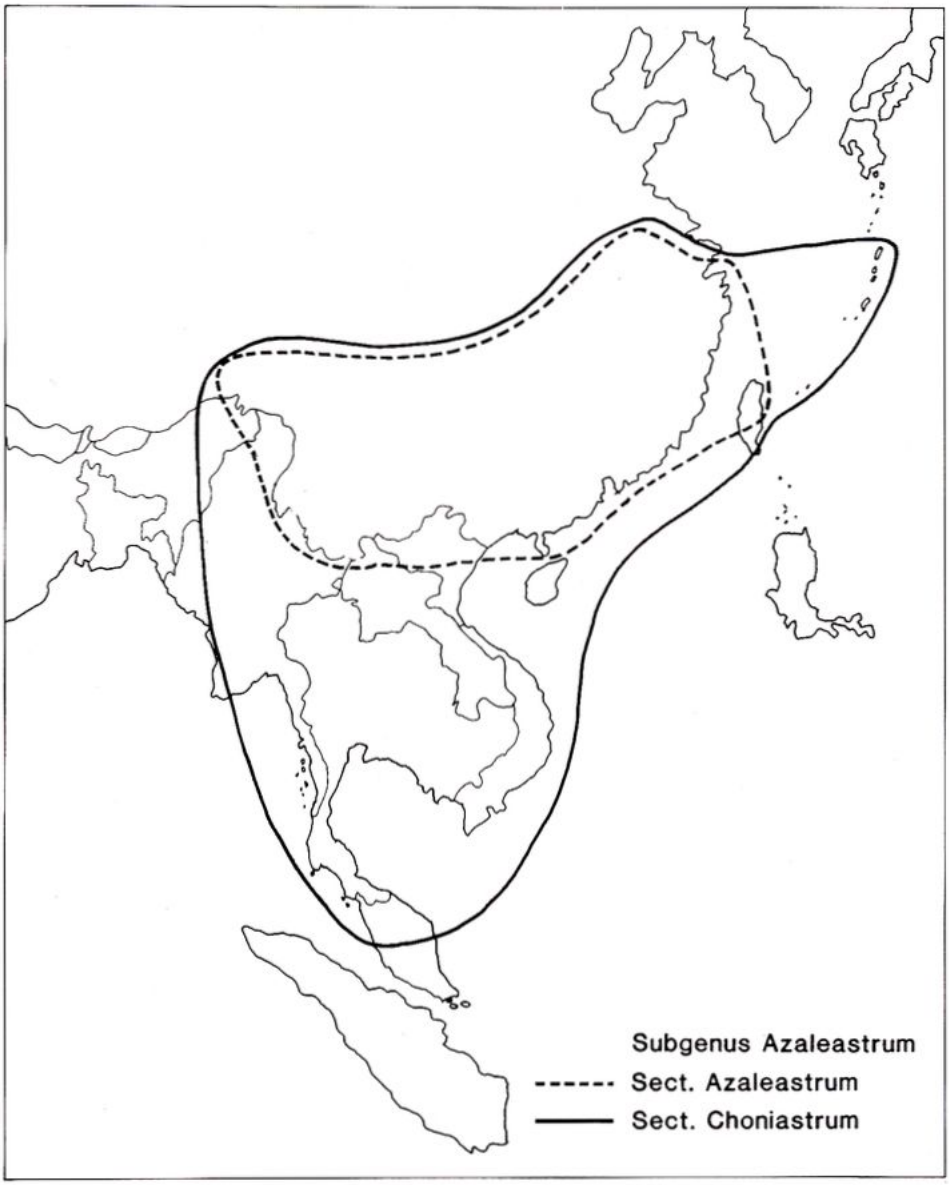

FIG. 1. Distribution of Subgenus *Azaleastrum*: sect. *Azaleastrum* (broken line); sect. *Choniastrum* (continuous line).

A well-defined but small group of species with a limited geographical range (Fig. 1). Their distinctive features are discussed under the subgeneric description. Authors have frequently suggested that some or all of the species should be united, but there are good grounds for maintaining the five species recognized here, most of which have distinct geographical ranges. *R. vialii* is most distinct in view of its corolla shape and colour. *R. hongkongense*, also with a restricted range, is distinguished by a combination of the white or creamy ground colour of its corolla and its leaf shape. The range of *R. leptothrium* is well separated from that of *R. ovatum*, from which species

it is distinguished mainly by its lanceolate-elliptic leaf and its usually more tongue-shaped calyx lobes. *R. ngawchangense* occurs in the extreme south-western part of the range of *R. leptothrium*, but it is distinguished from that and all other species of this section by the style bearing numerous stalked glandular hairs on its lower part. Its foliage is also distinctive.

1. Corolla tube much shorter than the lobes, broadly funnel-shaped ... 2
+ Corolla tube much longer than the lobes, cylindric widening slightly (S Yunnan, N Laos & Vietnam) ..... **5. R. vialii**
2. Style glabrous (or rarely very few hairs near the base), leaf venation evident 3
+ Style with numerous glandular hairs on its lower part, leaf venation obscure (NE Burma) ..... **4. R. ngawchangense**
3. Leaf rounded-ovate to broadly elliptic (E & C China, Taiwan) **1. R. ovatum**
+ Leaf narrowly elliptic to lanceolate 4
4. Ground colour of corolla pink, lilac or magenta (NE Burma, NW Yunnan, etc.) ..... **2. R. leptothrium**
+ Ground colour of corolla white (Hong Kong, Guangdong) **3. R. hongkongense**

1. R. ovatum (Lindley) Maxim., Rhododendrons As. Or. 45 (1870) pro parte.
Syn.: *Azalea ovata* Lindley, J. Hort. Soc. 1:149 (1846). Type: China, Chusan Archipelago, *Fortune* s.n. (holo. K).
R. bachii Léveillé, Feddes Repert. 12:102 (1913). Type: China, Guizhou, Lou-Mong-Touan, iv 1908, *Cavalerie* 2982 (holo. E, iso. K).
R. lamprophyllum Hayata, Icon. Pl. Formosan. 3:135 (1913). Type: Taiwan, Randaisan, 1908, *Hayata & Mori*, n.v.
R. ovatum (Lindley) Maxim. var. *prismaticum* Tam, Bull. Bot. Res. 2,1:99 (1982). Type: China, Jiangxi, Lushan, 14 iv 1957, *S. K. Chun* 175 (holo. LBG-n.v.).
Ic.: Bot. Mag. 157: t. 9375 (1934)—as *R. bachii*; Tam, Survey Genus Rhododendron S China t. viii (1983).

Shrub to 4 m high, young branches and petioles minutely puberulous and sometimes also with glandular hairs. Leaves glabrous except for the petiole and upper mid-rib; blade broadly ovate or ovate elliptic, 30–60 × 16–26 mm, base rounded or cuneate, apex acute or obtuse, often emarginate, mucronate; petiole 6–16 mm long. Inflorescence buds lateral, 1-flowered, clustered near the ends of the leafy shoots; outer bud scales short, inner elongate (12–14 mm long); pedicel 15–20 mm long, puberulous and with few to many glandular hairs. Calyx lobes usually broadly rounded, 4–7 × 3–4 mm, glabrous or fringed with fine cilia and/or sessile or stalked glandular hairs. Corolla pink to pale purple or white, the upper three lobes with darker spots, glabrous or the tube minutely puberulous on the outside and/or within, rotate, with a short tube and spreading lobes, 40–50 mm across. Stamens 5, filaments hairy for a variable distance above the base. Ovary subglobose, c.2·5 mm high, setose and glandular, 5-locular; style glabrous. Capsule broadly ovoid, c.7 × 5 mm, verrucose.

CHINA (Anhui, Zhejiang, Fujian, Guangdong, Jiangxi, Hubei, Sichuan, Guizhou, Guangxi), TAIWAN (central mountains). In thickets and forests, and on open mountainsides, mostly at low altitudes, but reaching 2000 m in Hubei.

R. ovatum is not uncommon over a wide range in eastern and central China, but is rare in Taiwan. Formerly, specimens from the western part of its range were distinguished as *R. bachii* on the basis of the glandular hairs fringing the calyx, but we agree with Clarke (1976) that this species should be merged with *R. ovatum*. Fringed calyx lobes are certainly more frequent in the central Chinese provinces than in the eastern, but fully or partially fringed lobes occur in coastal States among populations with mainly glabrous calyx lobes, whereas the reverse occurs in the inland States. Evidently there is a cline in this character, but even the recognition of subspecies appears unwarranted.

2. R. leptothrium Balfour f. & Forrest, Notes R.B.G. Edinb. 11:84 (1919). Type: China, Yunnan, Litiping, 11 000 ft, vi 1917, *Forrest* 13881 (holo. E).
Syn.: *R. australe* Balf. f. & Forrest, Notes R.B.G. Edinb. 12:93 (1920). Type: China, W Yunnan, Shweli-Salween Divide, 25°30′N, 10 000 ft, *Forrest* 15673 (holo. E).
Ic.: Gard. Chron. ser. 3,81:355 (1927); Bot. Mag., n.s. 5: t. 502 (1966).

Shrub to 8 m, minutely puberulous on the young branches, petioles and upper mid-ribs. Leaves narrowly elliptic to lanceolate, rounded or cuneate at the base, tapering to a sub-acute or emarginate apex, mucronate, 35–120 × 17–36 mm, slightly coriaceous, reticulation of veins evident; petiole 10–15 mm long. Inflorescence buds lateral, 1-flowered, clustered near the ends of the leafy shoots; outer bud scales short, inner elongate (c.12–14 mm long); pedicel c.15–25 mm long, puberulous and with glandular hairs. Calyx lobes usually oblong, obtuse, or ovate (3·5–)6–8 × (2·5–)3–4 mm, variously fringed with fine hairs and/or glandular hairs or almost glabrous. Corolla rose to magenta purple with darker markings, glabrous or the tube minutely puberulous on the outside and/or within, rotate with a short tube and spreading lobes, up to c.50 mm across. Stamens 5, filaments hairy below. Ovary subglobose, c.2·5 mm high, with setose and glandular hairs, 5-locular; style glabrous. Capsule broadly ovoid, 6–8 × 5–6 mm, verrucose.
CHINA (NW Yunnan, adjacent parts of Sichuan and Xizang), NE UPPER BURMA. In open scrubland and in deciduous and pine forests, 2250–3550 m.

The limited range of *R. leptothrium* is well separated both geographically and altitudinally from that of *R. ovatum*. Its range in the south-east overlaps with that of *R. ngawchangense*; see under that species for distinguishing features.

3. R. hongkongense Hutchinson in Stevenson (ed.), The Species of Rhododendron 156 (1930).
Basionym: *Azalea myrtifolia* Champion, Bot. Mag. 77: sub t. 4609 (1851), non Loddiges (1824). Type: Hongkong, Black Mountain, iii 1849, *Eyre* (holo. K).

Shrub to 5 m, minutely puberulous on the young branches, petioles and upper mid-ribs. Leaves elliptic to narrowly elliptic, 30–65 × 13–33 mm, base cuneate, tapering to a blunt or emarginate apex, mucronate; petiole 6–13 mm

long. Inflorescence buds lateral, 1-flowered, clustered near the ends of the leafy shoots; outer bud scales short, inner elongate (c.12 mm long); pedicel only slightly longer than the inner bud scales, densely covered with long glandular hairs. Calyx lobes rounded, 2·75–3·25 × 1·5–3·0 mm, copiously to sparsely fringed with delicate hairs and stalked glandular hairs. Corolla white with a variable number of violet to red-purple spots on the upper lobes, occasionally with a yellow centre, puberulous on the outside of the tube; rotate, with a short tube and spreading lobes about 50 mm across. Stamens 5, protruding, filaments hairy for half or more of their length. Ovary subglobose, c.2·5 mm high, with glandular hairs, 5-locular; style exserted, up-curved, glabrous or with very few basal hairs. Capsule broadly ovoid, c.8 mm high, verrucose.
HONG KONG, CHINA (Guangdong). Rocky slopes, 300–1200 m.

Herklots (*Rhododendron Year Book* 184, 1949) describes this species (as *R. ovatum*) as free flowering and fragrant.

4. R. ngawchangense Philipson & Philipson, Notes R.B.G. Edinb. 40:228 (1982). Type: Burma, Htawgaw Fort, 4000 ft, *Farrer* 807 (holo. E).
Syn.: *R. medoense* Fang & M. Y. He var. *adenostylum* Fang & M. Y. He, Bull. Bot. Res. 3,1:2, f. 2 (1983). Type: NE Upper Burma, Tzi-tzo-ti, 3300 m, iv 1925, *Forrest* 26420 (holo. PE–n.v., iso. E).

Tall shrub with young branches minutely puberulous. Leaves glabrous except for the petiole and upper mid-rib; blade narrowly elliptic-ovate, c.45 × 16 mm, base cuneate, narrowed to an obtuse or emarginate apex, mucronate, chartaceous, lateral veins obscure; petiole about 6 mm long. Inflorescence buds lateral, 1-flowered, clustered near the ends of the leafy shoots; outer bud scales short, inner elongated (c.12 mm); pedicel 10 mm long, puberulous and with glandular hairs. Calyx lobes oblong to ovate, 6–7 × 2·5–3 mm, margin slightly ciliate or glabrous. Corolla magenta-rose with darker spots, glabrous on the outside, c.22 mm long, rotate with a short tube and spreading lobes. Stamens 5, filaments hairy below. Ovary subglobose, c.2·5 mm high, setose and glandular, 5-loculate; style with numerous glandular hairs on its lower part. Capsule c.6 × 5 mm, verrucose.
NE BURMA. In scrub, 1300–3300 m.

This species is distinguished from all other members of section Azaleastrum by the densely glandular lower part of the style. The small, narrow, chartaceous, rather than coriaceous leaves with inconspicuous venation are also characteristic. It is a local species, occurring in the south western limits of the range of *R. leptothrium*. In Cox, *Farrer's Last Journey* (1926), p. 220, this plant is provisionally identified as *R. leptothrium*.

5. R. vialii Delavay & Franchet, J. Bot. (Marot) 9:398 (1985). Type: China, Yunnan, near Kouang-y, 13 ii 1891, *Delavay* 4886 (iso. K).

Shrub to 3 m, minutely puberulous on the young branches, petioles and upper mid-ribs. Leaves elliptic or obovate, 40–70 × 15–30 mm, base broadly cuneate, apex obtuse or emarginate, mucronate; petiole 7–15 mm long. Inflorescence buds lateral, 1-flowered, clustered near the ends of leafy shoots; outer bud scales short, rounded, inner elongate (to 12 mm long); pedicel only slightly longer than the inner bud scales, with many glandular

hairs. Calyx lobes oblong, up to 8 × 4 mm, apex rounded, densely bristly at the base, margin fringed with glandular hairs. Corolla crimson, glabrous; tube gradually widening, c.15 mm long; lobes rotund, c.10 mm long. Stamens 5, about equalling the corolla, filaments stout, slightly hairy on the lower half. Ovary subglobose, c.3 mm high, with glandular hairs, 5-locular; style exserted, glabrous. Capsule unknown.
CHINA (S Yunnan), N LAOS, VIETNAM (northern).

A distinctive species whose distribution and range of variability are inadequately known.

The following recently described species have not been incorporated in the above account because adequate information is not available to us.

1. R. hangzhouense Fang & M. Y. He, Bull. Bot. Res. 2,2:81 (1982). Type: China, Zhejiang, Hangzhou, Yun-qi-shan, 20 iv 1957, *S. Y. Chang* 211 (holo. PE–n.v.).

The authors compare the leaf and calyx of this species with those of *R. ovatum*. Their figure of the leaf matches examples of leaves of *R. ovatum* but the small calyx is distinctive. Apparently the species is based on a single gathering.

2. R. medoense Fang & M. Y. He, Bull. Bot. Res. 3,1:1 (1983). Type: China, Xizang, Medo Xian, Bangu Shan, 1750 m, 29 iv 1980, *Qinghai-Xizang Exp.* 11479 (holo. PE–n.v.).

The leaves of the typical (Tibetan) form of this species resemble those of *R. leptothrium*, but glandular styles are not known to occur in that species. The variety described from Upper Burma is based on the same type as *R. ngawchangense*.

3. R. mitriforme Tam, Survey Genus Rhododendron S China 111, t. 223, f. 1 (1983). Type: China, Guangxi, He Xian, 680 m, 13 ix 1958, *Y. K. Lee* 401563 (holo. IBSC).
Syn.: *R. mitriforme* Fang & M. Y. He var. *setaceum* Tam, op. cit. 112 (1983). Type: China, Guangxi, Xingan Xian, 1080 m, 21 vii 1958, *C. C. Chen* 51194 (holo. IBSC–n.v.).

The leaves are larger than those of any other species of this section from southern China, recalling those of *R. leptothrium*. The large capsules and calyx lobes are also distinctive.

4. R. sanidodeum Tam, Guihaia 3:182 (1983). Type: China, Guangxi, Xingan Xian, 6 viii 1958, *C. C. Chen* 51542 (holo. IBSC–n.v.).

Apparently known only from the type, which probably represents a form of *R. ovatum*. Crenate leaf margins are known in that species, especially on young plants, and fimbriate calyx lobes are not uncommon.

5. R. tianlinense Tam, Guihaia 3:182 (1983). Type; China, Guangxi, Tianlin Xian, Mt Lao, 13 vi 1958, *C. T. Lee* 600713 (holo. IBSC).

Apparently known only from the type. The lanceolate leaves are quite unlike those of *R. ovatum*, though it resembles that species in other respects.

6. R. xinganense G. Z. Li, Guihaia 3:83 (1983). Type: China, Guangxi, Xingan Xian, Miao-er-shan, 1450 m, 10 v 1982, *G. Z. Li* 11501 (holo. IBK–n.v.).

The leaves and inflorescence resemble those of *R. hongkongense*, but the pedicel is only sparsely glandular hairy and the larger calyx lobes bear eglandular hairs. Collected from several localities in Guangxi.

Section **Choniastrum** Franchet, Bull. Soc. Bot. Fr. 3:229 (1886).
Syn.: Subgenus *Choniastrum* (Franchet) Drude in Engler & Prantl, Pflanzenfam. 4(1):39 (1889).
Series *Stamineum* sensu Hutchinson in Stevenson (ed.), The Species of Rhododendron 610 (1930).

Evergreen shrubs or small trees. The leaf blades glabrous or ciliate. Inflorescence buds lateral, below vegetative buds, 1- to several-flowered. Calyx lobes variably small (but to about 12 mm in *R. championae*) usually glabrous, ciliate in some species. Corolla narrowly funnel-shaped, 5-lobed. Stamens 10. Ovary glabrous or pilose cylindric, 5(–6)-locular; style base not impressed. Capsule elongate (c.25–50 mm). Seeds with appendages at both ends.
Type species: *R. stamineum* Franchet.

The distinguishing characteristics of this well-defined section are discussed under the subgeneric description. Its range is shown in Fig. 1. Sleumer (1958) discusses the difficulty of discriminating species in this rather uniform assemblage. After a re-investigation of much recent material, we agree to a very large extent with the preliminary treatment proposed by Sleumer. Thus some plants considered distinct in cultivation, such as *R. westlandii* Hemsley, are not given separate status here, because they fall within the limits of such wide ranging species as *R. moulmainense* Hook. It is possible that local forms of some of the species recognized here will eventually be found to be distinct, but this will require intensive field study over the whole range of the species complex. To segregate local variants as species at this stage is premature.

1. Leaves of mature plant with hairs on mid-rib (and often also on blade and margin) 2
\+ Leaves of mature plant glabrous 4
2. Margins of mature leaves ciliate ..... **1. championae**
\+ Margins of mature leaves without cilia 3
3. Leaf surface glabrous, stiff bristles on underside of mid-rib **2. feddei**
\+ Leaf surface setulose, soft bristles on mid-rib ..... **3. tutcherae**
4. Inflorescence of 1 (or 2) flowers 5
\+ Inflorescence of 3 or more flowers 8
5. Ovary covered with silky hairs ..... **4. hancockii**
\+ Ovary glabrous 6
6. Corolla 25 mm long or shorter ..... **5. esquirolii**
\+ Corolla c.35 mm long or longer 7
7. Corolla c.35–40 mm long, tube c.$\frac{1}{3}$ length of the corolla (c.12 mm long) **6. latoucheae**

+ Corolla c.45 mm long or much longer, tube c.$\frac{1}{2}$ length of the corolla **10. moulmainense**

8. Pedicels hairy 9
+ Pedicels glabrous 11
9. Indumentum of pedicels composed of fine eglandular hairs **7. cavaleriei**
+ Indumentum of pedicels composed of patent glandular hairs 10
10. Leaves elliptic-obovate, mostly over 100 mm long ..... **8. henryi**
+ Leaves oblong-oblanceolate, mostly under 100 mm long.... **9. taiense**
11. Corolla c.46–62 mm long, stamens only slightly longer than the corolla **10. moulmainense**
+ Corolla c.25–35 mm long, stamens long exserted ..... **11. stamineum**

1. R. championae Hooker f., Bot. Mag. 77: t. 4609 (1851). Type: the plate cited.

Shrub or small tree to 8 m high, young branches densely covered with glandular bristly hairs. Leafblade elliptic or obovate 70–150 × 25–50 mm, base cuneate, apex acuminate, chartaceous, upper surface sparsely short setose, increasing towards the margin, lower surface loosely bristly, especially on the mid-rib and principal veins, often also pubescent, margin ciliate; petiole c.10–12 mm, with dense spreading bristles. Inflorescence buds lateral, clustered at the ends of leafy shoots, about 5-flowered; bud scales viscid; pedicels c.18–20 mm long, densely covered in coarse spreading glandular hairs. Calyx of 5 variable lobes, up to 12 mm long, narrow, densely ciliate. Corolla at first pink becoming white with yellow markings on upper lobe, glabrous, tube c.12–15 mm, lobes c.40–45 × 25–30 mm. Stamens 10, filaments hairy on the lower part, Ovary cylindric, c.7 mm long, densely bristly; style glabrous. Capsule narrowly cylindric, coarsely setose, c.35–40 mm long.

CHINA (Guangxi, Guangdong, Fujian, Zhejang, Hunan, Jiangxi), HONG KONG.

The leaf margins of a number of species of section Choniastrum bear ciliate hairs in juvenile (or sucker) plants, but *R. championae* is the only species in which the adult leaf has marginal cilia. *R. championae* var. *ovalifolium* Tam (*Survey Genus Rhododendron S. China* 112, 1981) has bullate leaves, white flowers and some basal puberulence on the style.

2. R. feddei Léveillé, Feddes Repert. 12:102 (1913). Type: China, Guizhou, Pin Fa, 18 vi 1903, *Cavalerie* 1074 (holo. E).

Shrub 4 m high, young branches glabrous. Leaves glabrous except for scattered stiff bristles on the mid-rib below and on the petiole; blade oblanceolate, c.130 × 32 mm, tapered to the base, apex slightly acuminate, coriaceous, veins forming a close network; petiole c.10–12 mm long. Inflorescence buds lateral, at the ends of leafy shoots, c.5-flowered; bud scales not seen; pedicel glabrous, 25–30 mm long. Calyx an undulate rim, glabrous. Corolla not seen, Stamens not seen. Ovary glabrous. Capsule narrowly cylindric, c.25 × 3 mm, glabrous.

CHINA (Guizhou).

The stiff bristles on the underside of the mid-rib and the close network of veins make the leaves of this species readily recognizable. The species is

evidently rare. Besides three collections by Cavalerie we have seen only one other (*Tsiang* 8456).

3. R. tutcherae Hemsley & Wilson, Kew Bull. 1910:116 (1910). Type: China, Mts S of Mengtse, 2000 m, *Henry* 10636 (holo. K, iso. E).

Tree, 12 m high, young branches with long stiff bristles. Leaf blade oblanceolate, 80–100 × 18–26 mm, base cuneate, apex acuminate, coriaceous, lower surface with well-spaced short hairs (none on the margin) and longer bristles on the mid-rib; petiole c.6–10 mm long, with long bristles. Inflorescence buds lateral, clustered at the ends of leafy shoots, 1–3 (or more)-flowered; bud scales glabrous, caducous; pedicels 15–18 mm long, with sparse but long pilose hairs. Calyx a 5-lobed undulate rim, glabrous. Corolla violet, glabrous, tube c.11 mm long, lobes c.28 × 15 mm. Stamens 10, filaments hairy on the lower part. Ovary cylindric, c.6 mm high, covered with appressed hairs; style glabrous. Capsule not seen.
CHINA (S Yunnan).

A rare species. The tree habit and violet flowers, together with the bristly twigs and leaves make a distinctive combination of characters.

4. R. hancockii Hemsley, Kew Bull. 1895:107 (1895). Type: China, Yunnan, Mongtse (Mengzi), *Hancock* 156 (holo. K).
Ic.: Hooker's Icon. Pl. 24: t. 2381 (1895).

Shrub to 2 m high, young branches glabrous. Leaves glabrous; blade broadly elliptic to narrowly obovate 95–150 × 30–60 mm, base cuneate to narrowly cuneate, apex acute or acuminate, coriaceous; petiole 8–12 mm long. Inflorescence buds lateral, clustered at the ends of leafy shoots, 1-flowered; bud scales numerous, outer short, inner elongate (to 40 mm), margins sometimes minutely ciliate (and sometimes glandular) and with an apical rim of minute white hairs, surface not shining, persistent until anthesis; pedicels 15–20 mm long, with scattered pubescence. Calyx lobes 5, small, rounded or slightly longer, ovate, glabrous, or pubescent on the outer surface and margin. Corolla white, upper lobe with intense yellow blotch, glabrous, tube c.25–30 mm long, lobes c.30–40 × 25–30 mm, spreading. Stamens 10, filaments hairy on lower half. Ovary cylindric c.8–9 mm high, covered with silky hairs, 5–6-locular; style glabrous or a few basal hairs. Capsule narrowly cylindric, falcate, c.60 mm long.
CHINA (Yunnan, Guangxi).

The inflorescences with solitary large flowers are striking, and combined with the densely hairy ovary serve to distinguish this species.

5. R. esquirolii Léveillé, Feddes Repert. 12:102 (1913). Type: China, Guizhou, vi 1905, *Esquirol* 476 (holo. E).
Syn.: *R. vaniotii* Léveillé, Feddes Repert. 13:148 (1914). Type: China, Guizhou, Gan-chuan, iv 1912, *Cavalerie* 3886 (holo. E).

Shrub, young branches glabrous. Leaves glabrous; blade elliptic-lanceolate, 35–100 × 12–18 mm, base cuneate, apex acuminate, coriaceous; petiole c.6 mm long. Inflorescence buds lateral, clustered at the ends of leafy shoots, 1–2-flowered; bud scales glabrous and shining on their backs, margins of the upper scales ciliate; pedicels c.12 mm long, glabrous. Calyx of

5 triangular or sometimes linear, lobes, glabrous. Corolla small (c.25 mm long) with a relatively long tube (c.12 mm long), glabrous. Stamens 10, filaments almost glabrous. Ovary cylindric, c.5 mm long, glabrous; style glabrous. Capsule not seen.
CHINA (Guizhou).

A rare species, the only specimens seen being those collected by Esquirol and Cavalerie. It has the smallest flowers and the smallest average leaf size of any species of the section. It falls within the group combining glabrous pedicels with (mainly) 1-flowered inflorescences.

6. R. latoucheae Franchet, Bull. Soc. Bot. Fr. 46:210 (1899). Type: China, Fujian, les montagnes autour de Kuatin, *M & Mme de la Touche*, n.v.
Syn.: *R. wilsonae* Hemsley & Wilson, Kew Bull. 1910:116 (1910). Type: China, Hubei, in woods, 1700–2000 m, *Wilson* 317 (holo. K).
R. amamiense Ohwi, Acta Phytotax. Geobot. 6:49 (1937). Type: Japan, Ryukyu Islands, Mt Eboshidake, Amamioshima, *Z. Tashiro* (holo. KYO-n.v.).

Shrub to 7 m high, young branches glabrous. Leaves glabrous; blades broadly elliptic or obovate to elliptic-lanceolate, 50–100 × 18–50 mm, base cuneate, apex shortly or long acuminate, coriaceous; petiole 5–12 mm long. Inflorescence buds lateral, 1-flowered, clustered near the ends of leafy shoots; outer bud scales short, inner elongate (c.20 mm long), shining, glabrous except for minute hairs or glands on the margin and apex, persistent; pedicels glabrous, c.20 mm long. Calyx lobes 5, minute, glabrous. Corolla pink with darker spots on the upper lobe, glabrous, with a short tube (c.10 mm long) and broad spreading lobes (c.27 mm long). Stamens 10, filaments slightly villose near the base, exserted. Ovary cylindric, c.7 mm long, glabrous, 5-locular; style c.30 mm long, glabrous. Capsule narrowly cylindric, falcate, c.30–40 × 4–5 mm.
CHINA (Hubei, Guizhou, Hunan, Guangdong, Fujian, Jiangxi, Thejiang), JAPAN (Ryukyu Islands).

The original localities of *R. latoucheae* and *R. wilsonae* were far apart (Fujian and Hubei respectively) so that the presence or absence of a fringe of glandular hairs on the margins of the flower bud-scales was regarded as adequate specific distinction. However, their combined ranges are now known to stretch over seven adjacent provinces. Consequently, this small difference is not considered to justify the separation of *R. wilsonae* as a species as no other distinctive character can be recognized in support of it. For notes on *R. latoucheae* and *R. wilsonae* see Fang (1939).

We record this species from the Ryukyu Islands on the basis of a specimen collected on Ishigaki Id, Mt Omotodake by *Idzumi & Togashi s.n.* This has the typical 1-flowered inflorescence and short tube of this species. The resemblance to *R. latoucheae* of some 1-flowered specimens from Taiwan has been commented on (see Hui-Lin Li, 1963). It is possible, therefore, that this species also occurs in Taiwan. We have not seen the type of *R. amamiense* (also from the Ryukyu Islands) but it is treated as a synonym of *R. latoucheae* because of its 1-flowered inflorescence and short corolla tube. We are grateful to Dr John Rouse of Melbourne for information about this plant which he has in cultivation.

7. R. cavaleriei Léveillé, Bull. Soc. Agric. Art. Sarthe 39:48 (1903). Type: China, Guizhou, sous préfecture de Tou-chan, v 1899, *Cavalerie* 2633 (holo. E).
Ic.: Icon. Corm. Sin. 3: t. 4272 (1974).

Shrub to 5 m high, young branches glabrous. Leaves glabrous; blade narrowly obovate to oblanceolate, 75–150 × 35–40 mm, base and apex attenuated, thinly coriaceous; petiole 8–12 mm long. Inflorescence buds lateral, at the ends of leafy shoots, 3- or more-flowered; bud scales glabrous or with minute cilia on the margins, caducous; pedicels 25–30 mm long, laxly or densely pubescent. Calyx of 5 minute lobes, glabrous or ciliate. Corolla white to rose, tube 12–15 mm, lobes 20–24 × 10–12 mm. Stamens 10, filaments hairy on lower part (? sometimes glabrous). Ovary cylindric, 7 mm high, pubescent; style glabrous. Capsule c.40–50 mm long.
CHINA (Guizhou, Guangxi).

The inflorescences with several flowers and hairy pedicels recall *R. henryi*, but the hairs of the pedicels form a fine pubescence in contrast to the glandular patent hairs of *R. henryi*. Also the leaves are longer and narrower than those of *R. henryi*.

8. R. henryi Hance, J. Bot. (Lond.) 19:243 (1881). Type: China, Guangdong, Fi-loi-tsz, ad angustias Tsing-in, North River, *Henry* (Hb Hance 21638) (holo. BM).
Syn.: *R. dunnii* Wilson, J. Arnold Arb. 6:170 (1925). Type: China, Guangdong, Swatow, Phoenix Mt, *Dunn* 5802 (holo. K).
R. ciliato-pedunculatum Hayata, Icon. Pl. Formosan. 3:131 (1913). Type: China, Fujian, Mt Isan, 1910, *Nagasawa*, n.v.
Ic.: Icon. Corm. Sin. 3: f. 4274 (1974).

Shrub to 5 m high, young branches glabrous. Leaves glabrous; blade elliptic to slightly obovate, 50–100 × 15–35 mm, base cuneate, apex acuminate, coriaceous, veins impressed on upper surface; petiole 8–12 mm long. Inflorescence buds lateral, at the ends of leafy shoots, 3–5-flowered; bud-scales with a tuft of brown, wavy hairs below the tip, caducous; pedicels 20–25 mm long, densely covered with spreading glandular hairs. Calyx lobes 5, variable in size, often in the same flower, short and rounded to linear (5 mm long) glabrous or with glandular hairs. Corolla pink, glabrous, tube c.13 mm long, lobes c.35 × 17–20 mm. Stamens 10, shortly exserted, filaments hairy on lower part. Ovary cylindric c.7 mm high, glabrous or densely covered with coarse appressed brim, 5-locular hairs; style glabrous. Capsule narrowly cylindric, falcate, 50–60 × 4–5 mm.
CHINA (Guangxi, Guangdong, Fujian, Zhejiang).

The inflorescences of this species are distinctive, having several flowers borne on pedicels with dense patent glandular hairs. The glabrous or hairy ovary has been used as the basis for separating *R. dunnii* from *R. henryi*. According to Fang (1939) specimens from the two western Provinces have densely hairy ovaries while those from the two eastern Provinces have glabrous ovaries, but evidently there is some intermingling. There has been confusion in the literature regarding this character. Hutchinson (1930) and Sleumer (1958) describe the ovary as glabrous, while we find the type material to have a densely hairy ovary. Wilson in describing *R. dunnii* confirms our finding.

9. R. taiense Hutchinson, Kew Bull. 1938:24 (1938). Type: Thailand, Nakawn, Sritamarat Province, Kao Luang, c.1400 m, *Kerr* 15512 (holo. K, iso. BM).

Small tree about 10 m high, with glabrous branches. Leaves glabrous; blade oblong-oblanceolate 100–140 × 30–35 mm, base narrowly cuneate, apex acuminate or acute, lateral veins evident; petiole c.15 mm long. Inflorescence buds lateral, 3- or more-flowered; bud scales glabrous except for minute cilia on the margin and apex, caducous; pedicels glandular-pilose, c.15 mm long. Calyx of 5 very short glabrous lobes. Corolla white, c.40 cm long, with a short tube and spreading oblong-elliptic lobes. Stamens 10, slightly shorter than the corolla, filaments slightly pilose, anthers 3 mm long. Ovary cylindric, glabrous; style glabrous, c.40 mm long. Capsule unknown.

THAILAND (Nakawn Sritamarat Province)

An inadequately known species from northern Thailand. Similar to the neighbouring *R. henryi* but with larger leaves (in the key published by Sleumer (1958) the characters of this species and of *R. henryi* were inadvertently transposed).

10. R. moulmainense Hooker f., Bot. Mag. 82: t. 4904 (1856). Type: described from a cultivated plant grown by Veitch from seed collected by Lobb in S Burma on the Gerai Mts, Moulmain at 5000 ft.

Syn.: *R. ellipticum* Maxim., Bull. Acad. Sci. St. Pétersb. 32:497 (1888). Type: Japan, Yayama Archipelago, 1886, *Tashiro*, n.v.

R. westlandii Hemsley, J. Linn. Soc. Bot. 26:31 (1889). Type: Hongkong, Lantao Island, 2500 ft, *Westland* 87 (holo. K).

R. oxyphyllum Franchet, J. Bot. (Morot) 12:264 (1898). Type: China, C Yunnan, entre Mounglé et Kou ma tze, 30 iii 1895, *Henry*, n.v.

R. siamensis Diels, Feddes Repert. 4:289 (1904). Type: Thailand, Doi Sutep, 1500 m, 20 iii 1905, *Hosseus* 507 (iso. E).

R. klossii Ridley, J. Fed. Mal. St. Mus. 4:43 (1909). Type: Malaysia, Gunong Berumbum, 6000 ft, *Ridley* 13589 (holo. SING).

R. leucobotrys Ridley, loc. cit. (1909). Type: Malaysia, Kedah Peak (Gunong Jerai), 3–4000 ft, vi 1893, *Ridley* 5531 (holo. SING).

R. leiopodum Hayata, Icon. Pl. Formosan. 3:136 (1913). Type: Taiwan, Shichiscitansan, iv 1911, *Sasaki*, n.v.

R. leptosanthum Hayata, op. cit.: 137 (1913). Type: Taiwan, prope Äko, 5000 ft, 1907, *T. Kawakami*, n.v.

R. tanakai Hayata, op. cit. 4:15 (1914). Type: Taiwan, Mt Arisan, inter Karapin et Suisharyo, 3000 ft, iv 1913, *Hayata & Tanaka*, n.v.

R. stenaulum Baulf. f. & Forest, Notes R.B.G. Edinb. 10:157 (1917). Type: China, W Yunnan, divide between the Pu-piao and Yung Chang valleys, 7–8000 ft, iv 1910, *Forrest* 5530 (holo. E).

R. nematocalyx Balf. f. &. W.W. Sm., Notes R.B.G. Edinb. 10:124 (1917). Type: China, W Yuinnan, Hills NW of Tengyueh, 25°15′N, 7000 ft, v 1912, *Forrest* 7673 (holo. E).

R. mackenzianum Forrest, Notes R.B.G. Edinb. 12:132 (1920). Type: China, W Yunnan, Shweli-Salween divide, 25°N, 9000 ft, iv 1918, *Forrest* 16111 (holo. E).

R. laoticum Dop, Fl. Gén. Indo-chin. 3:735 (1930). Type: Laos, environs de Napé, *Delacour*, n.v.

R. pectinatum Hutchinson, Gard. Chron. ser. 3,101:119 (1937). Type: a plant grown from seed at Exbury of *Forrest* 26022, originating from Yunnan in China.

Ic.: Bot. Mag. 164: t. 9656 (1948)–as *R. stenaulum*; Quart. Bull. Amer. Rhodod. Soc. 32:239 (1979).

A shrub or small tree to 15 m high, young branches glabrous. Leaves glabrous; blade 60–170 × 20–50 mm, elliptic to narrowly elliptic, base cuneate, apex acute or acuminate, coriaceous, margins glabrous (except in juvenile or sucker leaves, adult leaves only rarely with marginal bristles; petiole 10–18 mm long. Inflorescence buds lateral, (1–) 3–5-flowered, at the ends of leafy shoots, bud scales glabrous or minutely pilose on the back, margin shortly ciliate or glandular, caducous; pedicels 15–20 mm long, glabrous. Calyx of 5 minute glabrous lobes (abnormal elongate, pectinate or ciliate lobes also occur). Corolla white, pink, violet or magenta, with a yellow blotch, glabrous, with a narrow tube 16–22 mm long, and broad, spreading lobes to 30–40 mm long. Stamens 10, filaments hairy on lower part. Ovary cylindric, c.5 mm long, glabrous; style glabrous. Capsule narrowly cylindric, c.70 mm long.

CHINA (SE Xizang, Yunnan, Guizhou, Guangxi, Hunan, Guangdong, Hainan), TAIWAN, HONGKONG, JAPAN (Ryukyu Islands), INDIA (Assam), BURMA, THAILAND, LAOS, CAMBODIA, VIETNAM, W MALAYSIA (Kedah, Pahang).

R. moulmainense has a very wide range within which many species have been described. Some of these may prove to be sufficiently distinct, but in this presentation all forms with large funnelliform flowers, glabrous pedicels and glabrous leaves are regarded as a single species. Single-flowered inflorescences are recorded from Taiwan (but see under *R. latoucheae*) and in Yunnan 1-flowered forms have been segregated as *R. mackenzieanum*. The Yunnan plants have long corollas which distinguish them from *R. latouchae* of eastern China. One or both of these may prove to be distinct species. However, on the basis of collections at present available, the segregation of local variants appears to us to be premature. Similarly, as pointed out by Sleumer (1958) the use of ovary tomentum to separate *R. moulmainense* from *R. klossii*, and *R. henryi* from *R. dunnii* appears unacceptable. The length and form of the calyx lobes is variable, even in the same flower. Aberrant calyx lobes occur in *R. pectinatum* Hutchinson but are not sufficient for specific status.

11. R. stamineum Franchet, Bull. Soc. Bot. Fr. 33:236 (1886). Type: China, Yunnan, in monte Tchen-Fong-chan, *Delavay* 296 (iso. K).

Syn.: *R. pittosporaefolium* Hemsley, J. Linn. Soc., Bot. 26:29 (1889); Wilson in J. Arn. Arb. 5:105 (1924), descr. ampl. Syntypes: China, Hubei, Patung (Badong) *Henry* 4025 (K), 4031 (K).

R. cavaleriei Léveillé var. *chaffanjonii* Léveillé, Bull. Soc. Agric. Sci. Arts Sarthe 39:49 (1903). Type: China, Guizhou, mont du college, iv 1898, *Chaffanjon* (*Bodinier* 2332) (holo. E).

R. aucubaefolium Hemsley, op. cit. 19 (1889)—see also Kew Bull. 1910:116 (1910) for flowers. Type: China, Hubei, Patung (Badong), *Henry* 4081 (holo. K).

Ic.: Icon. Corm. Sin. 3: f. 4268 (1974).

Shrub or small tree to 13 m high, young branches glabrous. Leaves glabrous; blade elliptic to oblanceolate, 60–140 × 20–45 mm, base broadly cuneate, apex acuminate, coriaceous; petiole 8–15 mm long. Inflorescence buds lateral, 3–5 (–8)-flowered, at the ends of leafy shoots; bud scales glabrous except for ciliate margin, caducous; pedicels 10–30 mm long, glabrous. Calyx 5 minute lobes (sometimes unequal), glabrous. Corolla white or pink, with yellow blotch, glabrous, with a narrow tube 10–15 mm long, and spreading, or reflexed, narrowly oblong lobes c.15–20 mm long. Stamens 10, long exserted, filaments hairy on lower part. Ovary cylindric c.6 mm long, glabrous or slightly pilose; style glabrous. Capsule tapered at each end, often falcate, 25–40 × 4 mm.

NE UPPER BURMA, CHINA (Yunnan, Sichuan, Guizhou, Hunan, Huhei, Guangxi, Anhui).

The flowers with long exserted stamens and recurved corolla lobes distinguish this species. Sleumer (1958) considers that *R. cavaleriei* has similar flowers, but this is not our experience. Sleumer (1958) states that *R. cavaleriei* var. *chaffanjonii* is not synonymous with *R. stamineum*. However, the holotype at Edinburgh is referable to that species.

The following recently described species have not been incorporated in the above account because adequate information is not available to us.

1. R. detampullum [Chun ex] Tam, Survey Genus Rhododendron S China 113, f. 17 (1983). Type: China, Guangdong, Xingyi Xian, Dawushan, 30 iii 1931, *S. P. Ko* 51246 (holo. IBSC).

The author compares the number of flowers in a truss, the density of the pubescence of the calyx lobes, and the pubescence of the filaments with those of *R. cavaleriei*. Of these only the dense pubescence of the calyx lobes is outside the range of variation of *R. cavaleriei*.

2. R. huguangense Tam, Bull. Bot. Res. 2,1:98, t. 2 (1982). Type: China, Hunan, Rongjiadong, Guangdong-Hunan Border, 4 v 1934, *S. P. Ko* 54265 (holo. IBSC).

The occasional presence of an elongated calyx lobe in a plant which otherwise resembles *R. moulmainense* seems an insufficient basis for a species. Apparently known only from the type.

3. R. kaliense Fang & M. Y. He, Bull. Bot. Res. 2,2:83, t. 2 (1982). Type: China, Kali Xian, Leigou Shan, 31 viii 1959, *S Guizhou Exp.* 3834 (holo. PE–n.v.).

This species resembles *R. moulmainense* and *R. stamineum* but the fruits are longer than in those species. The flowers are unknown. Apparently known only from the type.

4. R. linearicupulare Tam, Guihaia 3:183, f. 5 (1983). Type: China, Guangxi, Heng Xian, 340 m 26 iv 1957, *C. C. Chen* 50272 (holo. IBSC).

The striking elongated calyx lobes may prove an insufficient basis for separating this species from *R. moulmainense*. Apparently known only from two collections from the same locality.

5. R. shiwandashanense Tam, Survey Genus Rhododendron S China 114, f. 18 (1983). Type: China, Guangxi, Shangsi Xian, Shiwanda Shan, 410 m, 16 iii 1944, *S. H. Chun* 4683 (holo. IBSC).

Appears to be very close to *R. henryi*.

6. R. subestipitatum Tam, Survey Genus Rhododendron S China 113, f. 16 (1983). Type: China, Guangdong, Xingyi Xian, Tungkan, 31 iii 1932, *C. Wong* 31755 (holo. IBSC).

Similar to *R. championae* differing mainly in the solitary flowers.

Subgenus **Mumeazalea** (Sleumer) Philipson & Philipson, Notes R.B.G. Edinb. 40:227 (1982).

Syn.: Section *Mumeazalea* Sleumer, Bot. Jahrb. 74:528, 552 (1949).
Section Azaleastrum (Planchon) Maxim., Rhododendrons As. Or. 45 (1870) pro parte.
Series *Semibarbatum* sensu Rehder in Stevenson (ed.), The Species of Rhododendron 607 (1930).

Deciduous shrub. Inflorescences lateral below vegetative buds, 1-flowered. Calyx of 5 small glandular-fringed lobes. Corolla with a short tube and spreading lobes. Stamens 5; the three lower long, divergent, with filaments slightly pubescent below, anthers large; the upper two shorter, erect, and densely pilose below, anthers small. Ovary subglobose, 5(–6)-locular, style impressed. Capsule subglobose. Seed without appendages.

Type species: *R. semibarbatum* Maxim.

Distribution: Japan (Fig. 2).

This monotypic subgenus differs from all other species of *Rhododendron* in having markedly dimorphic stamens. The arrangement of the 1-flowered inflorescence buds is similar to that of section Azaleastrum and some species

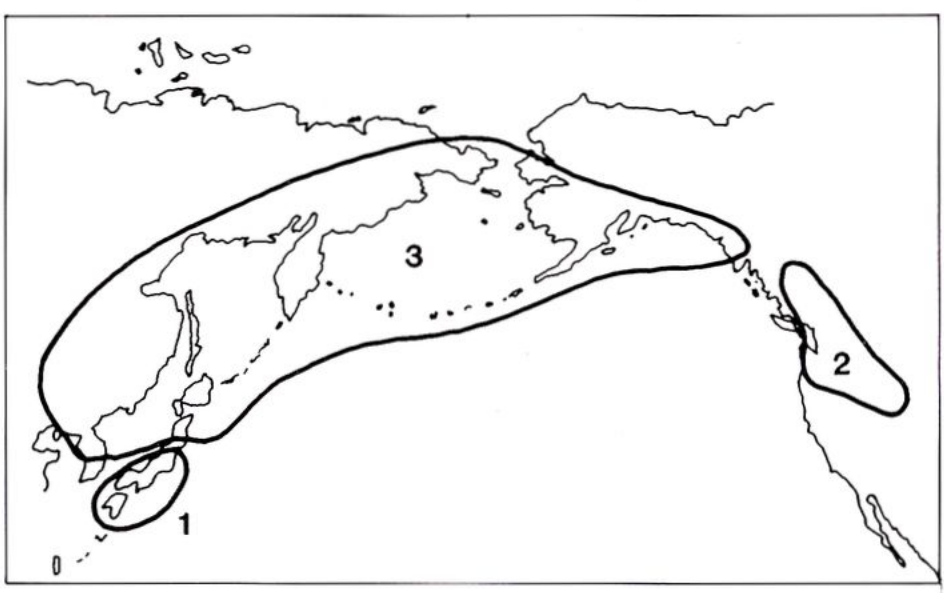

FIG. 2. Distribution of: 1, subgenus *Mumeazalea*; 2, subgenus *Candidastrum*; 3, subgenus *Therorhodion*.

of section Choniastrum, but this subgenus is distinct from them morphologically and geographically (see W. R. Philipson, 1980). The name *Mumeazalea* was first introduced by Makino (*Bot. Mag. Tokyo* 28:338, 1914) as a generic synonym and hence not valid.

1. R. semibarbatum Maxim., Bull. Acad. Sci. St. Pétersb. Ser. 3,15:230 [Mél. Biol. 7:338] (1870). Type: Japan, high alps, *Tschonovski* s.n. (iso. K); [prope Nambu] (iso. BM).

Syn.: *Azalea semibarbata* (Maxim.) Kuntze, Rev. Gen. 2:387 (1891).
Azaleastrum semibarbatum (Maxim.) Makino, Bot. Mag. Tokyo 28:338 (1914).

Deciduous shrub, to 2 m high, young branches puberulous and with glandular hairs. Leaves clustered at the end of short-growing shoots, or spaced along free-growing shoots; blade elliptic or ovate, c.20–60 × 10–26 mm, base rounded or cuneate, apex sub-acute, apiculate, or obtuse, sometimes slightly emarginate and mucronate, margin serrulate and sometimes finely ciliate, mid-rib puberulous above and below, veins on lower surface ciliate; petiole c.5–12 mm long, puberulous and glandular. Inflorescence buds lateral, 1-flowered, borne below the expanded leaves; bud-scales persistent; pedicel c.5–8 mm long, pubescent and glandular. Calyx lobes broadly rounded, c.2 mm, ciliate outside and fringed with prominent glandular hairs. Corolla white with pink flush and rose-purple markings, rotate with a short wide tube and spreading lobes, c.20 mm across. Stamens 5, unequal; the 2 upper short (c.7 mm), erect with filaments densely pilose for most of their length, the 3 lower with longer filaments (c.12 mm) almost glabrous or shortly pubescent at the base, spreading. Ovary subglobose, c.2 mm long, setose and densely glandular; style glabrous. Capsule subglobose, c.4 × 4 mm, densely glandular.

JAPAN (Kyushu, Shikoku Honshu). Thickets and forests in mountainous localities.

Subgenus **Candidastrum** (Sleumer) Philipson & Philipson, Notes R.B.G. Edinb. 40:227 (1982).

Syn.: Genus *Azaleastrum* (Planchon) Rydberg, Mem. New York Bot. Gard. 1:297 (1900) pro parte.
Series *Albiflorum* sensu Rehder in Stevenson (ed.), The Species of Rhododendron 1 (1930).
Section *Candidastrum* Sleumer, Bot. Jahrb. 74:552 (1949).

Deciduous shrub. Inflorescences lateral below vegetative buds, 1–2-flowered. Calyx of 5 large foliaceous gland-fringed lobes. Corolla rotate-campanulate, sub-actinomorphic, tube short. Stamens 10, equal. Ovary globose, style impressed. Capsule globose. Seed with appendages at each end.
Type species: *R. albiflorum* Hooker.
Distribution: SW Canada and NW USA (Fig. 2).

This monotypic subgenus is distinctive in the shape and arrangement of its flowers. It is also isolated geographically.

1. R. albiflorum W. J. Hooker, Fl. Bor. Amer. 2:43 (1834). Type: USA, Rocky Mts, *Drummond* s.n. (holo. K).

Syn.: *Cladothamnus campanulatus* Greene, Erythraea 3:65 (1895). Described from Canada (British Columbia) and the USA (Washington State).
Azaleastrum albiflorum (Hooker) Rydberg, Mem. New York Bot. Gard. 1:297 (1900).
A. warrenii A. Nelson, Bot. Gaz. 56:67 (1913). Type: USA, Colorado, Jackson Co., Mt Zarkel, 14 vii 1911, *Warren*.
R. warrenii (A. Nelson) Macbride, Contr. Gray Herb n.s. 56:55 (1918).
Ic.: Bot. Mag. 65, t 3670 (1839).

Deciduous shrub to c.2 m high, young branches with brown strigose hairs. Leaves scattered along the shoots or clustered at their ends; blade membranous, narrowly elliptic or lanceolate to oblanceolate, to c.80 × 24 mm, base narrowly cuneate, apex acute, margin minutely serrate, when young ciliate on the mid-rib and margin, becoming more or less glabrous; petiole c.4 mm long, with strigose hairs. Inflorescence buds lateral, spaced along the shoots of the previous year, above leaf scars, 1–2-flowered, flowers pendulous, borne below the expanded leaves; bud scales mostly fallen at anthesis; pedicels up to c.10 mm long, with a minute glandular indumentum, and strigose hairs around the base. Calyx lobes oblong-ligulate, deeply divided, c.8 × 3–4 mm, with glandular hairs on the margin and strigose and glandular hairs on the outer surface. Corolla bowl-shaped, almost actinomorphic, c.20 mm across, with a short tube and spreading lobes, white (rarely marked with yellow), usually minutely puberulous on the inner and outer surfaces. Stamens 10 (12 in rare 6-merous flowers) equal, filaments c.10 mm long, pilose below. Ovary globose, 2 mm long, setose and glandular; style straight, impressed, pilose below. Capsule globose, enclosed in the persistent calyx, c.8 mm long, glandular and with strigose hairs. Seed with ligulate appendages at each end.
CANADA (British Columbia, Alberta), U.S.A. (Washington and Montana to Oregon and Colorado). Undershrub in upper montane forest and forming thickets in open places at and above the tree line and along stream banks, ranging from 1200–2300 m.

An erect growing shrub often with trailing branches from the base of the plant. The white nodding cup-shaped flowers scattered along the leafy branches are distinctive, and resemble a prunus rather than a rhododendron. The flowers are borne on short lateral leafy branches along the main stems and also below the terminal cluster of leaves.

Subgenus **Therorhodion** (Maxim.) Gray, Synoptical Flora North Amer. 2(1):39 (1878).
Syn.: Section *Therorhodion* Maxim., Rhododendrons As. Or. 47 (1870).
Genus *Therorhodion* (Maxim.) Small, North Amer. Fl. 29(1):45 (1914).
Series *Camtschaticum* sensu Tagg in Stevenson (ed.), The Species of Rhododendron 187 (1930).

Evergreen or deciduous shrublets, the leaves with ciliate and sometimes glandular hairs. Inflorescence buds terminal, the peduncle bearing leaf-like bracts. Calyx lobes oblong, with glandular hairs. Corolla ± rotate, divided to the base on the lower side. Stamens 10. Ovary 5-locular, pubescent; style-base impressed. Capsule ovoid. Seeds without appendages.

Type species: *R. camtschaticum* Pallas.
Distribution: NE China, N Japan, NE Siberia and Alaska (Fig. 2).

A distinct pair of species occurring on both sides of the Bering Strait. This subgenus has sometimes been given generic status, mainly because of the nature of its inflorescence. See Philipson, W. R. (1985) for a re-assessment of the inflorescence.

1. Calyx c.10 mm long or longer, corolla c.20 mm long or longer **1. R. camtschaticum**
+ Calyx c.5 mm long, corolla c.15 mm long ..... **2. R. redowskianum**

1. R. camtschaticum Pallas, Fl. Ross. 1:48, t. 33 (1784).

Prostrate or low shrub (usually less than 20 cm high), much branched, deciduous or evergreen, the dry bud-scales ± persistent. Leafy shoots from separate buds below the inflorescences; leaves ± sessile, obovate or spathulate, 10–60 × 4–22 mm, base cuneate, apex rounded with a glandular apiculum, serrulate, with marginal cilia and pubescent on the veins below, reticulation of veins evident. Inflorescence buds terminal, opening to produce a 1–3-flowered raceme, the peduncle bearing leafy bracts, often with glandular hairs as well as cilia. Calyx lobes oblong, 8–18 × 4–5 mm, obtuse, margins and back with cilia and glandular hairs. Corolla rose-purple (rarely white) with darker spots, ±rotate, pubescent outside or glabrous, c.20–25 mm long, tube c.7 mm long, the division between the lower pairs of lobes reaching to the base of the tube. Stamens 10, unequal in length, the largest ± equalling the corolla; filaments hairy below. Ovary ovoid, c.6 mm long, pubescent, 5-locular; style curved, pubescent near the base. Capsule ovoid, c.10 mm long, pubescent.

1. Corolla lobes pubescent outside, margin ciliate; leaves of vegetative shoots without glandular hairs (or these sparse) ..... **a.** subsp. **camtschaticum**
+ Corolla lobes glabrous outside, margins not ciliate; leaves of vegetative shoots glandular hairy ..... **b.** subsp. **glandulosum**

1a. subsp. **camschaticum.** Described from the USSR, 'versus Mare Schotense in peninsula Camtchatca et insula Beringi', *Steller*; see also the Pallas plate cited above.

Syn.: *Rhodothamnus camschaticus* (Pallas) Lindley, Paxton's Flower Garden 1: t. 22 (1853).
Therorhodion camschaticum (Pallas) Small, N. Amer. Fl. 29(1):45 (1914).
Rhododendron camschaticum Pallas subsp. *typicum* Hultén, Fl. Kamtschatka 4:14 (1930), nom. inval. (Art. 26).

Ic.: Quart. Bull. Amer. Rhodod. Soc. 31:103(1977); Togashi, Spec. Rhodod. Japan 222–224 (1981).

Foliage on vegetative shoots without glandular hairs (or these very sparse); corolla lobes pubescent on the outside and with ciliate margins.

JAPAN (N Honshu, Hokkaido), USSR (S & E Kamtschatka, Kuriles Islands), USA (Aleutian Islands and S Alaskan coast).

1b. subsp. **glandulosum** (Small) Hultén, Fl. Kamtschatka 4:15 (1930).
Syn.: *Therorhodion glandulosum* Small, N. Amer. Fl. 29(1):45 (1914). Type: USA, Alaska, foot of Kigluiak Mountain, nr Ooglak Bay, Imurak Basin, n.v.
Rhododendron glandulosum (Small) Hutchinson in Stevenson (ed.), The Species of Rhododendron 190 (1930).

A lower growing plant with narrower corolla lobes. The leaves of the vegetative shoots are distinctly glandular-hairy and the outer surface of the corolla lobes is glabrous (or virtually so) and margins are not ciliate.
USSR (Siberia north of Okhotsk to the Bering Strait), USA (W Alaska—Seward Peninsula and lower Yukon River valley).

Over most of the range of the species these two subspecies are morphologically distinct and have separate geographical distributions, However, intermediate forms occur in the zone where the two subspecies meet (see Hultén, op. cit.).

2. R. redowskianum Maxim., Prim. Fl. Amur. 48 (1870). Type: USSR, E Siberia, nr Jablonnoi Chrebet, *Redowski*, n.v.
Syn.: *Therorhodion redowskianum* (Maxim.) Hutchinson, Kew Bull. 1921:204 (1921).
Ic.: Nakai, Fl. Sylv. Koreana 8: t. 12 (1918).

Dwarf deciduous shrublet, c. 10 cm high, young shoots glandular hairy. Leafy shoots from separate buds below the inflorescences; leaves with a short petiole; blade spathulate or oblanceolate, 5–15 × 3–6 mm, base obtuse, margin glandular ciliate, reticulation of veins prominent. Inflorescence buds terminal, opening to produce a 1–3-flowered raceme, the peduncle bearing leafy bracts, the peduncle, rhachis and bracts glandular hairy. Calyx lobes narrowly oblong, obtuse, c.5 × 1·2 mm, glandular hairy and finely pubescent. Corolla rose-purple, ±rotate, glabrous, c.15 mm long, tube 7–8 mm long, lobes 5, broadly oblong, the division between the lower pair deeper. Stamens 10, filaments hairy below. Ovary ovoid, c.6 mm long, pubescent, 5-locular; style 5 mm long, curved, pubescent on the lower half. Capsule ovoid, c.6 mm long.
USSR (E Siberia), CHINA (Manchuria), KOREA.

We have seen no specimens of this little-known plant. Our description is based on that of Maximovicz.

Identification of specimens

This list includes identifications of numbered specimens seen during the preparation of this revision. Collection numbers given in italics have been added by Dr D. F. Chamberlain from material in BM, E and K. The names of Chinese collectors have not been standardized, as their Pin Yin spellings are not always known. However, an effort has been made to bring them into line with the spelling used in the first two parts of this series.

Allen 216 albiflorum
Barchet 453 ovatum
Barretto 248 ovatum
Bird 224, 1289, 1401, 2307 albiflorum
Bissett (Milne) 4597 camschaticum
Berkeley 56566 leptothrium
Bodinier 2332 stamineum; *2633* cavaleriei
Bowring 10602 ovatum
Bullock 194 ovatum
Calder et al. 11004, 13880, 27337, 31898 albiflorum
Canton Christian Coll. 12057 hongkongense; 12108 moulmainense; 12438 latoucheae; 12619 hongkongense
Carles 194 ovatum
Cavalerie 666 ovatum; 982 cavaleriei; 1074 feddei; 1106 cavaleriei; 2375 feddei; 2633 cavaleriei; 2982 ovatum; 3886 esquirolii; 4388 moulmainense; *4622* vialii
Chaffanjon 2332 stamineum
Champion s.n. championae
Chen & Liu 88698 moulmainense
Chen, C. 1047 moulmainense
Chen, M. 4350 moulmainense
Chen, S. 2817 latoucheae; 2845, 2930 ovatum
Cheng 1975–*95*, –97 ovatum
Cheng, W. C. & Hwa, C. T. 1029 ovatum
Cheo, H. C. 46 ovatum
Chiao, C. Y. 7954, 14503 ovatum
Ching, R. C. 1686 latoucheae; 2065, 2068 championae; 2437 henryi; 2511 ovatum; 2667 henryi; 2868 ovatum; 3331 stamineum; 6991, 8026 hancockii; 8077 henryi; 8107 hancockii
Chow, H. C. 272, 753 stamineum; 882 ovatum
Chow 1973–71 ovatum
Chun, N. K. 40261, 40989 moulmainense
Chun, W. Y. 5649 championae; 5667, 5763 moulmainense; 5836, 5842, 5875, 6710 championae
Chung, H. H. 1353, 2626 *2651* ovatum; 2667 latoucheae; 3171 ovatum
Coville & Kearney 1532, 2202 camschaticum subsp. camschaticum
Cox & Hutchison 496 moulmainense
Cuffe 691–69, –72 moulmainense
Cusick 1744 albiflorum
Dalziel s.n. henryi
Dawson 1399 albiflorum
Delavay 296 stamineum; 4886 vialii
Ducloux 2029 stamineum
Dunn 2897a championae; 5802 henryi
Esquirol 476 esquitolii; *512*, 2604 cavaleriei; 3886 esquirolii
Eyerdan 1286 albiflorum; 2418 camschaticum subsp. camschaticum
Faber 88, 218, 656 ovatum
Fan & Li 186 stamineum; 199, *328* ovatum; 452, 518 stamineum; *574* ovatum
Fang, W. P. 1073, 1354, 10033, 10069, 10256, 10257 stamineum
Farges 61, 705 stamineum
Farrer 801 moulmainense 807 ngawchangense; 1505 moulmainense
Faurie 1434 camschaticum subsp. glandulosum; 4213 semibarbatum; 5836 moulmainense; 13358 semibarbatum
Feng, K. M. 4163 leptothrium
Ford 381 hongkongense
Forrest 5530, 7673, 7919 moulmainense; 8039, 9341 leptothrium; 9350, 9435, 9818 moulmainense; 9901, 11850, 11863, 12845 leptothrium; 13697, 13748 moulmainense; 13881, 15030, 15673, 15736 leptothrium; *15756*, 15998 moulmainense; 16069 leptothrium; 16084, 16111, moulmainense; 16355, 17401, 17663, 17709, 17736 leptothrium; 17819 moulmainense; 17826 leptothrium; 17832, 18291, 18389, 18392, 18475 moulmainense; 18736, 18792 leptothrium; 18802, 18804, *18908*, 19336, 19344, 19352 moulmainense; 19452, 19455, 19460, 19462 leptothrium; 19869, 20244, 20876 moulmainense; 21036 leptothrium; 21123, 21691 moulmainense; 21698 leptothrium; 22925 moulmainense; 23319, *24022*, *24046*, *24062*, *24071*, *24099* leptothrium; *24102*, *24206*, *24212* moulmainense; *24248*, *24284* leptothrium; *24340*, 25324 moulmainense; 25448, 25458, 25487 leptothrium; 25656, 25849 moulmainense; 25910 leptothrium; 26022 moulmainense; 26028, 26031 leptothrium; 26047, 26271, 26281, 26304 moulmainense; 26344, 26375 leptothrium; 26418, 26420, 26493 ngawchangense; 26507 leptothrium; 26530 moulmainense; 26597, leptothrium; 27369 moulmainense; 27375 ngawchangense; *27429*, 27430, 27787, 27815, 27827, 27831, 27832, 27833, 29293 leptothrium; 29413, 29422, 29428, 29505 moulmainense; 29564 leptothrium
Fortune A52 ovatum
Furuze 1221, 2419, 2647, 3595 moulmainense
Garrett 501 moulmainense
Goodspeed 32 leptothrium
Green, P. S. 2198 stamineum
Gressitt 129 moulmainense
Hance 1191 championae; 18199 camschaticum subsp. camschaticum; 21638 (Henry) henryi
Hancock 130 albiflorum
Hancock 54 ovatum; 156 hancockii
Handel-Mazzetti 9409 moulmainense; 12038 stamineum
Hanson 10090 taiense

Hanson & Smitinand 40042 taiense
Hennipman 3879 taiense
Henry 88 ovatum; 259, 331 moulmainense; 4025, 4031, 4081 stamineum; 5278 ovatum; *5787* stamineum; *6283* ovatum; 6432 stamineum; *7828* ovatum; *10059* vialii; 10523 hancockii; 10636 tutcherae; 11563 vialii; 11609 moulmainense; *14563* vialii
Henry, J. N. 240 albiflorum
Hosseus 507 moulmainense
Howard 13445 camschaticum subsp. camschaticum
Hu, H. H. s.n. ovatum
Hu, S. Y. 5144 moulmainense; *5118*, *5120*, 10043 championae; *13032* honkongense; *13541*, *13591*, *13632* moulmainense
Hu, W. K. 9034 stamineum
Huang, S. C. 65 hancockii
Hutchison 191, 218, 359, 391, 906 camschaticum subsp. camschaticum
Hwa 445 ovatum
Idzumi & Togashi 338 moulmainense; 535 semibarbatum
Kermode 16692, 16695, 17043, 17169 moulmainense; *17184*, *17188* leptothrium
Kerr 539, *3925*, 4935, 5174, *5299* moulmainense; 15512 taiense
Khant, M. P. 15314 moulmainense
Kingdon-Ward 135, *250* moulmainense; *460* leptothrium; *3783*, 3801, 5013, 5425, 5536, 6729, 7969, 8056, 9275, 12626, 16692, 16695, 17043, 17169, 18540, 20679, *21525* moulmainense
Kirkwood & Savary 1564 albiflorum
Kirkwood 2392 albiflorum
Ko, S. P. 50159 moulmainense; 50265, 50268 hongkongense; *50275* moulmainense; 50291 hongkongense; 50333, 50342, 50349 championae
Kobayashi 128041 moulmainense
Koe, Su 9149, 9152 moulmainense
Kurata & Naikaike 1002 moulmainense
Lace 5757a moulmainense
Lamb 1334 albiflorum
Lamont 409 championae
Latouche 1 latoucheae; 5, 8, 9 henryi; 30, 32 latoucheae; 57 ovatum; 60 latoucheae; 62 ovatum; 76 latoucheae; *132* ovatum
Lau, S. K. 1627 stamineum; *4360*, *4491* moulmainense; *28659* cavaleriei
Li, Y. H. 60–11660 moulmainense
Liang, H. Y. 63702 moulmainense
Longfield & Blazard 295 albiflorum
Macoun 130, 344, 707, 948, 965, 85999, 86000 albiflorum
Makino 101784 (cult.) moulmainense; 101975 semibarbatum
Mao, P. I. 5789 moulmainense
Matthews, V. A. 408 albiflorum
McCalla 2166 albiflorum
McLaren D34 leptothrium
Metcalf 148 ovatum; 7498, 17010 henryi
Meyer 1544 ovatum
Moir 270 albiflorum
Nam Singh 8 moulmainense
Nimanong 8 moulmainense
Norberg 32 camschaticum subsp. camschaticum
Novograblenov 3098 camschaticum subsp. camschaticum
Parker 3120 moulmainense
Parkinson 8, *5391* moulmainense
Price 282 bis, 1049 moulmainense
Put 3783, 3925 moulmainense
Richardson 294 albiflorum
Rock 2762, 2903, 2989 moulmainense; 7577 stamineum; 7646, leptothrium; 7866 stamineum; 7968, 8009, 8016, 8022 moulmainense; 8071, 8633, 8645, 8648, 8702, 9170, 9189, 9197 leptothrium; 11200 moulmainense; 11317, 11706, 17144, 17145, 17149, 18471, 18473, *18474*, leptothrium; 22139 moulmainense; *159* leptothrium
Rogers 71a ngawchangense
Rosendahl 2017 albiflorum
Rutter 235 camschaticum subsp. camschaticum
San Maung Mya 5391 moulmainense
Sandberg & Leiberg 633 albiflorum
Santisuk et al. 53679 taiense
Shaw, C. H. 130, 344, 907, 948 albiflorum
Shimizu & Kao 11968 moulmainense
Shing, G. S. 630 moulmainense
Shui, S. K. 59–3560 leptothrium
Sorenson 7090 moulmainense
Soule 510 camschaticum subsp. camschaticum
Steward et al. 72, 73, 74 moulmainense; 137, 204, 251 cavaleriei; 381 stamineum; 574 moulmainense
Taam, Y. W. 217? moulmainense
Tanaka & Shimada 13560 moulmainense
Tang, H. C. 1715 championae
To & Ts'ang 12108 moulmainense
Tsai, H. T. 51627 stamineum; 51944 moulmainense; 53061, 53361, 53431, 53479 hancockii; 56482 moulmainense; 57589a, 57692, 57839, 57900, 57996, 58543, 58717, 59541, 59804 leptothrium; 62697 moulmainense; 63043 leptothrium
Tsang, W. T. 20106, 20400, 20451 moulmainense; *20553*, *20738* hongkongense; 21675, 21705 henryi; 22092, *22117*, 22257, 22454, 22662 moulmainense; 22793 cavaleriei; 23741 moulmainense; *25021* ovatum; *25049* moulmainense; *25073* ovatum; *25133* moulmainense; *26239*, *26244*, *26375* championae; *26428* ovatum

Tsiang, Y. 42, 66 moulmainense; 1372 latoucheae; 4161, 4198 moulmainense; 4576 ovatum; 5024 stamineum; 6440 moulmainense; 7000 ovatum; 7072 cavaleriei; 7520 wilsonae; 7670 ovatum; 7724, 7820 wilsonae, 8456 feddei
Tsu, L. F. 607 ovatum
Voronova 5641 camschaticum subsp. glandulosum
Walden H736/77 moulmainense
Wang & Liu 88155, 88698 moulmainense
Wang, C. W. 87919 vialii
Wang, F. T. 22740 stamineum
Wang, Y. K. 30226 championae
Ward, G. H. 41 albiflorum
Westland 87, 377 moulmainense
Williams, M. 1779 camschaticum subsp. glandulosum
Wilson 317 latoucheae; A567 stamineum; A1319, A1690 ovatum; A3470 stamineum; A6242, A7027 semibarbatum; A7354 stamineum; A9725, A10249 moulmainense; V719 ovatum; V758, *V5139*, V5140 stamineum
Wong, C. 35275 moulmainense
Wu, C. A. 7681, 9048 moulmainense; *68–241* tutcherae
Yang, C. H. 81–134 hancockii; *–158*, *–186* stamineum
Yin, H. C. 860 hancockii
Yu, T. T. 1165 leptothrium; *1855*, 17807, 20587, 21047 moulmainense
Zhai, P. 1014 stamineum

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