THE GENUS RHODODENDRON L. IN INDOCHINA AND SIAM

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In the course of my recent revision of the genus Rhododendron in Malaysia it has become evident, that the subsect. *Irrorata,* regarded as purely South Eastern Asiatic up to now, is also represented in the Malay Peninsula and Sumatra, whilst the subsect. *Euvireya,* outside of its large Malaysian area, has outposts in Indochina, and the subsect. *Pseudovireya* covers an enormous area from the Eastern Himalaya and S.W. China over the whole of Malaysia to New Guinea. Through the 'Species of Rhododendron' (1930, 2nd ed. 1947), the Eastern Asiatic Rhododendrons are rather well known for India, Burma, China and Japan, but less so for Siam, while those of Indochina were omitted. It seemed therefore necessary to elaborate the latter critically, not only to fill the gap between our knowledge of the proper Eastern Asiatic and Malaysian Rhododendrons taxonomically, but also for a better understanding of the geographical relations within the old-world groups of the genus, i. e. their mutual overlapping in the area between the two supposed evolutionary centres of Rhododendron, the primary one in proper continental Asia, a secondary one in Malaysia.

Various trips to Great Britain and France enabled me to study the material deposited in the herbaria of London (Brit. Museum Natural History), Kew and Edinburgh, and the specimens which Dop has had for his treatment of the genus in the Fl. Gén. de l'Indo-Chine (1930) in the Paris Museum. The more recently collected and not yet classified material at Paris helped us to enlarge our knowledge of the Indochinese Rhododendrons considerably. The type specimen of *R. ningyuenense* Hand.-Mazz. was kindly lent from the Botanical Institute of the Vienna University.

Key to the subgenera, sections and subsections

1.a. Flowers in solitary terminal inflorescences 3
b. Flowers in several lateral (seemingly terminal, 1- to many-flowered) inflorescences (each inflorescence from the axil of an upper, sometimes much reduced or early caducous-leaf of the past season). (Plant elepidote. Leaves evergreen). Subgen. **Azaleastrum** 2
2.a. Stamens 5. Calyx lobes large . . . . . .Sect. **Azaleastrum** (p. 56)
b. Stamens 10. Calyx indistinct . . . . . .Sect. **Choniastrum** (p. 56)
3.a. Plants lepidote, (evergreen). (Subgen. **Rhododendron**) 4
b. Plants elepidote 7
4.a. Seeds not or very shortly (and then mostly unilaterally) appendiculate. (Scales

entire, thick, often inequal, dark rusty or golden-brown, the thin marginal zone divided by numerous radiate walls)
Sect. **Rhododendron** Subsect. **Maddenia** (p. 40)
b. Seeds long-appendiculate or tailed at both ends. Sect. **Vireya** 5
5.a. Scales (equal, sessile or stalked, ± persistent) disk-shaped, i. e. their marginal zone entire or only slightly crenulate (and narrow in relation to the large, mostly thick centre) . . . . . Subsect. **Pseudovireya** (p. 47)
b. Scales (always sessile) star-shaped, i. e. their marginal zone distinctly (regularly or irregularly, obtusely or acutely) lobed, dented or incised to various degree, the centre ± thin 6
6.a. Scales markedly inequal, i. e. very many smaller and a few much larger ones irregularly mixed, all very dense, touching resp. partly overlapping each other, persistent; centre sooty or blackish brown, mostly large in relation to the paler, finally silvery, marginal zone . . . . . Subsect. **Malayovireya** (p. 48)
b. Scales subequal in size, much spaced, often disappearing early or barely recognizable in later stages; centre light to dark brown, rather small in relation to the marginal zone . . . . . Subsect. **Euvireya** (p. 48)
7.a. Flowers and leafy branchlets (new foliate shoots) from the same terminal bud (the branchlets from the lowest scale-like bracts of that bud). Plants usually with flattened, ± appressed, strigose hairs. Leaves usually decidous, rarely evergreen . . . . . Subgen. **Anthodendron**, Sect. **Tsutsusi** (p. 49)
b. Flowers and leafy branchlets from different buds: flowers from the terminal buds; leafy branchlets (new foliate shoots) from separate, lateral buds, i. e. from the axils of the leaves of the past season. Plants showing various indument types except the one with flattened strigose hairs, or glabrous. Leaves evergreen. Subgen. **Hymenanthes**, Sect. **Hymenanthes** 8
8.a. Trees or tree-like shrubs, the bole ± distinct. (Leaves: nerves numerous, ± distinctly parallel to each other, often ± impressed above; undersurface covered with a dense spongy or ± plastered indumentum). Truss compact, the pedicels thickish, up to 1 cm long . . . . . Subsect. **Arborea** (p. 51)
b. Shrubs, without a proper bole. Truss less compact, the pedicels mostly more slender and longer than 1 cm 9
9.a. Leaves glabrous from the beginning . . . . . Subsect. **Fortunea** (p. 52)
b. Leaves, at least initially, ± densely hairy to tomentose 10
10.a. Leaves initially with a thin, often film-like indument of simple hairs underneath, glabrescent with age; margin cartilagineous, often obscurely notched and rough to the touch. (Nervation similar to Subsect. *Arborea*) Subsect. **Irrorata** (p. 52)
b. Leaves with a persistent, rather thin, suède-like indument of radiate or long-rayed, rosette-like hairs underneath; margin entire . . Subsect. **Lactea** (p. 56)

RHODODENDRON L., Spec. Pl. 1, 1753, 392.

Subgen. **Rhododendron**

Sect. RHODODENDRON.

Subsect. Maddenia Sleum., Bot. Jahrb. 74, 1949, 533.

This subsection has been the object of a special study by Hutchinson (Not. R. Bot. Gard. Edinb. 12, 1919, 1—84), which was enlarged by the same author in the 'Species of Rhododendron' (1930, 447—499), again without including the Indochinese species of the subsection. In 2 of the 3 subseries, distinguished by Hutchinson, i. e. subser. *Maddenii* and *Megacalyx*, the species are mainly differenciated by characters commonly used within the genus such as the number of stamens, length of calyx lobes, corolla, leaves and capsules, and the pubescence of various parts in the floral region, resulting in a rather normal or average species concept. In the third subser. *Ciliicalyx*, however, besides these characters, Hutchinson stresses the various density of the scales both on the corolla ("corolla tube more or less scaly all over outside or down one side" against "corolla

tube not scaly outside or only slightly so at the base of the lobes") and on the undersurface of the leaves (scales "their own or about their own diam. apart", "more than their own diam. apart", "2—4 times their own diam. apart", "touching each other or nearly so", "overlapping" or "not overlapping" each other), resulting thus in a more or less gradual differentiation with respect to the density of the scales instead of sharp (extreme) antitheses. The same can be said where he remarks "flowers solitary or rarely in two's" and "flowers 3 or more per inflorescence", and of the use of a subtle distinction of leaf-shapes, leaf-apices and leaf-bases, the contrast of which immediately becomes doubtful, if more material than just the type-specimen comes into consideration. In this way the *Ciliicalyx* group, previously consisting of 11 species, increased suddenly, in Hutchinson's work, into 30 species. The key to these species is difficult to handle because of its many too vague alternatives with the result, that since then more and more "new" species have been added to the *Ciliicalyx* group by Hutchinson and others. Hutchinson himself on the one hand (p. 4) maintains, that "as careful work in the discriminating of Rhododendron species proceeds, it becomes increasingly evident, that the majority are very local in distribution", but on the other hand (p. 5) says with reference to *R. ciliicalyx* and its relatives, "that he is not prepared to say how constant are the differences which go to distinguish these Yunnan species as shown in the key, and to what extent they will stand the test of cultivation and further collection". Kingdon Ward (Garden. Chron. 133, 3. ser., 1953, 5) says, under his new species *R. walongense*: "Considering the restricted distribution of most species, it seems probable, that more will be discovered. At the same time it must be allowed that several named species are precariously distinguished, and when the time comes to review the group, with the help of living plants and more herbarium material, it is not unlikely that the number of species recognized will be further restricted".

In fact, reduction of the number of species and enlarging the area they inhabit beyond political boundaries in South Eastern Asia is characteristic of the careful revision of certain subsections of the genus, published by Cowan & Davidian in the last decade, and the same is to be expected for the revision of every other group within the genus. The occurrence of the subsect. *Maddenia* in Indochina and Siam has obliged me to revise it for the present paper. The main question is, which of the characters used by Hutchinson are reliable, and especially, in how far the relative distance between the scales on the undersurface of the leaf can be used to help to distinguish proper species in that subsection.

That such differences in the distance between the scales exist, is beyond any doubt, if leaves are compared which have reached the same degree of maturity. The scales are denser on young, not yet fully developed leaves, than on really mature leaves. A comparison of the scale density on the leaves from specimens cultivated in the glasshouses at Kew and Edinburgh with those from wild herbarium specimens of the same species has proved, that the cultivated specimens in general have the scales more distant than the specimens collected in the field, which is easily understandable due to the different ecological conditions between European

glasshouses and the original localities in the open field. The density of scales in wild and cultivated material is therefore not directly comparable. The fact that 4 of Hutchinson's new species are based on such cultivated materials makes any key principally unsuitable as to the relative density of the scales, which plays such an important role in Hutchinson's work. A close investigation of the rich material (incl. duplicates) of *R. ciliicalyx* in the Paris Herbarium reveals, that this species shows a certain variation in the scale density within the same locality, or a very restricted area, where Delavay has collected it again and again. The character of scale density alone is still less reliable for distinguishing groups of species, as proposed in Hutchinson's key, and can only be used, if the scale density shows extremes that do not overlap in two separate species.

In the subsect. *Maddenia* the main type of leaves is elliptical or obovate, and all transitions and minor variations towards a more broadened resp. more narrowed form of these types are found. Furthermore it is not rare that the first (older) leaves are more obovate (and smaller) than the younger leaves, which are often more typically elliptic (and larger) of the same branchlet. This makes the shape of the leaf a rather unreliable detail to characterize a species, and surely useless for a key. It seems, however, still worth while to differenciate the species by the occurrence of bristles both on branchlets and leaves (less so on the margin of the calyx lobes), providing only material of wild specimens and of more or less the same state of development is compared. Cultivated specimens in general are much less bristly.

There are apparently only a few reliable characters to separate the main groups resp. to begin with in a key to the species of the proper *ciliicalyx*-group. The part of the key which deals with all species of that special group, given here, is only tentative, and the species admitted here possibly must be reduced still more drastically in number when more material becomes available.

Key to all species of the subsect. Maddenia *)

1.a. Stamens 15—25. Ovary 10—12(—13)-celled. (Calyx lobes up to 1.2 cm long, rather variable in size). *S. Tibet, Upper Burma, W. Yunnan, N. Tonkin.* (Group of *R. maddenii* Hook. f.) . . . . . 1. **R. crassum** Franch.

b. Stamens 10 ((very rarely up to 13). Ovary (4—)5—7-celled 2

2.a. Calyx large and more or less leafy, with broadish lobes 8—25 by (6—)8 mm. *N. Tonkin, Loos.* (Group of *R. megacalyx* Balf. f. et Ward) 2. **R.** aff. **nuttallii** Booth

b. Calyx. relat. poorly developed (rarely with lobes up to 10 by 2.5 mm), sometimes rim-like only (Group of *R. ciliicalyx* Franch.) 3

3.a. Style quite smooth its full length, i. e. neither hairy nor lepidote . . . 4

b. Style (besides some hairs, which may occur) lepidote at or mostly well above the base 6

4.a. Calyx lobes 8—10 mm long. Corolla glabrous or laxly lepidote outside . . 5

b. Calyx lobes c. 2 mm long. (Corolla probably pink, loosely lepidote and finely pubescent all over outside). *E. Tibet* . . . . . **R. scopulorum** Hutch.

5.a. Corolla white to rose, not lepidote outside. Branchlets bristly. *Sikkim, S. E. Tibet* **R. ciliatum** Hook. f.

b. Corolla pale lemon yellow, laxly scaly outside. Branchlets scarcely or not bristly. *S. Tibet* . . . . . **R. amandum** Cowan

6.a. Corolla (pale) yellow or greenish-yellow (rarely also greenish-white) . . 7

*) The numbered species occur in Siam and/or Indochina.

b. Corolla white to flesh coloured (sometimes with a yellow or greenish or orange blotch on the tube inside) when full grown (rose to dark mauve if still in bud) 10

7.a. Calyx lobes up to 2 mm long 8

b. Calyx lobes c. 8 mm long. (Leaves 3—4 by 1.5—2 cm). *Yunnan* **R. valentinianum** Forrest

8.a. Leaves small, (2.5—)3—4 by (1.2—)1.5—2 cm. Corolla c. 3 cm long. *Laos (Pu Bia)* **3. R. crenulatum** Hutch.

b. Leaves medium sized, 6—10 by (1.8—)2—4 cm 9

9.a. Mature leaves still ± densely lepidote on the upper surface. Inflorescences 5—6-flowered. *Burma (Mt Victoria)* . . . . . **R. burmanicum** Hutch.

b. Mature leaves sparingly lepidote or glabrous on the upper surface. Inflorescence 1—3-flowered. *Yunnan (Tali Ra.)* . . **R. pachypodum** Balf. f. et W. W. Sm.

10.a. Leaves linear, or linear-lanceolate, acute, 0.7—1.2 (rarely and only partly in the same specimen up to 1.5) cm wide, (5—9 cm long), the petioles ± winged with the decurrent leaf-blade 11

b. Leaves of various form (if linear or lanceolate, at least partly wider than 1.5 cm in the same specimen), the petiole not, or not manifestly, winged with the decurrent leaf-blade 12

11.a. Corolla sparingly lepidote all over the outside, not hairy. *Assam (Khasia)* **R. iteaphyllum** Hutch.

b. Corolla laxly to subdensely lepidote and softly pubescent towards the base outside. *Assam (Khasia).* A form with narrower leaves of **R. formosum** Wall.

12.a. Calyx lobes (all or at least the one (or two) adaxial one(s) 8—10 mm long. *Burma (Mt Victoria)* . . . . . **R. cuffeanum** Craib ex Hutch.

b. Calyx lobes up to 6 mm long, inequal, or no calyx lobes at all 13

13.a. Style, at least in the lower part, both finely and shortly pubescent and lepidote 14

b. Style exclusively lepidote 15

14.a. Pedicels equally lepidote and very shortly pubescent. Corolla 4—4.5 cm long, all over lepidote and subvillose-pubescent. Leaves obovate, bristly at the margin and petiole when young. *Siam (Doi Chieng Dao)* **4. R. ludwigianum** Hosseus

b. Pedicels lepidote, but pubescent at the very base only. Corolla c. 8 cm long, laxly lepidote all over, softly pubescent in the lower half only outside. Leaves broadly eliptic, not bristly at all. *Yunnan* . . . . . **R. lasiopodum** Hutch.

15.a. Branchlets (one year old shoots) and margin of the (young) leaves rather densely set with ± persistent bristle-like hairs 16

b. Branchlets (one year old shoots) mostly not, rarely but sparsely and ± caducously set with bristly-like hairs 19

16.a. Scales much distant from each other on the undersurface of the leaves, the latter ± green to the naked eye 17

b. Scales dense to very dense on the undersurface of the leaves, the latter ± brownish to the naked eye 18

17.a. Corolla c. 7 cm long. Leaves elongate-oblong-elliptic, 10—11 by 3—3.5 cm. *N. Burma (Bhamo)* . . . . . **R. cubittii** Hutch.

b. Corolla 5—6 cm long. Leaves oblanceolate to obovate, 3—7 by (1—)1.5—3 cm. *Assam (Khasia)* . . . . . **R. formosum** Wall.

18.a. Calyx not bristly. Scales on the undersurface of the leaves all or mostly touching each other. *S. Annam* . . . . . **5. R. fleuryi** Chev.

b. Calyx laxly to subdensely bristly. Scales on the undersurface of the leaves less dense, only in part or not touching each other. *Assam, ?Burma, Yunnan, Kweichow, Tonkin, Laos, Annam, N. Siam* . . . . . **6. R. lyi** Lévl. (*R. johnstoneanum* Watt ex Hutch., *?R. parryae* Hutch., *R. saravanense* Dop, *?R. leptocladon* Dop, *R. pseudociliicalyx* Hutch., *R. ciliipes* Hutch., *R. scottianum* Hutch.).

19.a. Scales very dense, i. e. ± contiguous, fairly large and flaky on the undersurface of the leaves, the latter ± brown to the naked eye. *Siam* **7. R. surasianum** Balf. f. et Craib

b. Scales less dense, i. e. spaced to various degree, rel. small and rather fleshy on the undersurface of the leaves, the latter ± green to the naked eye . . 20

20.a. Capsule very oblique. *Assam (Khasia)* . . . . . **R. inaequale** Hutch.

b. Capsule ± straight 21

21.a. Leaves predominantly obovate, elliptic-obovate or obovate-oblanceolate, or oblong-oblanceolate. Calyx not or but very laxly bristle-ciliate. *Assam/Tibet border, Upper and Lower Burma, Yunnan, Laos, Laos/Annam border, N. Siam* **8. R. veitchianum** Hook.
(*R. smilesii* Hutch., *R. notatum* Hutch., *R. taronense* Hutch., *R. walongense* Ward).

b. Leaves ± elliptic to oblong-elliptic, rarely subobovate-elliptic. Calyx (sub) densely bristle-ciliate. *Yunnan* . . . . . **R. ciliicalyx** Franch.
(*R. carneum* Hutch., *R. dendricola* Hutch., *R. pilicalyx* Hutch., *R. missionarium* Lévl., *R. roseatum* Hutch., *R. supranubium* Hutch., *R. rufosquamosum* Hutch., *R. atentsiense* Hand.-Mazz.).

1. R. crassum Franch., Bull. Soc. Bot. Fr. 34, 1887, 282; Bean, Kew Bull. 1914, 201; Millais, Rhodod., 1917, 149; Hutch., Not. R. Bot. Gard. Edinb. 12, 1919, 28; Millais, Rhodod. 2nd. ser., 1924, 118; Hutch. in Spec. Rhodod., 1930, 485; Bean, Trees & Shr. 3, 1933, 366; Rothchild, Year Book Rhod., 1939, 110; Hutch., Bot. Mag., 1946, t. 9673; Cowan, Not. R. Bot. Gard. Edinb. 19, 1937, 246. — *R. chapaense* Dop, in Fl. Gén. I.-C. 3, 1930, 743.

INDOCHINA. Tonkin, prov. Lao-Kay, Phan-Si-Pan, 2800 m: *Poilane 17101*, fr.; massif de Lo-sui-tong, près de Cha-pa: *Poilane 12672* (P, type of *R. chapaense*), fr.

R. chapaense is known in fruit only. The capsules are 11—12(—13)-celled, in contrast to the 10-celled ovary of *R. crassum*. In other respects, especially in the leaf-shape and the density of the scales, it is not distinguishable from *R. crassum*. The petioles show the same V-shaped grooves on the upper side at the base as in *R. crassum* and other species of the group.

Another specimen from the Massif de Phan-Si-Pan, at 2300 m: *Poilane 12986* (branchlets with leaves and flower buds only), shows the V-shaped groove less distinctly and has the nervation on the undersurface of the leaves more prominent than *R. crassum*, but might still belong to it.

2. R. *aff.* **nuttallii** Booth, Kew J. Bot. 5, 1853, 355; Hook., Bot. Mag. 1859, t. 5146; Hutch., Not. R. Bot. Gard. Edinb. 12, 1919, 41; in Spec. Rhodod., 1930, 496.

INDOCHINA. Tonkin, prov. Lao-Kay, massif de Phan-Si-Pan, 2200 m: *Poilane 17202*, arbuste 4—5 m, fr. Dec. Laos, prov. Tran-Ninh, Pu Sam Sum (Pu Sac Noi), 103°46′—19°6′: *Smiles s.n.* (K), fr.

Poilane's specimen differs from true *R. nuttallii* (Bhutan) by the petioles 2.5—3.5 cm long (instead of c. 2 cm in *R. nuttallii*), the calyx lobes only c. 1 cm long (instead of 1.5—2.5 cm), and the capsule 4.5 cm long (instead of 3—3.5 cm). Probably a new species, but material too poor for a sufficient description.

Smiles' specimen may represent the same species, but has a smaller capsule (3.5—4.2 cm long), and smaller leaves (8—10 by 3.5—5 cm) with shorter (1.5—2 cm) and more slender petioles. In both specimens the pedicels are lepidote and epilose, a fact which places them nearer to *R. nuttallii* Booth than to *R. dalhousiae* Hook. f. (Sikkim, Bhutan).

3. R. crenulatum Hutch. in Kerr, J. Siam Soc. Nat. Hist. Suppl. 9 (2), 1933, 222, *nom. nud.*

Frutex 1 m altus. Ramuli teretes, striati, dense breviter patenti-pilosi, 2—3 mm diam.; internodia 2,5—4(—5) cm longa. Folia alternatim per internodia ultima et penultima disposita, inferiora in quoque internodio cito caduca, superiora persistentia et ± approximata, summa in pseudo-

verticilla c. 4-mera collecta, in quaque axilla gemmifera, oblongo-elliptica, apicem versus sensim attenuata, apice ipso subobtusa, basi late in petiolum attenuata vel cuneata, tenuiter coriacea, sat firma, supra maturitate costa nervisque puberulis exceptis glabra et (certe partim) vernicoso-nitentia, crebre impresso-punctulata, subtus dense subpersistenter lepidota (lepidibus rotundis crassis ± immersis), in toto margine minute, sed bene visibiliter lepidibus impressis crenulata, (2,5—)3—4 cm longa, (1,2—)1,5—2 cm lata, costa utrinque prominente, nervis lateralibus utroque latere c. 8, erecto-patentibus, supra parum, subtus minute elevatis, reticulatione subtus tantum visibili; petioli crassi, applanati, petiolo ± decurrenti in superiore parte subalati, 2—4 mm longi, c. 1,5 mm lati. Racemi umbelliformes 3—4-florae. Perulae exteriores subrotundatae usque ovato-subacuminatae, interiores obovato-spathulatae, carina dorsali protracta apiculatae, extrinsecus laxe lepidotae, margine densissime breviter albociliatae, 0,5—1,5 cm longae, usque ad 1 cm latae. Pedicelli graciles, subdense lepidoti, epilosi, c. 1 cm longi. Calyx aperte cupulatus, fere usque ad basin 5-partitus, dorso subdense lepidotus, lobis irregularibus ovatis, obtusis vel subacutis, ciliolatis, c. 2 mm longis. Corolla inferne late tubulosa, superne campanulato-dilatata, tenera, ex coll. dilute flavida, in sicco fere 3 cm longa, extus ubique subdense lepidota, ultro 3 mm glabra, supra per 2—3 mm villosula, superne iterum glabra, tubo c. 1,5 cm longo, e basi apicem versus sensim dilatato, basi ipsa 3—4, ore 10—12 mm diam., lobis ± patentibus breviter obovato-spathulatis usque obovato-subrotundatis, 1,3—1,5 cm longis et latis. Stamina 10, inaequilonga, longiora c. 2, brevissima 1,2 cm attingentia; filamenta anguste linearia, inferne per (2—)3 mm glabra, superne per 2—3(—4) mm villosa, supra iterum glabra; antherae late subobovato-oblongae, c. 2 mm longae, 1 mm latae. Discus sat dense longepilosus. Ovarium conicum, c. 5 mm longum, basi c. 3 mm diam., cum stylo abruptum, densissime lepidotum, stylo sat gracili corollam aequante, inferne sat dense, superne usque ad apicem laxius lepidoto, stigmate subcapitato. Capsula late oblonga, 1—1,3 cm longa, c. 0,4 cm lata, lepidota, pedicello c. 1,5 cm longo, 1 mm crasso.

INDOCHINA. Laos, prov. Tran-Ninh, Pu Bia (103°7′—19°1′), summit, c. 2800 m: *Kerr 21044* (BM; K, typus; P), fl. pale yellow, fr., 14-4-32.

4. R. ludwigianum Hosseus, Bot. Centralbl. Beih. 28 (2), 1911, 122; Craib, Kew Bull. 1911, 405; Aberdeen Univ. Stud. 57, 1912, 121; Hutch., Not. R. Bot. Gard. Edinb. 12, 1919, 62; Dop, in Fl. Gén. I.-C. 3, 1930, 739; Hutch., in Spec. Rhodod. 1930, 466; in Craib, Fl. Siam. En. 2 (4), 1938, 317, *pr. p.* — *R. sp.*, Hosseus, Bot. Centralbl. Beih. 27 (2), 1910, 506.

SIAM. Payap, Doi Chiengdao, 1600—2180 m: *Hosseus 401* (B, type, †; K), along open ridges on limestone rocks; ibid.: *Kerr 5570; Put 384; Garrett 1180.*

5. R. fleuryi Dop in Chevalier, Rév. Bot. Appl. Agric. Trop. 9, 1929, 255; in Fl. Gén. I.-C. 3, 1930, 741, f. 82, 17—19, f. 83, 2—3.

INDOCHINA. Annam, prov. Darlac, massif du Langbian, au sommet du piton du Langbian, près du village de Beneur, 2000—2500 m: *Chevalier 30896* (P, type), fl. Feb. Prov. Nhatrang, 2000 m: *Poilane 3578*, fr.

6. R. lyi Lévl., Fedde Rep. 13, 1914, 147; Fl. Kouy-Tchéou,1914, 153; Hutch., Not. R. Bot. Gard. Edinb. 12, 1919, 56, f. 7; Stapf, Bot. Mag., 1924, t. 9051; Tagg, Rhodod. Soc. Notes 3, 1928, 230; Hutch. in

Spec. Rhodod. 1930, 467. — *R. formosum* Wall. var. *johnstonianum* Brandis, Ind. Tr., 1906, 411. — *R. johnstoneanum* Watt ex Hutch., Not. R. Bot. Gard. Edinb. 12, 1919, 72; in Spec. Rhodod., 1930, 464; in Kerr, J. Siam Soc. Nat. Hist. Suppl. 9 (2), 1933, 222, in text. — *R. scottianum* Hutch., Not. R. Bot. Gard. Edinb. 12, 1919, 64; in Spec. Rhodod., 1930, 476. — *R. pseudociliicalyx* Hutch. l. c. 54, resp. 472. — *R. ciliipes* Hutch. in Spec. Rhodod., 1930, 457; Not. R. Bot. Gard. Edinb. 16, 1931, 177. — *R. saravanense* Dop, in Fl. Gén. I.-C. 3, 1930, 745; Dop et Trochain, Bull. Mus. Nat. Hist. Natur. sér. II, 4, 1932, 719. — ? *R. leptocladon* Dop, in Fl. Gén. I.-C. 3, 1930, 745. — ? *R. parryae* Hutch., Gard. Chron. 153, ser. III, 1933, 387.

INDOCHINA. Tonkin, prov. Lao-Kay, massif de Lo-sui-tong, 2200 m: *Poilane 12680* (P, type of *R. leptocladon*), fr. July; massif de Fan-Si-Pan, près de Cha-pa, 1500 m: *Pételot 4210* (different by more ovate leaves). Laos, prov. Saravane, sommet de Pou set, 1400 m: *Poilane 16165* (P, type of *R. saravan.*), fl. buds, fr. Prov. Tran-Ninh (Xieng Khouang), Pu Bia, 2800 m: *Kerr 21046*. Annam, prov. Kontum, Ngok Peng près de Dak Bon, Khong, Ouest de Dak Gley, 1300 m: *Poilane 32930, 32940, 32948*; massif du Ngok Pan, 2187—2400 m: *Poilane 32181, 32183, 35819, 35885*.

SIAM. Udawn, Kao Krading, Loi, c. 1200 m: *Kerr 8670*; *Lakshnakara 1381*. Rachaburi, Kao Ri Yai, 1600 m: *Kerr 10390*.

R. lyi comes very near *R. ciliicalyx* in many respects. Beside the bristles (which however may disappear more or less in full mature branchlets and leaves, i. e. fruit-bearing specimens), the main difference between these species is found in the leaves. In *R. lyi*, the leaves are more narrowly oblong-elliptic to subovate-oblong, rarely oblanceolate or ± narrow-obovate-elliptic, in general smaller and more densely lepidote underneath than in *R. ciliicalyx*, which has elliptic to broad-elliptic or oblong-elliptic, rarely subobovate-elliptic leaves and more manifestly distant scales. The above cited specimens from Siam and Laos (Pu Bia) are of the *R. lyi* type in foliage, but less bristly than generally in that species.

Material in fruit, as for example the type specimen of *R. leptocladon*, is often difficult to place in one or the other species.

7. R. surasianum Balf. f. et Craib, Not. R. Bot. Gard. Edinb. 10, 1917, 160; Hutch. l. c. 12, 1919, 67; in Spec. Rhodod., 1930, 479; in Craib, Fl. Siam. En. 2 (4), 1934, 318; Dop, in Fl. Gén. I.-C. 3, 1930, 742.

SIAM. Payap, Doi Pahom Pok, c. 1400 m: *Kerr 5175*, rocky ground in open evergreen forest; Doi Sutep, c. 1560 m: *Kerr 3238* (BM; E, type; K, P); Doi Lang Ka: *Put 3323, 3398, 3733, 3749*. Chiengmai, Pang Tawn, *Put 3718*; Doi Hua Mot: *Garrett 756*.

8. R. veitchianum Hook., Bot. Mag., 1857, t. 4992; Clarke in Hook. f. Fl. Br. Ind. 3, 1882, 474; Brandis, Ind. Tr., 1906, 411; Craib, Kew Bull., 1911, 405; Aberdeen Univ. Stud. 57, 1912, 422; Millais, Rhodod., 1917, 257; Hutch., Not. R. Bot. Gard. Edinb. 12, 1919, 76; in Spec. Rhodod., 1930, 482; Dop, in Fl. Gén. I.-C. 3, 1930, 741; Hutch. in Craib, Fl. Siam. En. 2 (4), 1938, 319. — *R. formosum* Wall. var. *veitchianum* (Hook.) Kurz, J. As. Soc. Beng. 46, ii, 1877, 276; Hosseus, Bot. Centralbl. Beih. 27 (2), 1910, 505; Craib, Aberdeen Univ. Stud. 57, 1912, 422. — *R. formosum* (non Wall.) Kurz, For. Fl. Br. Burma 2, 1877, 94. — *R. smilesii* Hutch., Not. R. Bot. Gard. Edinb. 12, 1919, 71; in Spec. Rhodod., 1930, 477; Dop, in Fl. Gén. I.-C. 3, 1930, 740. — *R. notatum* Hutch., in Spec. Rhodod., 1930, 469; Not. R. Bot. Gard. Edinb. 16, 1931, 177. — *R. taronense* Hutch.,

in Spec. Rhodod., 1930, 480; Not. R. Bot. Gard. Edinb. 16, 1931, 178. — *R. walongense* Ward, Gard. Chron. 133, III. ser., 1953, 5, f. 3.

INDOCHINA. Laos, prov. Tran-Ninh, Pu Bia, 2300 m: *Kerhr 21022*; ibid., 2500 m: *Kerr 21028 A*. Laos (prov. Tran-Ninh)/Annam (prov. Vinh (Ngeh-An)) border, Pu Lei Leng, c. 104°8'—19°11': *Smiles s.n.* (K, type of *R. smilesii*).

SIAM. Payap, Doi Sutep, 1350—1650 m: *Hosseus 201*; *Kerr 512*; *Collins 1235*. Doi Angka, c. 2400 m: *Kerr 5322*; *Coolidge & Carpenter 102*; *Garrett 640*; *Winit 1341*.

R. smilesii differs from *R. veitchianum* only by a smaller corolla (c. 4 cm long), which is also found in Kerr's n. 21022 from Pu Bia, a mountain not far from Pu Lei Leng, the type locality of *R. smilesii*. On the same Pu Bia, a little higher, Kerr collected another Rhododendron n. 21028 A, conspecific with the former, but with corollas 5—5.5 cm long, similar to *R. notatum* and *R. taronense*, thus nearly attaining those of *R. veitchianum* and *R. walongense*, which show corollas from 6—7 (sometimes up to 8) cm in length.

In Rhododendron the corolla length is not too reliable, depending on the state of development in which the flower has been collected, and from the way of drying. Corollas dried without much pressing, shrink enormously compared with the size they have in the living plant.

Sect. VIREYA (Bl.) Copel. f., Philip. J. Sc. 40, 1929, 131, 151.

Subsect. Pseudovireya (Clarke) Sleum., Bot. Jahrb. 74, 1949, 537. — *R.* subgen. *Pseudovireya* Clarke in Hook. f., Fl. Br. Ind. 3, 1882, 464. — *R.* subsect. *Discovireya* Sleum., Bot. Jahrb. 74, 1949, 539.

Key to the species of the subsect. Pseudovireya

1.a. Branchlets verruculose by numerous stalked scales. Pedicels slender. Corolla open-campanulate, 0.9—1.2 cm long. *Tonkin, Yunnan, Kweichow*
1. R. emarginatum Hemsl. et Wils.

b. Branchlets smooth, laxly set with sessile scales, early glabrescent. Pedicels stoutish. Corolla tubular-campanulate, c. 1.4 cm long. *Tonkin*
2. R. sororium Sleum.

1. R. emarginatum Hemsl. et Wils., Kew Bull. 1910, 118; Hutch. in Spec. Rhodod., 1930, 819. — *R. euonymifolium* Lévl. in Fedde, Rep. 12, 1913, 103; Fl. Kouy-Tchéou, 1914, 152; Tagg in Rhodod. Soc. Notes 3, 1928, 228; Hutch. in Spec. Rhodod., 1930, 820; Rehd., J. Arn. Arb. 15, 1934, 273. — *R. poilanei* Dop, in Fl. Gén. I.-C. 3, 1930, 739.

INDOCHINA. Tonkin, prov. Lao-Kay, Cha-pa et Cho-bo: *Poilane 12599* (P, type of *R. poilanei*); route de la garderie de Lo-Qui-Ho au col de Lo-Qui-Ho, 1900 m: *Pételot 3752*, epiphyte.

I have compared the type material of the three above mentioned species at Edinburgh, Kew and Paris. There is a rather good lecto-isotype specimen of *R. euonymifolium* (Pin-fa, S.E. (cataractes), sur rochers, Aug. 1908, fl. jaunes odor., *Cavalerie 242*) in a ± complete, not yet named set of Cavalerie's and Ducloux' Kweichow plants in the Paris Herbarium.

2. R. sororium Sleum., nov. sp. — Frutex. Ramuli c. 2 mm diam., teretes, ad internodia 1—2 ultima laxe lepidibus rotundatis sessilibus parvis obsiti, cito omnino glabri. Folia in pseudoverticillis c. 5-meris disposita, in eodem specimine magnitudine variabilia, obovata, apice rotundata vel minute emarginata, minute glanduloso-apiculata, basi in petiolum cuneata et subdecurrentia, coriacea, supra saturate olivaceo-viridia, subtus palli-

diora, supra maturitate glabra, subtus laxe lepidibus crassiusculis instructa, (2,5—)3—4(—4,5) cm longa, (1—)1,5—2 cm lata, margine parum revoluta, nervis curvatis utroque latere 2—3, supra impressis, subtus prominulis; petioli applanati, c. 3—5 mm longi, 1,5—2 mm crassi. Flores solitarii rarius bini. Perulae dorso subsericeae, margine dense albociliatae, exteriores ovato-subrotundatae, obtusae, interiores ovato-acuminatae, subacuminatae, usque ad 1 cm longae et 0,5 cm latae. Pedicelli dense lepidoti, epilosi, sub anthesi 1,5—2, sub fructu 2—2,5 cm longi, c. 0,8 mm crassi. Calyx obliquus, c. 3 mm diam., lobis obtusis usque ad 1 mm longis, plerumque indistinctis. Corolla carnosula, colore haud cognita, inferne late tubulosa, superne ad lobos campanulato-dilatata, tota bene evoluta c. 1,4 cm longa, tubo c. 8 mm longo, c. 4 mm diam., extus dense lepidoto, intus albido-villosulo, lobis 5 obovatis, extus laxe lepidotis, intus glabris, c. 6—7 mm longis, c. 4 mm latis. Stamina 10, alternatim 10 et 8 mm longa; filamenta linearia, applanata, supra basin glabra, superne albido-villosula, sub apice angustoria et glabra; antherae lineares, c. 3 mm longae, 0,7 mm latae. Discus glaber. Ovarium conicum, cum stylo valde abruptum, dense lepidotum, c. 5 mm longum, 2,5 mm diam., stylo columnari, superne clavato-incrassato, glabro, stigmate abrupte truncato. Capsula nondum plane matura oblique oblonga, c. 1,7 longa, 0,3 cm lata, stylo crasso glabro 5—6 mm longo.

INDOCHINA. Tonkin, prov. Lao-Kay, environs de Cha-pa, massif de Fan-Si-Pan, sommet de la première crête, 1400—1700 m: *Pételot s.n.* (P), fl. July 1931.

Subsect. Malayovireya Sleum. **nov. subsect.**

Ser. *Malayana* Copel. f., Am. Midl. Nat. 30, 1943, 605, *nom. nud.*

Lepides sessiles, planae, parum impressae, plerumque magnitudine valde diversae, numerosiores parvae, pauciores intermixtae circa duplo maiores densissimae, sese attingentes vel partim sese tegentes, omnes in zona marginali dilutiore (aetate argentea) irregulariter obtuse lobatae haud raro usque ad centrum fissae, centro magno saturate fuliginoso.

Type sp.: *R. malayanum* Jack.

1. **R. malayanum** Jack, Mal. Misc. 2 (7), 1822, 17, reimpr. Hook., Bot. Misc. 1, 1934, 369; Hook., Bot. Mag., 1873, t. 6045; Clarke in Hook., Fl. Br. Ind. 3, 1882, 462; Ridl., Fl. Mal. Pen. 2, 1923, 219; Hutch. in Craib, Fl. Siam. En. 2 (4), 1938, 317.

SIAM. Pattani, G. Inang, Betong, 1200—1615 m: *Kerr 7549*; *Yapp 489*.

Subsect. Euvireya Copel. f., Philip. J. Sc. 40, 1929, 137, 159.

Key to the species of the subsection Euvireya

1.a. Leaves lanceolate-oblong, 15—20 by 6—8 cm. Corolla funnelform, brick-red, c. 8 cm long. *S. Annam* . . . . . **1. R. triumphans** Yersin et Cheval.

b. Leaves oblong-obovate or oblanceolate, 4—6 by 1.5—2(—2.5) cm. Corolla broadly tubular-campanulate, white to yellowish-cream, c. 2.5 cm long. *S. Annam* **2. R. chevalieri** Dop

1. **R. triumphans** Yersin et Chevalier in Chev., Cat. Pl. Jard. Bot. Saigon, 1919, 30, *nom. nud.*; Rév. de Bot. Appl. et d'Agric. Trop. 9 (n. 92), 1929, 256 (*descr.*), t. 11; Dop, in Fl. Gén. I.-C. 3 (6), 1930, 736.

INDOCHINA. S. Annam, prov. Khanh Hoa (Nhatrang), massif de Hon-ba, 1200—1500 m: *Chevalier 38601* (P).

R. triumphans is nearest to *R. brookeanum* Low ex Lindl. var. *brookeanum* from Borneo, i. e. practically identical with that species in the size and the nervation of the lamina and in the flowers. A striking difference, however, between these species is found in the petiole: thick in general and (very) short (2—10 by (2—)3—4(—5) mm) in *R. brookeanum*, longer and thus looking more slender in *R. triumphans* (18—26 by c. 3 mm). The capsule of the latter is not yet known and might be different from that of *R. brookeanum*.

2. R. chevalieri Dop in Chev., Rév. de Bot. Appl. et d'Agric. Trop. 9 (n. 92), 1929, 256, t. 10; Dop, in Fl. Gén. I.-C. 3 (6), 1930, 737.

INDOCHINA. S. Annam, prov. Khanh Hoa (Nhatrang), massif de Hon-ba, 1000—1500 m: *Chevalier 38692, 38709* (type, P); massif de Bi-Doup (Haut-Donaï), 2000—2287 m: *Poilane 30801, 31055*.

Subgen. **Anthodendron** (Reichb.) Reichb. ex Endl., Gen., 1839, 759.
Sect. TSUTSUSI Sweet, Brit. Fl. Gard. 5 (ser. 2, vol. 2), 1831, t. 117.

Key to the species of the section Tsutsusi

1.a. Bud scales viscid, especially on the inner surface. Shoots (in their first year) densely covered with spreading grey to grey-brown soft hairs, mixed with few to many loosely appressed or spreading, flattened, bristle-like hairs, and occasionally with glandular hairs. *Annam. (Cult.)* **1. R. mucronatum** G. Don

b. Bud scales not viscid. Shoots densely covered with flattened appressed hairs only 2

2.a. Stamens 5. Corolla white to pale pink (whether or not spotted with red or violet red inside on the upper 3 corolla lobes) 3

b. Stamens 7—10. Corolla rose red to purple 4

3.a. Style glabrous. Leaves relat. small, 1.5—3 (very rarely up to 4) by 0.5—1.3 (very rarely up to 2) cm, appressedly substrigose above still at maturitiy, firmly chartaceous, with 3—4 (rarely up to 5) lateral neves. *Yunnan, N. Siam*
2. R. microphyton Franch.

b. Style set with brown substrigose subappressed hairs in the lower half. Leaves larger, (3—)4—7(—8) by (1.5—)2—3(—3.5) cm, glabrous above at maturity, subcoriaceous, with (5—)6—8 lateral nerves. *N. Tonkin, C. Annam*
3. R. saxicolum Sleum.

4.a. Leaves (apparently not dimorphic) ± chartaceous, ± narrowly oblong-lanceolate to oblanceolate, ± densely strigose above, 2.5—6 by (0.4—)0.8—1.6 (sometimes up to 2.5) cm. Corolla apparently not spotted. *Laos, Annam*
4. R. annamense Rehd.

b. Leaves dimorphic: spring leaves chartaceous, elliptic or ovate- to oblong-elliptic, 1.8—5 by 0.8—1.8 cm, ± sparingly strigose above; summer leaves obovate to oblanceolate, more coriaceous. Corolla with scattered darker red spots at the base of the 3 upper lobes. *S. China, S. Tonkin, N. Laos, N.E. Siam*
5. R. simsii Planch.

1. R. mucronatum (Bl.) G. Don, Gen. Syst. 3, 1834, 846; Rehd., in Spec. Rhodod., 1930, 92. — *Azalea mucronata* Bl., Bijdr., 1826, 853.

INDOCHINA. Annam, Dalat, 1500 m: *Poilane 31083*, apparently cult.

2. R. microphyton Franch., Bull. Soc. Bot. Fr. 33, 1886, 235; Hemsl., J. Linn. Soc. 26, 1889, 28; Hemsl. et Wils., Kew Bull. 1910, 120; Diels, Not. R. Bot. Gard. Edinb. 7, 1913, 309, 392; Millais, Rhodod., 1917, 210; Rehd. et Wils., Monogr. Azaleas, 1921, 57; Rehd., in Spec. Rhodod., 1930, 91, fig.; Hutch. in Craib, Fl. Siam. En. 2 (4), 1938, 317.

SIAM. Payap, Chiengmai, Doi Lang Ka, c. 1570 m: *Garrett 837; Put 3325.*

3. R. saxicolum Sleum., nov. sp. — *R. simsii* (non Planch.) Dop et Trochain, Bull. Mus. Nat. Hist. Natur. sér. II, 4, 1932, 719, *pr. p.* —

Frutex 3—6 m altus. Ramuli recentissimi tantum foliati, dense pilis applanatis setosis rubro-brunneis obtecti, vetustiores omnino glabrati et griseo-corticati. Folia, ut videtur, subpersistentia, (monomorpha? — veranea tantum visa) ovata vel subovato-oblonga, interdum late oblonga, subinaequilateralia, apice breviter acuminata glandulaque minuta instructa, basi ± late cuneata rarius subrotundata, subcoriacea, maturitate firma, supra in sicco saturate brunnea vel subatrescentia, subtus (ex coll. etiam in vivo) dilutiora, in sicco brunnea vel rufescentia, utrinque opaca, supra maturitate costa subsetulosa excepta glabra, subtus in facie initio passim pilis substrigosis appressis 1—1,5 mm longis gracilibus adspersa, demum basibus pilorum caducorum relictis laxe punctulata, subtus ad costam nervosque laterales dense appresse rufo-subsetuloso-pilosa, integra, (3—)4—7(—8) cm longa, (1,5—)2—3(—3,5) cm lata, costa supra angustissima, vix immersa, subtus inferne crassa valdeque prominente, sursum gradatim angustiore, nervis lateralibus utroque latere (5—)6—8 irregularibus, sat approximatis, curvatis, marginem versus obsolete anastomosantibus, supra in foliis plane maturis cum rete venarum laxo bene impressis, subtus prominentibus, venis subtus parum visibilibus; petioli 4—7 mm longi, ± 1 mm crassi, dense appresse strigoso-pilosi. Inflorescentiae subumbellatae 3—4-florae. Perulae exteriores ovatae, obtusae, interiores late ovato-oblongae, omnes praeter marginem parum, ceterum haud viscidulae, dorso superne brevissime sericeae denseque rufo-substrigoso-pilosae, intus apice sericeae, ceterum glabrae, ciliatae, usque ad 10 mm longae et 5 mm latae. Pedicelli crassiusculi, dense rufo-substrigoso-pilosi, 5—7 mm longi, post anthesin vix accrescentes. Calyx parvus, breviter 5-lobus, dense pilis erectis substrigosis rufis 2—3 mm longis praeditus. Corolla breviter infundibuliformis, alba, roseo-suffusa, subfragrans, utrinque glabra, tota in sicco 1,7—2,1 cm longa, ± usque ad medium 5-loba, tubo basi 3—4 diam., sursum usque ad 5—7 mm diam. dilatato, lobis oblongo-obovatis 5—7 mm latis. Stamina 5, ± exserta; filamenta filiformia, glabra vel inferne pilis paucis brevibus vel brevissimis adspersa, ± 2 cm longa; antherae oblongae, ± 2 mm longae, c. 1 mm latae. Ovarium ovoideum, c. 4 mm longum, 2,5 mm diam., dense pilis rufis longis substrigosis subappressis indutum; stylus sat gracilis, c. 1,5 cm longus, supra basin per 3—5 mm dense substrigoso-pilosus, superne omnino glaber, stigmate breviter obconico obtuso vel vix lobato. Capsula (*Poilane 17076*) ovoidea, 7—9 mm longa, 5—6 mm diam., styli parte basali permanente coronata, omnino dense rufo-strigoso-pilosa, valvis 5 aperta.

INDOCHINA. Tonkin, prov. Lao-Kay, Phan-Si-Pan, 2500 m: *Poilane 17076*, forêt fr. Jan.; Col de Lo-Qui-Ho, environs de Cha-Pa, 1800 m: *Poilane 25419* (L; P, type), fl. Mars, vieille forêt; *Pételot 3826*; Cha-Pa: *Pételot 6340*. Annam, prov. Quang-nam, Col des Nuages près de Tourane, 400—500 m: *Poilane 7932*, forêt, sol rocheux, fl. Sept.

R. saxicolum is most related to *R. seniavinii* Maxim., but differs from it mainly by the leaves, which are much less strigose underneath, and the quite glabrous, apparently not purple-spotted corollas.

4. R. annamense Rehd., J. Arn. Arb. 10, 1929, 182; in Spec. Rhodod., 1930, 79. — *R. simsii* Planch. ap. Dop, in Fl. Gén. I.-C. 3, 1930, 737, *pr. p.*

INDOCHINA. Laos, prov. Cam-Mon, environs de Napé: *Delacourt s.n.* Annam, prov. Quang-tri, rivière de Quang-tri: *Cadière 1*; vallée de la haute rivière de Cu-bi:

Eberhardt 2060; loco haud indicato: *Henry d'Orléans*. Prov. Thua-Thien, Hué: *Squires 94* (A, type, not seen; BM, E, K, P), sandy river banks at sea level, not common, fl. bright scarlet; Nui Bach Ma, près de Hué, 1200—1400 m: *Poilane 29777* (leaves 6—10 mm wide), forêt, fl. rouges; ibid., Grande Cascade: *Poilane 29733* (leaves 7—14 mm wide), fl. andrinople clair, *29744* (leaves 11—25 mm wide, possibly a shadow form), arbuste sur rocher du torrent; Lang Ngoi: *Eberhardt 2799*, fl. rouge violacée. Prov. Kontum, entre Tu-Juh et Tou-Morong: *Poilane 32197* (leaves 7—20 mm wide), fl. andrinople clair.

R. annamense certainly is very near to *R. simsii* and possibly only a variety of that well known species, which is widely distributed in the more southern part of China and Northern Indochina and Siam. I have still kept apart *R. annamense*, mainly because of its apparently non-dimorphic leaves, which constantly have a rather narrow oblong-lanceolate or oblanceolate form, notwithstanding the fact, that the material indicated above shows a great variation in the width of the leaves. The type collection is an extremely narrow-leafed form (4—16 mm wide), possibly due to its sandy and presumably poor and dry locality at sea level, whilst the specimens from localities in the mountains near Hué at ± 1000 m alt. have wider leaves (up to 25 mm). One specimen, collected between 1200 and 1400 m, again has the narrow leaves that correspond to the plants of the type locality. I could not find any real difference in the flowers of *R. simsii* and *R. annamense*. The latter is the southernmost species of the Azalea group on the Asiatic continent, and its area seems to form a kind of southern belt to that of *R. simsii*, as far as this can be seen from the still scanty material.

5. **R. simsii** Planch., Fl. Serres 9, 1853/54, 78; Rehd., in Spec. Rhodod., 1930, 105; Dop. in Fl. Gén. I.-C. 3, 1930, 737 pr. p.; Dop et Trochain, Bull. Mus. Nat. Hist. Natur. sér. II, 4, 1932, 719 pr. p.; Hutch. in Craib, Fl. Siam. En. 2 (4), 1938, 318.

INDOCHINA. S. Tonkin, locality not given: *Bon 264, 439*. Laos, prov. Tran-Ninh, Muong Ngan: *Pételot 4218*.

SIAM. Udawn, Loi, Pu Tong, c. 1000 m: *Kerr 8837*. Loi, Kao Krading, 1045—1200 m: *Kerr 20091*; *Lakshnakara 1389*; *Thanom 18*.

Subgen. **Hymenanthes** (Bl.) Endl., Gen. 1839, 759.

Sect. HYMENANTHES (Bl.) DC., Prodr. 7, 1839, 721.

Subsect. Arborea Sleum., Bot. Jahrb. 74, 1949, 545.

Key to the species of the subsection Arborea

1.a. Leaves oblong-lanceolate to oblong-oblanceolate, 7—15 by 2—3 cm. *Yunnan, N. Annam, N. Siam* . . . . . **1. R. delavayi** Franch.

b. Leaves very narrow, lanceolate, 7—15 by 1—2 cm. *Yunnan, N. Tonkin* **2. R. aff. peramoenum** Balf. f. et Forr.

1. **R. delavayi** Franch., Bull. Soc. Bot. Fr. 33, 1886, 231; Bot. Mag., 1907, t. 8137; Tagg, in Spec. Rhodod., 1930, 17. — *R. arboreum* (non Sm.) Hutch. in Craib, Fl. Siam. En. 2 (4), 1938, 317.

SIAM. Payap, Doi Angka (Intanon), 2100—2400 m: *Kerr 5320*; *Winit 1340*; *Coolidge & Carpenter 104*; ibid., Pa Ngem: *Garrett 346*; *Kerr 5320 A*.

INDOCHINA. Annam, prov. Vinh (Nghe-An), Pu Lei Leng (c. 19°11′—104°8′), top, c. 2710 m: *Smiles s.n.* (K).

2. **R. aff. peramoenum** Balf. f. et Forr., Not. R. Bot. Gard. Edinb. 13, 1920, 56; Tagg, in Spec. Rhodod., 1930, 19.

INDOCHINA. Tonkin, prov. Lao-Kay, Phan-Si-Pan, c. 2500 m: *Poilane 17069*, fr. Nov.

Subsect. Fortunea Sleum., Bot. Jahrb. 74, 1949, 546.

1. R. serotinum Hutch., Bot. Mag., 1920, t. 8841. — *Rh. decorum* (non Franch.) Hutch. in Kerr, J. Siam Soc. Nat. Hist. Suppl. 9 (2), 1933, 222, in text.

INDOCHINA. Laos, prov. Tran- Ninh, Pu Bia, common in evengreen forests, 2300—2700 m: *Kerr 21019*, tree 20 m, corolla white, fl. April.

This is the first wild specimen known of the species, the type specimen of which has been raised at Paris and Kew Gardens from seeds, collected by Delavay in a place "South of Mengtze". Kerr states, that the corolla is up to 15.5 cm in diam. at the limb. The dried material shows corollas 7—8.5 cm in length and c. 8 cm in diam. at thelimb.

Subsect. Irrorata Sleum., Bot. Jahrb. 74, 1949, 548.

To demonstrate the position of the species of the subsect. *Irrorata* in Indochina, Siam and Malaysia, in relation to the others, known from Tibet, Bhutan, Burma and China, I give here a revised key of all species belonging to this subsection.

Key to all species of the subsect. Irrorata

1.a. Ovary grandular (i. e. beset with stalked glands), or glandular and hairy (pilose, floccose, setulose), the glands sometimes ± hidden by the hairs 2
b. Ovary not glandular, i. e. glabrous or hairy 22
2.a. Style laxly to densely glandular to the top, or at least for some length from the base (furthermore whether or not hairy) 3
b. Style eglandular or practically so, i. e. sometimes very sparingly sprinkled with glands, or with a few glands on its basal part only), otherwise whether or not hairy 15
3.a. Leaves clad with a thin film-like or somewhat scurfy indumentum underneath still at maturity. *W. Yunnan* . . . . **R. agastum** Balf. f. et W. W. Sm.
b. Leaves glabrous (epilose) underneath at maturity 4
4.a. Ovary predominantly densely hairy (or setulose), the hairs ± conceiling the shortly stalked, ± sparse glands 5
b. Ovary predominantly and distinctly glandular, furthermore whether or not clothed with (rather straight or strigose) hairs 7
5.a. Corolla c. 2.5 cm long. Filaments glabrous. Style (besides the glands) not hairy. (Pedicels densely and exclusively clad with thickish straight (rather strigose) hairs of the same type which covers the ovary.) *Annam*
1. R. kontumense Sleum.
b. Corolla c. 4 cm long. Filaments densely pubescent at the base. Style (besides the glands) ± hairy at least at the base 6
6.a. Pedicels clad with stalked glands and fewer floccose hairs of the same type which forms the tomentum of the ovary. *S. E. Yunnan, Kweichow*
R. pogonostylum Balf. f. et W. W. Sm.
b. Pedicels ± densely floccose (or glabrescent), eglandular. *W. Yunnan*
R. dimitrum Balf. f. et Forr.
7.a. Ovary densely glandular, moreover beset with straight hairs, the latter mostly, sometimes sparsely so, in the lower half of the ovary only 8
b. Ovary densely glandular only, no hairs present 11
8.a. Pedicels densely clad with glandular bristle-like hairs. *S. E. Yunnan*
R. mengtszense Balf. f. et W. W. Sm.
b. Pedicels ± densely clad with shortly stalked glands, moreover whether or not with fine, non-glandular (sometimes floccose) hairs 9
9.a. Rhachis glabrous or very slightly glandular, (2—)2.5—3.5 cm long at the

anthesis. Corolla open-campanulate. Capsule c. 20 by 8 mm. *N. W. Yunnan*
R. hardingii Forr.

b. Rhachis ± densely clad with shortly stalked glands, furthermore not rarely hairy (especially at or below the insertion of the pedicel), 0.5—1.5 cm long at the anthesis. Corolla narrower, more funnel-campanulate. Capsule 10—15 (—18) by 7 mm 10

10.a. Ultimate internode of each branchlet glabrous. Racemes 3—6-flowered. Calyx lobes short, obtuse, 0.5—1 mm. *S.W. Szechuan, E. Yunnan, Annam*
2. R. ningyuenense Hand.-Mazz.

b. Ultimate internode of each branchlet ± persistently and patently stipitate-glandular. Racemes 6—10(—12)-flowered. Calyx lobes distinct, 1.5—2.5 mm. *N. Sumatra* . . . . . **R. atjehense** Sleum. *)

11.a. Corolla open-campanulate (cupular) or nearly patelliform 12

b. Corolla tubular-campanulate, (± 4 cm long). (Filaments ± densely and shortly (papillose-)pubescent below). *W. Yunnan* . . . . . **R. irroratum** Franch.

12.a. Corolla widely open, nearly patelliform, (2—3 cm long). Filaments minutely puberulous at the base. Leaves markedly recurved, of a brittle texture in dry specimens. *E. Yunnan* . . . . . **R. abercornwayi** Cowan

b. Corolla open-campanulate (cupular). Filaments glabrous or nearly so. Leaves not or only slightly recurved, not brittle in dry specimens 13

13.a. Inflorescence (6—)10—12-flowered 14

b. Inflorescence 2—3-flowered. (Corolla 3—3.5 cm long). *Kwangsi*
R. brevinerve Chun et Fang

14.a. Corolla c. 2.5 cm long. *W. Yunnan, Kweichow* . . . . . **R. annae** Franch.

b. Corolla c. 4 cm long. *W. Yunnan* . . . . **R. laxiflorum** Balf. f. et Forr.

15.a. Style hairy to above the middle. *W. Yunnan* **R. dimitrum** Balf. f. et Forr.

b. Style completely glabrous 16

16.a. Ovary densely clad with glands and fewer (± strigose or floccose) hairs, i. e. the glands predominant and the ovary ± viscid 17

b. Ovary glandular and tomentose, i. e. the hairs ± covering the glands . . . 19

17.a. Leaves wax-coated above, i. e. becoming lustrous when heated, (the undersurface clad with a thin loose whitish or fawn ± persistent tomentum). Rhachis c. 1 cm long. Corolla campanulate, c. 4 cm long. *Yunnan*
R. leptopeplum Balf. f. et Forr.

b. Leaves not wax-coated above, unaltered when heated. Rhachis 2—3 cm long. Corolla tubular-campanulate, 5—5.5 cm long 18

18.a. Filaments glabrous. Pedicels sparsely glandular and floccose. Leaves very thinly veiled underneath with a detersile indumentum. **Bhutan**
R. epapillatum Balf. f. et Cooper

b. Filaments pubescent at the base. Pedicels densely glandular. Leaves clad underneath with a ± persistent, thin, film-like or somewhat scurfy tomentum. *W. Yunnan.* A form with the style glandular at its base of
R. agastum Balf. f. et W. W. Sm.

19.a. Leaves clad underneath with a thin whitish or fawn indumentum of interlaced cobweb-like hairs, which persists for a long time 20

b. Leaves clad initially with a detersile, very thin, veil-like indumentum, ± glabrescent in later stages. (Corolla white or pale cream) 21

20.a. Corolla rose- or deep-crimson. Leaves at first floccose and glandular. *Yunnan*
R. pennivenium Balf. f. et Forr.

b. Corolla white, sometimes flushed with pink outside. Leaves at first floccose, not glandular. *Malay Peninsula* . . . . . **R. wrayi** King et Gamble

21.a. Filaments glabrous. Pedicels ± densely glandular, slightly or not floccose. *Annam*
3. R. excelsum Cheval.

b. Filaments pubescent below. Pedicels glandular and floccose. *Bhutan*
R. papillatum Balf. f. et Cooper

22.a. Ovary laxly to densely hairy (or substrigose) 23

b. Ovary completely glabrous. (Style glabrous) 31

*) To be published in my revision of the genus in Malaysia.

23.a. Calyx-lobes 8—10 mm long. (Style floccose to above the middle, or rarely glabrous). *W. Yunnan* . . . . . **R. dimitrum** Balf. f. et Forr.
b. Calyx lobes up to 3 mm long. (Style glabrous) 24
24.a. Leaves wax-coated above, i. e. becoming lustrous when heated. Pedicels rather densely short-glandular, not hairy. Corolla c. 2.5 cm long. *Sumatra* **R. korthalsii** Miq.
b. Leaves not wax-coated above, unaltered when heated 25
25.a. Rhachis elongate, 2—3 cm long. (Filaments glabrous) 26
b. Rhachis short, 1—1.8 cm long. (Capsule, as far as known, 4—5 mm diam.) . 27
26.a. Rhachis densely floccose- or substrigose-tomentose. Capsule narrow-oblong, 3 by 0.3 cm. *Bhutan* . . . . . **R. kendrickii** Nutt.
b. Rhachis glabrous. Capsule 1.5—2 by 0.5 cm. *S.E. Tibet* **R. ramsdenianum** Cowan.
27.a. Filaments glabrous 28
b. Filaments pubescent below 29
28.a. Leaves manifestly punctulate underneath by the bases of caducous glands. *S.E. Yunnan* . . . . . **R. spanotrichum** Balf. f. et W. W. Sm.
b. Leaves not punctate underneath. *S. Tibet* . . **R. pankimense** Cowan et Ward
29.a. Ovary tomentose. (Pedicels sparingly floccose and glandular, or almost glabrous. — Pedicels ± densely set with stalked glands: cf. *R. pogonostylum*). *N.E. Upper Burma* . . . . . **R. ombrochares** Balf. f. et Ward
b. Ovary ± sparingly hairy 30
30.a. Ovary sparingly brownish-floccose. Rhachis glaucous, glabrous. *W. Yunnan* **R. cerochitum** Balf. f. et Forr.
b. Ovary clad with short, white, appressed, simple hairs. Rhachis ± clothed with floccose hairs. *W. Yunnan* . . . . **R. araiophyllum** Balf. f. et W. W. Sm.
31.a. Leaves wax-coated above, i. e. becoming glossy when warmed. *S.E. Tibet, S.W. Szechuan, N.W. Yunnan* . . . . . **R. lukiangense** Franch.
b. Leaves not wax-coated, unaltered when warmed 32
32.a. Flowers 6—7-merous 33
b. Flowers 5-merous 34
33.a. Leaves oblong, apex blunt to rounded. *Yunnan* **R. eritimum** Balf. f. et W. W. Sm.
b. Leaves lanceolate to oblanceolate, apex acute, pointed *N.W. Yunnan* **R. anthosphaerum** Diels
34.a. Calyx lobes large, 3—4 mm long, resp. wide at the base, ± as long as the ovary. *Bhutan* . . . . . **R. shepherdii** Nutt.
b. Calyx lobes small, up to 2 mm long, much shorter than the ovary . . . 35
35.a. Corolla white or white suffused with rose outside. *W. Yunnan.* A glabrous form with a glabrous ovary of . . . **R. araiophyllum** Balf. f. et W. W. Sm.
b. Corolla red to dark red or crimson 36
36.a. Rhachis 2—3 cm long, glabrous. *S.E. Tibet* . . . **R. ramsdenianum** Cowan
b. Rhachis 1—2 cm long, thinly pubescent. *E. Upper Burma, W. Yunnan, N. Tonkin* **4. R. tanastylum** Balf. f. et Ward

1. R. kontumense Sleum., nov. sp. — Frutex 3—4 m altus, ramulis validis teretibus pallide corticatis, etiam ad internodia ultima (1—1,5 cm longa) glabris. Folia in pseudoverticillis 5—7-meris ad nodos ultimos et penultimos disposita, lanceolato-oblonga vel oblonga, apice breviter acuminata, subacuta, subapiculata, basi in petiolum attenuata, tenuiter coriacea, firmula, in sicco sordide brunnea, subtus dilutiora, utrinque ± opaca, novella (in turionibus) dense rufescenti-floccosa, adulta omnino glabra, supra minutissime ceracea, subtus laxe punctis glanduliferis rubro-nigrescentibus adspersa, margine cartilagineo undulata, integra, 7—9 cm longa, (2—)2,3—2,8 cm lata, costa supra immersa, subtus inferne valde, laminae apicem versus gradatim minus distincte prominente, nervis lateralibus utroque latere 14—16 inferne subrectis, superne leviter curvatis, inter sese subparallelis, haud anastomosantibus, supra minutissime impressis, subtus distincte elevatis, reticulatione densa supra subobscura, subtus sat mani-

festa; petioli rugosuli, validi, glabri, supra canaliculati, 1,2—1,6 cm longi. Perulae gemmarum foliigerarum exteriores subglabrae, interiores dorso rufo-floccoso-tomentellae. Racemi subumbellati, 6—8-flori. Perulae gemmarum florigerarum interiores tantum visae, obovato-spathulatae, dorso pallide flavescenti-tomentosae vel -lanatae, ultro apicem versus ± dense pilis rufescentibus crassioribus indutae, c. 2 cm longae, 5—7 mm latae. Rhachis 0,5—1 cm longa, sat dense minute glandulifera, ceterum laxe vel subdense rufescenti-substrigoso-pilosa, ad insertionem pedicellorum pilis pallidioribus quasi barbata. Bracteolae lineares, laxe pilosae, c. 6 mm longae. Pedicelli crassi (c. 1 mm diam.), sat dense brevissime stipitato-glandulosi et dense longe rufo-substrigoso-pilosi, sub anthesi 3—4 mm tantum longi. Calyx profunde 5-lobus, dorso dense substrigoso-pilosus parceque glandulosus, lobis deltoideus obtusis c. 1,5 mm longis. Corolla late infundibuliformi-campanulata, ± 2,5 cm longa, utrinque glabra, carnosula, in vivo roseo-violacea, lobis erecto-patentibus suborbicularibus 7—8 mm diam. Stamina 10, inaequilonga, corollae tubum subaequantia; filamenta linearia (0,5 mm), glabra; antherae obovatae, 2 mm longae. Discus breviter pubescens. Ovarium conicum, sat gradatim in stylum abiens, c. 4 mm longum, 2,5 mm crassum, dense rufo-strigoso-pilosum et breviter stipitato-glandulosum. Stylus subgracilis, subdense usque ad apicem glandulosus, ultro in tertio inferiore laxe pilis longis substrigosis ornatus, c. dimidium corollae loborum aequans; stigma capitatum. Capsula adhuc ignota.

INDOCHINA. Annam, N. prov. du Kontum, sommet du Ngoc Pang, crête, 2187 m: *E. Poilane 32176* (L; P, type), *32179* (L, P), fl. violet rose or violet mauve, 8-III-41.

2. R. ningyuenense Hand.-Mazz., Anz. Akad. Wiss. Wien 57, 1920, 288; Tagg, in Spec. Rhodod., 1930, 353; Hand.-Mazz., Symb. Sin. 7, 1936, 779. — *R. langbianense* Chev. ex Dop, in Fl. Gén. I.-C. 3, 1930, 745.

CHINA. S.W. Szechuan, Huili, Mt Lungdschu-shan, 2700 m: *Handel-Mazzetti 900*; Ningyüen, Mt Lose-shan, above the village of Luschne, 2900—3300 m: *Handel-Mazzetti 1445* (WU, type of *R. ningyuenense)*; Yenyüen-Yalung, Sandao-shan, 27°31', 3150—3350 m: *Handel-Mazzetti 2211*. E. Yunnan, Lo-Shin Mts: *McLaren U 71*.

INDOCHINA. Annam, prov. Kontum, Nui Dai Ding près de Dak Gley, 1300 m: *Poilane 32824*. Prov. Darlac, massif de Chu Yang sinh, 2000—2400 m: *Poilane 32547, 32549, 32560, 32568, 32579*; massif du Langbian, sommet du Pic Grand Piton, 2500 m, près du village de Beneur, 2500 m: *Chevalier 30896, 30896 bis* (P, type of *R. langbian.*). Prov. Djiring (Haut-Donai), près du Langbiang, 2160 m: *Poilane 30655*; massif du Bi Doup, 2200—2287 m: *Poilane 30767, 30868*.

3. R. excelsum Chev., Rev. Bot. Appl. et d'Agric. Trop. 9, 1929, 255; Dop, in Fl. Gén. I.-C. 3, 1930, 744.

INDOCHINA. Annam, prov. Nhatrang, massif de Hon-ba, 1500 m: *Chevalier 38707* (P, type of *R. excels.)*, fr.; N de Ninh-Hoa, 1600 m: *Poilane 6535*. Prov. Quang Nam, Ba Na, près de Tourane, 900 m: *Poilane 29109*, fl. blanch.

4. R. tanastylum Balf. f. et Ward, Trans. Bot. Soc. Edinb. 27, 1917, 217; Tagg, in Spec. Rhodod., 1930, 360. — *R. petelotii* Dop, in Fl. Gén. I.-C. 3, 1930, 733; Dop et Trochain, Bull. Mus. Nat. Hist. Nat. II, 4, 1932, 719.

INDOCHINA. N. Tonkin, prov. Lao-Kay, route de Lo-Qui-Ho, près de Cha-pa, 1900 m: *Pételot 5135* (P, type of *R. petelotii)*; Col de Lo-Qui-Ho, 2000 m: *Poilane 25417*; Cha-pa, 1400—1500 m: *Chevalier 29390;* massif de Fan-Si-Pan, 1800—2500 m: *Pételot 4208*; *Poilane 17067*; entre Trinh Thuong et Muong Hum, 2100 m: *Poilane 18818*.

Subsect. Lactea Sleum., Bot. Jahrb. 74, 1949, 549.

1. **R. nhatrangense** Dop, in Fl. Gén. I. - C. 3, 1930, 743.

INDOCHINA. Annam, prov. Nhatrang: *Poilane 3556, 3679* (P, lectotype), fr.

The species, known only in fruit, presumably belongs to the subsect. *Lactea,* to judge from the fine brown stellate indumentum on the undersurface of the leaves and on the capsule. It comes near *R. beesianum* Diels in leaf-characters, but has a much smaller fruit. Another species to compare is *R. dictyotum* Balf.f., which has equally small, but practically glabrous capsules. The locality is far outside the area of the subsection, which has representatives from Eastern Himalaya, S. and S.E. Tibet to Szechuan and Yunnan, with extensions to Kansu, Upper Burma and Bhutan.

Subgen. **Azaleastrum** Planch., Fl. Serres 9, 1853/54, 75.

Sect. AZALEASTRUM (Planch.) Maxim., Mém. Ac. Sc. St. Pétersbourg sér. 7, vol. 16 n. 9, 1870, 45.

1. **R. vialii** Delav. et Franch. in Morot, Journ. de Bot. 9, 1895, 398.

INDOCHINA. Laos/N. Annam border, top of Pu Lei Leng: *Smiles s.n.* (K). Further distribution: S. Yunnan.

Sect. CHONIASTRUM Franch., Bull. Soc. Bot. Fr. 33, 1886, 229.

This section, widely spread from Burma to S. China and Formosa, Indochina and Siam, has its southernmost representatives in the Malay Peninsula. In Hutchinson's treatment of the section (Series *Stamineum* in Spec. Rhodod., 1930, 610—627) the species are differentiated in the first place by indument characters, secondly by the number of flowers per inflorescence, whether the stamens are exserted or not, the form and size of calyx, corolla and leaves. In the course of my revision of the section, based on a reinvestigation of the type resp. isotype specimens of all hitherto described species and a lot of more recently collected, not yet classified material both from China and Indochina, I have become obliged to reduce the number of species, as stated by Hutchinson, considerably.

Characteristics such as the number of flowers per inflorescence, the leaf-shape, venation (nerves obscure or distinct, resp. prominent or impressed, depending, apparently, on the grade of maturity a leaf has reached, or merely of the way of drying by the collector), the ovary whether or not abrupt with the style, the form of the corolla ("narrowly", "rather narrowly" or "widely" funnel-shaped, "tubular"-funnelshaped, "narrowly" tubular), the colour of the corolla (all transitions from pure white to rose-violet) and the size of the calyx lobes, are difficult to use or are obviously not constant enough, to serve for a clear differentiation of species in this section.

In the use of the indument characters I have followed Hutchinson, but I am afraid that the pubescence of the ovary and pedicels (simple hairs, forming a lax to dense, ± appressed pubescence) finally will prove to be insufficient to characterize a species. I will give here only two examples:

1. *Tsang 22257* ("*stenaulum*") from Kwangsi with a densely pubescent ovary and glabrous pedicel, thus *R. klossii* according to the key, occurs,

practically in the same locality, together with *Tsang 22662*, which has a glabrous ovary (young fruit) and a glabrous pedicel and apparently is *R. moulmainense*. These two species are also known from the rather small Elephant Range in Cambodia.

2. There are two species in the section with ± pronouncedly exserted stamens, *R. stamineum* with glabrous ovary and pedicels, and *R. cavaleriei* with ± densely pubescent ovary and pedicels, no other real differences being known to distinguish them. Both occur together in the same place Pin-fa (now Ping-pa or An-ping) in Kweichow (*Cavalerie & Fortunat 2375* = *R. stamineum*, *Cavalerie 982* and *1106* = *R. cavaleriei*).

The fact, that the area of *R. moulmainense* includes that of *R. klossii*, and the area of *R. stamineum* that of *R. cavaleriei*, seems to suggest that specimens with a certain pubescence may be better valued as mere varieties of glabrous, but otherwise identical species, than as proper species.

The two opposite items "stamens exserted" and "stamens included" also may loose their sharpness in the future, when more material can be investigated. Exserted stamens combined with a relatively small corolla are the only details to distinguish *R. stamineum* from *R. moulmainense*. It must further be said, that the leaves of *R. moulmainense*, *R. stamineum*, *R. esquirolii*, *R. leiopodum*, *R. latoucheae*, *R. mackenzianum*, *R. klosii* and *R. cavaleriei* are practically of the same type. These species seem to occur together in Yunnan and Hainan.

I am giving here a preliminary key to all species of the section, including, what are, in my opinion, synonyms.

Key to all species of the sect. Choniastrum

1.a. Leaves completely glabrous on the undersurface 2
b. Leaves bristly on both surfaces or at least laxly so on the midrib underneath 13
2.a. Ovary entirely glabrous 3
b. Ovary laxly to densely pilose or setulose 11
3.a. Pedicels glabrous 4
b. Pedicels densely glandular-pilose 10
4.a. Stamens widely exserted. (Corolla ± 2.5 cm long). *Szechuan, Yunnan, Hupeh, Hunan, Kweichow, Kwangsi* . . . . . **R. stamineum** Franch. (*R. pittosporifolium Hemsl.; R. aucubifolium Hemsl.*, as to flowers)
b. Stamens included 5
5.a. Flower- and leaf-bud scales ciliate, i. e. densely and exclusively fringed with (short or longer) white hairs (no glands!), glabrous or sericeous dorsally . . 6
b. Leaf bud scales ciliate as sub 5.a., but flower bud scales, besides being ciliate, set with numerous shortly stalked or ± sessile thickish glands along the whole, or at least a part, of the margin 9
6.a. Flowers 1—2 per inflorescence, i. e. from each scaly (bracteate) peduncle . . 7
b. Flowers 3—5 per inflorescence. *Yunnan, Hunan, Kwangsi, Kwangtung, Hongkong, Indochina, Siam, Malay Peninsula (Kedah Peak)* . . **1. R. moulmainense** Hook. (*R. westlandii* Hemsl., *R. oxyphyllum* Franch., *R. siamense* Diels, *R. leucobotrys* Ridl., *R. stenaulum* Balf. f. et Forr., *?R. nematocalyx* Balf. f. et W. W. Sm.).
7.a. Corolla ± 2.5 cm long. *Kweichow* . . . **R. esquirolii** Lévl. (*R. vaniotii Lévl.*)
b. Corolla 4—6 cm long 8
8.a. Corolla c. 4 cm long. *Hupeh, Hunan, Kwangtung* **R. wilsonae** Hemsl. et Wils.
b. Corolla c. 6 cm long. Formosa . . . . . **R. leiopodum** Hayata (*R. leptosanthum* Hayata, *R. leptanthum* Hayata, *R. tanakai* Hayata).
9.a. Flower bud scales glabrous dorsally. *Fokien, Kweichow, Kwangtung* **R. latoucheae** Franch.

b. Flower bud scales subdensely sericeous dorsally. *Yunnan, Kwangsi* **R. mackenzianum** Forrest

10.a. Leaves elliptic-obovate, 10—15 by 3—3.5 cm. *Kwangtung* **R. henryi** Hance (*R. dunnii* Wils., *R. ciliato-pedicellatum* Hayata).

b. Leaves oblong-oblanceolate, 5—10 by 2.5—3.5 cm. *Siam* **2. R. taiense** Hutch.

11.a. Inflorescences 1(—2)-flowered. Corolla 6.5—7.5 cm long. *S. Yunnan* **R. hancockii** Hemsl.

b. Inflorescences 2- to several-flowered. Corolla up to 4 cm long 12

12.a. Pedicels glabrous or practically so. Stamens ± included. *Laos, Cambodge, Kwangsi, Hainan, Malay Peninsula (Cameron Highlands, Frazer Hill vicinity)* **R. klossii** Ridl. (*R. laoticum* Dop)

b. Pedicels ± densely hairy. Stamens ± exserted. *N. Tonkin, Kweichow, Kwangsi* **4. R. cavaleriei** Lévl. (*?R. albicaule* Lévl.)

13.a. Ovary glabrous. Leaves with bristles along the midrib underneath. *Kweichow* **R. feddei** Lévl. (*R. cavaleriei* Lévl. var. *chaffanjoni* Lévl.)*).

b. Ovary clad with hairs or bristles. Leaves more densely bristly underneath.

14.a. Inflorescence several-flowered. Ovary very densely bristly. *Hongkong, Kwangtung, Hunan, Kiangsi* . . . . . **R. championae** Hook.

b. Inflorescence 1-flowered. Ovary covered with short appressed hairs. *S. Yunnan* **R. tutcherae** Hemsl. et Wils.

1. R. moulmainense Hook., Bot. Mag. 1856, t. 4904; Kurz, J. As. Soc. Beng. 46, ii, 1877, 216; Fl. Br. Burma 2, 1877, 94; Clarke in Hook.f., Fl. Br. Ind. 3, 1882, 463; Brandis, Ind. Tr., 1906, 412; Craib, Kew Bull. 1911, 405; Ridl., Fl. Mal. Pen. 2, 1923, 218; Dop, in Fl. Gén. I.-C. 3, 1930, 734; Hutch., in Spec. Rhodod., 1930, 620, excl. syn. *R. klosii* Ridl.; Hutch. in Craib, Fl. Siam. En. 2 (4), 1938, 318. — *R. westlandii* Hemsl., J. Linn. Soc. Bot. 26, 1889, 31; Hutch., in Spec. Rhodod., 1930, 626; Herklots, Rhodod. Year Book, 1949, 185, f. 58. — *R. oxyphyllum* Franch., J. de Bot. 12, 1898, 264; Hemsl. et Wils., Kew Bull. 1910, 116; Craib, Kew Bull. 1911, 405; Aberdeen Univ. Stud. 57, 1912, 121; Gard. Chron. 70, 1921, 74, f. 30 on p. 75; Dop, in Fl. Gén. I.-C. 3, 1930, 734; Hutch., in Spec. Rhodod., 1930, 621; in Craib, Fl. Siam. En. 2 (4), 1938, 318. — *R. siamense* Diels in Fedde, Rep. 4, 1907, 289; Hosseus, Bot. Centralbl. Beih. 27 (2), 1910, 506, l. c. 28 (2), 1911, 423. — *R. leucobotrys* Ridl., J. Fed. Mal. St. Mus. 4, 1909, 43; l. c. 7, 1916, 26; Fl. Mal. Pen. 2, 1923, 218; Hutch., in Spec. Rhodod., 1930, 619. — *R. stenaulum* Balf.f. et Forr., Not. R. Bot. Gard. Edinb. 10, 1917, 157; Hutch., in Spec. Rhodod., 1930, 624, excl. syn. *R. mackenzianum* Forr. — *R. nematocalyx* Balf.f. et W. W. Sm., Not. R. Bot. Gard. Edinb. 10, 1917, 124 (calyx anomalous).

INDOCHINA. Tonkin, prov. Caobang, massif du Pia-Houac, 1200—1400 m: *Poilane 19021, 19111, 19116.* Prov. Lai-Chau, entre Tsinh-Ho et Chinh-nua, 1200—1400 m: *Poilane 25692.* Prov. Lao-Kay, massif de Nin-Bien, près Cho-bo: *Poilane 13096.* Annam, prov. Kontum, Nui-Doi-Ding, près de Dak-Gley, 1200—1300 m: *Poilane 32850, 32852 bis*; sommet du Ngoc-Pang, 2000 m: *Poilane 32152.* Prov. Quang-Nam, Ba-Na, près de Tourane, 1400 m: *Poilane 28990*; au S de la prov. de Quang-Nam, 1500—1800 m: *Poilane 31811.* Cambodge, prov. Kampot, Montagne de l'Eléphant, 800 m: *Poilane 23167*, fl. blanches; Prov. Kompong-Chnang, Phnom Chom ou Chol, 1480 m, près du sommet: *Poilane 28769.*

SIAM. Payap, Chiengmai, Doi Angka, 1860—2030 m: *Garrett 501*; *Kerr 5299*; *Winit 1337*; Doi Sutep, 900—1500 m: *Kerr 539, 539a*; *Hosseus 507* (B, type of *R. siam.*,

*) Certainly not a synonym of *Rh. stamineum* Franch., as stated by Hutchinson in Spec. Rhodod., 1930, 623, *pr. sp.*

†; BM, E, L); Doi Lang Ka: *Put 3783*; Pang Tawn: *Put 3925*; Doi Pahom Pok, 1200 m: *Kerr 5174*. Maharat, Doi Pu Ka, Nan, 1700 m: *Kerr 4935*.

2. R. taiense Hutch., Kew Bull. 1938, 24; in Craib, Fl. Siam. En. 2 (4), 1938, 319.

SIAM. Nakawn Sritamarat, Kao Luang, c. 1400 m: *Kerr 15512* (BM; K, type).

3. R. klossii Ridl., J. Fed. Mal. St. Mus. 4, 1909, 43; Fl. Mal. Pen. 2, 1923, 218. — *R. laoticum* Dop, in Fl. Gén. I.-C. 3, 1930, 735.

INDOCHINA. Laos, prov. Cam-Mon, Napé (c. 18°): *Delacour s.n.* (P, type of *R. laot.*). Cambodge, prov. Kampot, au S de la montagne de l'Eléphant, 900—1000 m: *Chevalier 35891, 35893*; *Poilane 22966*.

4. R. cavaleriei Lévl., Bull. Soc. Agric. Sci. Sarthe 39, 1903, 48; Fl. Kouy-Tchéou, 1914, 152; Tagg, in Rhodod. Soc. Notes 3, 1928, 228; Hutch., in Spec. Rhodod., 1930, 612; Rehd., in J. Arn. Arb. 15, 1934, 276.

INDOCHINA. Tonkin, prov. Vinh Yen, massif de Tam Dao: *du Pasquier s.n.* (Herb. *Chevalier*, P).

Doubtful species

1. R. falconeri (non Hook. f.) Dop, in Fl. Gén. I.-C. 3, 1930, 735.

INDOCHINA. Tonkin, prov. Lao-Kay, massif de Lo-sui-tong, près Cha-pa, sommet, 2200 m: *Poilane 12677* (P), arbre de 2.5 m, fr. 29-7-26.

The description given by Dop is that of true *R. falconeri* Hook.f., compiled from various sources, but the specimen mentioned from Tonkin, although superficially similar in leaf shape and venation to *R. falconeri*, represents a quite different species, its tomentum being unistrate, the hairs of a dendroid type, occurring in several groups of the genus, and not of the peculiar cup shaped type, which constitutes the upper layer of the bistrate *R. falconeri*. The Tonkin specimen is in fruit only, and I have not been able to classify it or to decide whether it represents a still undescribed species.

Excluded species

1. **R. honbanianum** Chev. ex Dop, in Fl. Gén. I.-C. 3, 1930, 744 = **Enkyanthus quinqueflorus** Lour.
   R. honbanianum Chev. is based on *Chevalier 38765*, from Annam, prov. Khan-Hoa, route du Hon-ba, in the Paris Herbarium (Herb. *Chevalier*).
2. **R. loureirianum** G. Don, Gen. Syst. 3, 1834, 846 (*loureiriana*); Dop, in Fl. Gén. I.-C. 3, 1930, 746. — *Azalea punctata* Lour., Fl. Cochinch., 1790, 113; ed. Willd., 1793, 139 = **Ardisia loureiriana** (G. Don) Merr., Comm. Lour. Fl. Cochinch., 1935, 10, 299.