

FLORAE MALESIANA PRECURSORES XXIX
SUPPLEMENTARY NOTES TOWARDS THE KNOWLEDGE
OF THE GENUS RHODODENDRON L. IN MALAYSIA

by

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Since the beginning of the printing of the author's revision of 'The Genus Rhododendron in Malaysia' in July 1959 (published in Reinwardtia 5, 2 (March 1960) 45-231), recently collected herbarium material especially from Borneo and New Guinea has amounted to such an extent, that a supplement becomes necessary.

The numbers refer to those given in the author's above cited work.

3. *R. pulleanum* Koord.

var. *maiuscolum* Sleum.

NEW GUINEA. Central part, Star Mts, Mt Antares, 3300—3400 m, *Kalkman* 4500, 4536, fl. red to light red 23/26-7-1959, rather common in alpine shrub vegetation.

4. *R. nummatum* J. J. S.

NEW GUINEA. Central part, Star Mts, Mt Antares, 3000 m, *Kalkman* 4484, fl. 23-7-1959, in semialpine shrub vegetation. Eastern part, Morobe Distr., Kaindi (= Wau), 2060 m, *Brass* 29747, on open clayey ground of old gold workings.

5. *R. gaultheriifolium* J. J. S.

var. *gaultheriifolium*

NEW GUINEA. Eastern part, Eastern Highlands, Mt Wilhelm, 3500 m, *Brass* 30078.

var. *expositum* Sleum.

NEW GUINEA. Central part, Star Mts, Mt Antares, 3000 m, *Kalkman* 4484 A, fl. fr. 23-7-1959, in semialpine shrub vegetation.

11. *R. saruwagedicum* Foerster.

var. *saruwagedicum*

NEW GUINEA. Eastern part, Mt Michael, 3290—3650 m, *Brass & Collins* 31273 (with anomalous calyx lobes).

12. *R. invasorium* Sleum.

NEW GUINEA. Eastern part, Morobe Distr., Kaindi (= Wau), c. 2000 m, *Brass* 29517, 29748, frequent on open clayey ground of old gold workings.

24. *R. quadrasianum* Vid.var. *villosum* J. J. S.

BORNEO. Brunei, G. Pagon ridge, 1675 m, Ashton BRUN 2345, 2346, in elfin woodland on rugged hill crest.

26a. *R. protandrum* Sleum., spec. nov. — Frutex c. 2,5 m altus, divaricato-ramosus. Ramuli subgraciles, ad partes novellas \pm 2 mm diam. dense lepidibus crassiusculis rotundis obsiti; internodia (2—)3—6(—8) cm longa. Folia in pseudoverticillis 4—5-meris ad nodos 2—3 ultimos disposita, elliptica, apice \pm late subacuminata, vel interdum obtuse apiculata, basi late attenuata vel subcuneata, coriacea, in sicco opaca, initio utrinque subdense lepidota, aetate supra \pm glabrescentia coloreque plumbea, subtus dilute brunnea et subdense \pm persistenter lepidota (lepidibus parvis (sub)rotundis, zona marginali angusta, centro crasso flavescenti parum impresso), integra, angustissime marginata, 3—5 cm longa, (1,6—)2—3 cm lata, costa supra anguste immersa, subtus inferne petioli crassitudine valdeque prominente, sursum sensim decrescente, nervis lateralibus utroque latere 4(—6) patentibus sat strictis, supra impressiusculis, subtus parum prominulis, haud raro utrinque obscuris, reticulatione nulla; petioli 4—6 mm longi, \pm 1 mm crassi, supra sulcati. Umbellae 5—8(—10)-florae. Perulae membranaceae, exteriores ovatae, apiculatae vel obtusae, interiores obovato-oblongae vel oblongae, dorso glabrae, usque ad 1 cm longae et 0,8 cm latae, apice glanduloso-fimbriatae. Bracteolae subspathulato-lineares, glabrae, usque ad 8 mm longae et c. 1 mm latae. Pedicelli graciles, sub anthesi 5—7(—10) mm longi, subdense lepidibus rotundis obsiti, epilosi. Calyx suboblique patelliformis, \pm 2,5 mm diam., dorso lepidotus, breviter 5-lobus, lobis irregularibus obtusis vel subacutis. Corolla tubulosa, ad lobos \pm horizontaliter expansa, omnino alba vel subvirescenti-albida, vel ad tubum dilute rosea, ad lobos puralba, extus omnino dense lepidibus rotundis crassis luce \pm transparentibus obsita, intus ad inferiorem tubi tercia parte pilis brevibus retrorsis adspersa, ceterum glabra, tubo recto vel subcurvato, \pm 2,5 cm longo, ipsa basi paullo dilatato, ceterum per totam longitudinem aequaliter 2—2,5 mm diam., lobis subspathulato-oblongis, 5—6 mm longis, \pm 3 mm latis, sub plena anthesi \pm reflexis. Stamina 10, iam initio anthesis (stylo tunc in corollae tubo inclusu) e corollae tubo valde exserta et erecta, postea filamentis recurvata; filaments subfiliformia, alba, in $\frac{1}{4}$ infer. parte laxe vel subdensius pilosa; antherae oblongae, basi obtuse, 1,8 mm longae, 0,5 mm latae. Discus parum prominens, in margine superiore tantum laxe erecto-pilosus. Ovarium cylindricum, c. 5 mm longum, 1,5 mm diam., subdense subappresse breviterque pilosum et lepidotum, cum stylo continuum, stylo rubescente gracili sub anthesi gradatim elongato, tempore staminum reflexorum plane evoluto valdeque e corollae tubo exerto, fere usque ad apicem subdense rotundato-lepidoto, ultro per centimetrum basale laxe pilosum, stigmate subcapitato, brevissime 5-lobo. Capsula submatura anguste fusiformis, rubescens, laxe lepidota et pilosa, 2,5—3 cm longa, 2,5—3 mm diam., sat profunde longitudinaliter 5-sulcata.

NEW GUINEA. Central part, Orion Mts, Sibil R. valley, 1260 m, Kalkman 4284 (L, type), fl. 15-6-59, in shrub vegetation on poor impervious white clay; ibid., Kalkman 4553, fr. 25-8-59, common locally.

Related to *R. cinchoniflorum* Sleum., which has smaller leaves, an exclusively lepidote ovary and the stamens hardly exserted from the throat.

28. *R. herzogii* Warb.

NEW GUINEA. Eastern part, Morobe Distr., Edie Creek Road, 1830 m, N.G.F. 11804 Womersley.

29. *R. incommodum* Sleum.

NEW GUINEA. Eastern part, Eastern Highlands, Purosa, Okapa area, 1950 m, Brass 31614, common high epiphyte in mixed rainforest, fl. red; Okapa patrol post, 2070 m, N.G.F. 10639 Henty (LAE).

These specimens differ from the type by laxly hairy filaments, and anthers but 2 mm long.

35. *R. superbum* Sleum.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Michael, 3000 m, Brass 31434.

36a. *R. stelligerum* Sleum., spec. nov. — Frutex 1—1,5 m altus, sparse erecto-ramosus. Ramuli graciles, in partibus novellis densissime aureo-stellato-lepidoti, in partibus vetustioribus glabrescentes et cinerascentes; internodia superiora (1,5)—3—7 cm longa, 1,5—2 mm diam. Folia in pseudoverticillis 4—5-meris ad nodos 2(—3) ultimos disposita, sublineari-lanceolata, apice basique aequaliter attenuata, apice ipso subacuta, coriacea, initio utrinque densissime aureo-stellato-lepidota, aetate supra glabrescentia tactuque asperula, subtus diu densissime lepidota (lepidibus sese pro parte tegentibus, apici tuberculi epidermalis persistentis impositis, in zona marginali sat lata profunde et valde irregulariter stellato-incisis vel -laceratis, laciniis apice extremo filiformibus, centro sat magno saturate castaneo, deorsum in pedem brevem vel brevissimum extenuato), integra, margine valde revoluta, (2—)2,5—4,5 cm longa, in statu revoluto (0,3)—0,4—0,8 cm lata, costa supra vix indicata, subtus obtuse valdeque prominente, nervis inconspicuis; petioli densissime lepidoti, 4—6 mm longi, c. 1 mm crassi. Gemmae floriferae ovoido-oblongae, c. 1 cm longae; perulae exteriores late subulatae, interiores sequentes ovatae, apice subabrupte in acumen 2—3 mm longum extenuatae, dorso leviter carinatae apiceque dense lepidotae, intimae ovato-oblongae, obtusae, ± glabrae, omnes dense lepidoto-fimbriatae, usque ad 1 cm longae et 0,5 cm latae. Bracteolae filiformes, laxe caduce lepidotae, usque ad c. 1 cm longae. Flores 2 vel 3, rarius solitarii. Pedicelli omnino lepidibus stellatis aureis obtecti, 1,2—1,6 cm longi, 0,7—1 mm diam. Calyx discoideus, parum obliquus, breviter 5-lobus (lobo uno altero interdum in laciniam angustum usque ad 8 mm longam aucto), ± 2,5 mm diam., dorso dense lepidotus. Corolla inferne tubulosa, sursum sensim subcampanulato-dilatata, saepius curvata, distincte zygomorpha, saturate rosea, in sicco colore magenta praedita, extus ad tubum et loborum basin subdense lepidibus stellatis aureis pilisque crispulis albidis induita, intus et ad lobos omnino glabra, tota 3,5—4 cm longa, tubo (2—)2,5—3,2 cm longo, basi 5—6, infra lobos 7—9 mm diam., lobis ipsis erecto-patentibus, late spathulatis vel obovatis, 0,7—1(—1,2) cm longis et 0,6—0,8 cm latis. Stamina 10, inaequilonga, e corollae tubo ± longe exserta, longissima dimidiata loborum partem aequantia; filamenta per totam longitudinem linearia, inferne 1, superne 0,5 mm lata, glaberrima; antherae obovato-oblongae, 2—2,5 mm longae, in superiore tertio 1,5 mm latae. Discus parum prominens, glaber. Ovarium subcylindricum, c. 5 mm longum, 2,5 mm crassum, densissime lepidibus profunde stellato-

incisis aureis pila stellata aemulantibus obtectum, certissime epilosum, sursum in stylum gradatim abiens, stylo ipso per $\frac{3}{4}$ infer. partem dense vel superne laxius lepidoto laxeque piloso, in summa parte tantum glabro; stigma crasse turbinatum, brevissime 5-lobum. Capsula matura subcylindrica, parum curvata, dense stellato-lepidota, epilosa, 2—2,5 cm longa, 0,4 cm diam., demum loculicide 5-fissa. Semina angustissima fere filiformia, 4 mm longa, utrinque longe caudato-appendiculata.

NEW GUINEA. Central part, Star Mts, Mt Antares, 3000 m, *Kalkman* 4471 (K; L, type), fl. 22-7-1959, in semialpine shrub vegetation, common.

39. *R. delicatulum* Sleum.

var. *lanceolatoides* Sleum., nov. var. — Foliis latioribus ovato-lanceolatis (2,5—)3,5—5 cm longis, 0,7—1,2 cm latis, pedicellis brevioribus 5—7 mm longis a typo diversum.

NEW GUINEA. Central part, Star Mts, 1 km E of the mouth of the Minam R. into the Bon R., 1500 m, *Kalkman* 4400 A (L, type), on peaty soil.

42. *R. dielsianum* Schltr.

var. *stylotrichum* Sleum. .

NEW GUINEA. Eastern part, Eastern Highlands, road between Kami and Lufa, 1920 m, *Brass* 31141, common.

45. *R. beyerinckianum* Koord.

NEW GUINEA. Central part, Star Mts, E of mouth of the Minam R. into the Bon R., 1500 m, *Kalkman* 4423; Mt Antares, 2360 m, *Kalkman* 4444. Eastern part, Western Highlands, E rim of Mt Oga, c. 12 miles E of Mt Hagen station, *Pullen* 127 (CANB); Mt Hagen, S slopes, 3350 m, *Robbins* 306 (CANB); Upper Minj R. valley, on the Minj-Nona divide, 3410 m, *Pullen* 230, in alpine thickets. Eastern Highlands, Kubor Ra., Mt Kinkain, 3410 m, *Saunders* 724; Mt Otto, 3400 m, *Brass* 30981; Mt Wilhelm, 3000 m, *Brass* 30541; Mt Michael, 3000 m, *Brass & Collins* 31308.

46. *R. leptanthum* F. v. M.

NEW GUINEA. Eastern part, Morobe Distr., Kaindi (= Wau), 2000 m, *Brass* 29523, terrestrial in mossy Castanopsis forest; ibid., 2250 m, *Brass* 29673, epiphytic on Nothofagus. Milne Bay Distr., Mt Garatun, 1370 m, *Cruttwell* 1014.

51. *R. konori* Becc.

NEW GUINEA. Central part, Sibil R. valley, Betabib, 1300 m, *Hünneman* 1. Eastern part, Eastern Highlands, Chimbu, *Womersley* s.n. (LAE). Morobe Distr., Edie Creek above Wau, 2135 m, N. G. F. 11827 *Womersley*. Yunzaing (Sattelberg), 1220—1525 m, *Clemens* 2727 (G).

67. *R. durionifolium* Becc.

BORNEO. Brunei, G. Pagon ridge, 1525—1675 m, *Ashton BRUN* 1046, 2278, 2302, in elfin woodland.

69. *R. apoanum* Stein, Gartenflora 34, 1885, 55, 194, t. 1196; Jahresber. Schles. Ges. Vaterl. Cult. f. d. Jahr 1885 (1886), 414, 416.

The citation "Verh. Schles. Ges. vaterl. Cult. Breslau 1883" given in the author's revision on p. 99 does not exist. Dr. Schadenberg collected the original plant as a shrub of c. 0,5 m height on Mt Apo at c. 3000 m.

70. *R. malayanum* Jackvar. *malayanum*

BORNEO. Eastern part, W. Kutei, Mt Palimasan near Tabang on Belajan R., 800 m, *Kostermans 12931*, treelet, 1 m, common in mossy forest on sand.

var. *pilosifilum* Sleum.

BORNEO. North Borneo, Mt Kinabalu, Janet's Halt, new route, 2440 m, *Collenette 555*, fl. orange red.

var. *axillare* J. J. S.

BORNEO. Brunei, Batu Ketam, Ulu Ingei, 260 m, *Ashton BRUN 5607*, in extreme heath (kerangas) forest on hard sandstone ridge. Bt. Sagan, 550 m, *Hasan BRUN 3117*, in heath forest on knife edge hard sandstone ridge.

74. *R. lineare* Merr.

BORNEO. Sarawak, Limbang, Sagan Ra., on exposed edge at 365 m, *Brunig SA 165*. Bintulu, Merurong plateau, 730 m, *Brunig S 8900*.

76. *R. variolosum* Becc.var. *andersonii* (Ridl.) Sleum.

BORNEO. North Borneo, Mt Kinabalu, above Kambaranga, 2440 m, *Smythies 10618*, corolla lemon yellow at base, lobes vermillion; ibid., Janet's Halt, new route, 2440 m, *Collenette 556*, corolla tube yellow, lobes orange red.

83. *R. yelliotii* Warb.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Wilhelm, 3560 m, *Brass 29828*, common.

91. *R. versteegii* J. J. S.

NEW GUINEA. Southwestern part, Mt Carstensz, Carstenszweide, *Dozy s.n.*, in ericoid vegetation on peaty soil, common.

92. *R. multinervium* Sleum.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Otto, 2000 m, *Brass 31069*; Mt Michael, 2000 m, *Brass 31466*.

95. *R. stapfianum* Hemsl. ex Prain

BORNEO. Eastern part, K. Kutei, Mt Palimasan, near Tabang on Belajan R., 800 m, *Kostermans 12963*.

97. *R. toverenae* F. v. M.; *Gartenflora* 34, 1885, 54.

NEW GUINEA. Southeastern part, Milne Bay Distr., Mt Garatun (Maneau Ra.), 1465 m, *Cruttwell & Otavi 1010* (K), fl. 4-7-1959, epiphytic shrub, c. 3,5 m, hanging from a large tree. Fergusson Isl., South coast, mountains between Agamoia and Ailuluai, 950 m, *Brass 27058*, in mossy forest on ridge crest (mentioned in the above cited revision sub 51. *R. konori* Becc., but the immature fruits of c. 7 by 1.7 cm and their style of c. 11 cm length point to *R. toverenae*).

The rediscovery of *R. toverenae*, which has the largest corollas of any species in the genus — Asiatic species have corollas up to 10 cm in length only — has made it possible to precise its systematic position. The species of which one flower was known up to now, has been put tentatively into the Subsect. *Solenovireya* by the author before, but the leaves now available point

to Subsect. *Phaeovireya*. *R. schlechteri* Laut., certainly much related to both *R. konori* Becc. and *R. toverenae* F. v. M. also is better placed in Subsect. *Phaeovireya*, in which these three species form a natural group.

99a. *R. macrosiphon* Sleum., nov. spec. — Frutex subscandens, c. 4 m altus. Ramuli robusti, ad internodia ultima (6—9 cm longa) 4—5, ad internodia inferiora (certe 10 cm longa) c. 8 mm diam., pruinosi, caduce lepidoti. Folia in pseudoverticillis 4—5-meris ad nodos ultimos disposita, obovato-elliptica, apicem versus late vel latissime attenuata, apice ipso breviter vel brevissime apiculata, vel obtusa vel rarius subrotundata, basi in petiolum cuneata parumque decurrentia, valde coriacea, rigida, iis *R. scabridibractei* forma et nervatione similia, maturitate supra glabra, subtus dense lepidota (lepidibus minutis, in zona marginali hyalina cito caduca varie stellato-dentatis, centro crasso sat parvo profunde impressis), integra, ± plana, 7—10 cm longa, (4—)4,5—6 cm lata, costa supra anguste impressa, subtus inferne petioli crassitudine, obtusa valdeque prominente, superne sensim decrecente, nervis lateralibus utroque latere 6—7 irregularibus, brevioribus intercalaribus seu venis conspicuis intermixtis, varie patentibus et anastomosantibus, supra in foliis maturis bene impressis, subtus prominentibus, reticulatione sat densa supra leviter vel levissime impressa, subtus prominula vel interdum subinconspicua; petioli robusti, semiteretes, supra sulcati, initio dense lepidoti, (2—)2,5 cm longi, c. 3 mm diam. Umbellae, ut videtur, 8—10-florae. Perulae exteriore haud visae, interiores elongato-spathulatae, utrinque pilis sat longis subappressis hirsutulae, usque ad 3 cm longae. Bracteolae lineares, glabrae, usque ad 2,5 cm longae. Pedicelli densissime lepidoti, (4—)5—8 mm longi, ± 1,5 mm crassi. Calyx oblique discoideus, irregulariter 5-lobulatus, dorso dense lepidotus, 5—6 mm diam. Corolla inferne tubulosa, ad lobos sat abrupte expansa, alba, extus ad tubum et medianam loborum partem subdense vel laxius stellato-lepidota, intus ad tubum dense pilis appressis albidis retrorsis c. 1 mm longis hirsuta, ceterum glabra, tubo 6—7 cm longo, e basi c. 5 mm diam. sensim sursum dilatato, infra lobos 1—1,5 cm diam., lobis subspathulato-ovatis vel suborbicularibus 2,5—3 cm longis, 2,5(—3) cm latis. Stamina 10, e fauce corollae per 1—1,5 cm exserta; filamenta inferne linearia (1 mm) denseque pilis retrorsis induita, superne angustiora laxiusque pilosa, per c. 1,5 cm ultima filiformia et glabra; antherae elongato-oblongae, in vivo aurantiaco-brunneae, 7—8 mm longae, 1,5 mm diam., thecis basi in appendicem c. 1 mm longam angustatis, appendicibus ± divergentibus. Discus crassus, 10-lobus, ad lobos densius, inter lobos laxius pilosus. Ovarium crasse cylindricum, sub anthesi c. 1,5 cm longum et 0,3—0,35 cm diam., flavidohirsutum (pilis antrorsis lepides omnino tegentibus resp. occultantibus), sensim in stylum abiens, stylo inferne 1,5—2 m crasso, apicem versus gradatim decrecente, in parte apicali glabra c. 0,5 mm diam., toto 5,5—6 cm longo, in inferiore 2/3 parte hirsuto, superne laxius piloso et ± caduce laxeque lepidoto, per centimetrum ultimum glabro; stigma capitatum, c. 2 mm diam., lobis crassis. Capsula nondum cognita.

NEW GUINEA. Central part, Star Mts, 1 km E of the mouth of the Minam R. into the Bon R., 1500 m, Kalkman 4353 (L, type), fl. 2-7-1959, in a depression on peaty ground in the primary forest, rather common.

Related to *R. carringtoniae* F. v. M. and *R. carstensenae* Wernh. which show a similar appendix at the base of each theca, different from both of them

by the corolla tube which is gradually dilated upwards, and by much larger corolla lobes.

100. *R. maius* (J. J. S.) Sleum.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Wilhelm, 2770—2800 m, Brass 30228, 30566 (infl. c. 5-flowered only).

103. *R. pleianthum* Sleum.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Otto, S slopes, 3260 m, Brass 30971; Mt Wilhelm, E slopes, on a high bank of Pengalagi Creek, 2700 m, Brass 30515.

107a. *R. rhodoleucum* Sleum., spec. nov. — Frutex (1—)1,5—3(—4) m altus, ramorum apicibus valde ramosis. Ramuli sat robusti, ad internodia ultima 3—5 cm longa et ± 2 mm diam. laxe caduce lepidoti, ad internodia inferiora usque ad 9 cm longa et 3—4 mm diam. glabratii, tenuiter albido-cinerascenti-corticati saepiusque laxe pustulis ellipticis fungi cuiusdam nigri forma lenticeleurum adpersi. Folia in pseudoverticillis 4—6-meris ad nodos ultimos vel rarius etiam penultimos disposita, (late) elliptica vel subobovato-elliptica, (sub) sessilia, apice breviter late attenuata, apice ipso brevissime subacuminato obtusa, vel rarius subrotundata, basi ± profunde cordata, coriacea, maturitate supra glabra et lucida, subtus sublucida laxeque lepidota (lepidibus planis, sat parvis, in zona marginali tenui sat lata varie dentatis vel angulatis, centro parvo leviter immerso), integra, plana, (3—)4—7 cm longa, (2—)2,5—5(—6) cm lata, costa supra inferne anguste impressa vel omnino plana, subtus inferne petioli crassitudine, applanata parumque prominente, sursum decrescente, nervis lateralibus utroque latere irregularibus 6—8, patentibus, venis similibus paucis interpositis, varie ramosis et anastomosantibus, utrinque conspicue prominentibus, reticulatione sat densa utrinque ± prominula; petioli 0—1 mm longi et lati. Umbellae (4—)5—6-florae. Perulae haud cognitae. Bracteolae fere filiformes, usque ad 1 cm long. visae. Pedicelli crassiusculi, subdense vel laxe stellato-lepidoti, epilosi, ± 1,5 cm longi. Calyx valde oblique discoideus, indistincte 5-lobus, 2,5—3 mm diam., dorso inferne lepidotus, superne glaber. Corolla tubulosa, subrecta vel parum curvata, tota (7—)8—9 cm longa, extus ad tubum laxe lepidota, intus inferne dense, superne laxius pilis subpatentibus vel retrorsis induita, ad lobos utrinque ± glabra, ad tubi basin rubra, per tubum rosaceo- vel salmoneo-suffusa, ad lobos alba, tubo 6—7(—7,5) cm longo, basi 4—5 mm diam., sursum sensim dilatato, infra lobos c. 1 cm diam., lobis ± patentibus obovatis usque subrotundatis 1,5—2 cm longis et latis. Stamina 10, e fauce corollae parum exserta; filamenta inferne linearia (c. 1,2 mm) et subdense, superne angustoria et laxius subpatenti-pilosa, in summo ¼ parte glabra; antherae flavidae, anguste oblongae, 3,5—4 mm longae, c. 1 mm latae, basi obtusae. Discus in margine superiore tantum pilosus. Ovarium subcylindricum, 7—8 mm longum, 2 mm diam., dense appresse pilosum et lepidotum, sensim in stylum abiens, stylo sat gracili, antheras paulo superante, in inferiore c. 2/3 parte densius usque laxius piloso laxeque lepidoto, superne per 3—4 mm sparse lepidoto et piloso, in superiore tertia parte omnino glabro; stigma crasse turbinatum, breviter 5-lobum. Capsula nondum cognita.

NEW GUINEA. Southeastern part, Milne Bay Distr., Maneau Ra., Mt Aniata, c. 2750 m, Cruttwell 1084 (K, type), locally common, fl. 9-7-59; Mt Donana, c. 2290 m, Cruttwell 936 (K), fl. 10-10-57; Maneau Peak, 2750 m, Brass 22276 (A, L), fl. 19-5-53, common on edges of stunted mossy forest.

Cruttwell 936 was treated in my revision as slightly different from *R. tuba*, but the colour slides of the Rev. N. E. G. Cruttwell have convinced me, that *R. tuba* and *R. rhodoleucum* must be treated as distinct taxa. *R. tuba*, however, now appears to be intermediate in many respects between *R. carringtoniae* and *R. rhodoleucum*, and might be a local natural hybrid. All three species occur within the Maneau Ra.

111a. *R. retrorsipilum* Sleum., nov. spec. — Frutex epiphyticus. Ramuli sat graciles, c. 2 mm diam., initio subdense lepidoti, citissime glabri et cinerascenti-corticati; internodia 3—4 ultima (1—)2—4 cm longi, inferiora vix longiora. Folia ad nodos ultimos vel penultimos in pseudoverticillis c. 3-meris disposita, elliptica, apice basique late obtuse attenuata vel saepius subrotundata, coriacea, in sicco supra olivacea, subtus pallidiora, initio utrinque subdense lepidota, maturitate supra quam subtus citius glabrescentia (lepidibus singulis tuberculo epidermali initio minuto vel plerumque minutissimo, denique ± evanescenti impositis, minutis, in zona marginali profunde stellato-incisis, centro parvo, in pedem brevem extenuato), integra, in ipso margine vix recurvata, 4—6,5 cm longa, 2,5—4,2 cm lata, costa supra angustissime impressa, subtus inferne petioli crassitudine obtuseque prominente, longitudinaliter striata, sursum gradatim diminuta, nervis lateralibus utroque latere c. 5 patentibus, sat strictis, supra levissime vel haud immersis, subtus parum elevatis, reticulatione nulla; petioli 6—8(—10) mm longi, 1—1,5 mm crassi. Gemmae floriferae ovoideo-oblongoideae, 2,3 cm longae et 0,8 cm diam., perulis exterioribus ovatis vix 4 mm longis, interioribus sensim maioribus, ovato-oblongis, usque ad 1,5 cm longis, dorso imprimis superne subdense lepidibus sessilibus obsitis, fimbriatis. Umbellae c. 6-florae, in omnibus partibus exterioribus glabrae. Pedicelli sat graciles, 5—8 mm longi. Bracteolae lineares, usque ad 1 cm longae. Calyx subobliquus, discoideus, c. 2,5 mm diam., irregulariter 5-lobatus, lobis late deltoideis subacutis, sat longe albido-fimbriatis, sub anthesi ± reflexis. Corolla hypocrateriformis, alba, tubo 2—2,3 cm longo, c. 0,3 cm diam., intus fere usque ad orem subdense pilis retrorsis induto, lobis anguste spathulatis ± horizontaliter patentibus 8—10 mm longis et 3—4 mm latis. Stamina 10, breviora e corollae tubo paullo, longiora valde exserta, longissima c. 3,5 cm longa; filamenta filiformia, fere usque ad apicem dense pilis ± retrorsis albis instructa; antherae anguste oblongae, 3 mm longae, c. 0,7 mm diam., thecis basi subapiculato-protractis, obtusis. Discus parum prominens, ipsa basi glaber, superne pilosus. Ovarium elongato-cylindricum, dense pilis adpressis prorsus versis lepidibusque (pilis fere omnino obtectis) indutum, 5—6 mm longum, c. 1,5 mm diam., sensim in stylum abiens, stylo gracili, longitudine corollae tubum paulo superante, inferne dense, superne laxius piloso et distinctius lepidoto, infra stigma capitatum 5-lobum glabro. Capsula nondum cognita.

NEW GUINEA. Northeastern part, Morobe Distr., in the range above Markham point near Lae, at c. 900 m, N. G. F. 11906 Henty, fl. 16-2-1960.

From the related *R. jasminiflorum* Hook. (confined to W. Malaysia) easily discernible by the much shorter corolla tube.

120. *R. loranthiflorum* Sleum.

NEW BRITAIN. Headwaters of Matabuna Creek, Talasea subdistr., 180 m, N. G. F. 10978 White, fl. white 2-5-1959, epiphyte in high rainforest.

Formerly only known from Bougainville.

120a. *R. rhodosalpinx* Sleum., nov. spec. — Frutex. Ramuli sat graciles, c. 2 mm diam., internodiis ultimis dense lepidotis; internodia 1—2(—4) cm longa. Folia in pseudoverticillis (3—)4-meris ad nodos 2(—3) ultimos disposita, elliptica vel subobovato-elliptica, apice late attenuata et obtusa vel subrotundata, interdum levissime retusa, basi late in petiolum attenuata vel subcuneata, coriacea, firma, supra in sicco olivacea et nitentia, subtus brunnescens et opaca, supra maturitate glabra, subtus subdense lepidota (lepidibus parvis, in zona marginali substellato-dentatis, centro parvo bene immerso), integra, margine distincte revoluta, (3—)4—5 cm longa, (1,5—)1,8—2,6 cm lata, costa supra angustissime impressa, subtus inferne petioli crassitudine valdeque obtuse elevata, superne sensim diminuta, nervis lateralibus utroque latere c. 3-paribus subtus tantum parce prominulis, saepius omnino obscuris, reticulatione nulla; petioli paullo applanati, supra sulcati, lepidoti, 4—6 mm longi, 1 mm crassi. Umbellae 3-florae; perulae haud visae. Pedicelli subdense lepidoti, minutissime (sub lente) patenter-puberuli, 1,7—2,1 cm longi, c. 0,8 mm crassi. Bracteolae lineares, c. 1 cm longae. Calyx suboblique discoideus, brevissime irregulariter 5-lobus, c. 2,5 mm diam., dorso lepidotus. Corolla hypocrateriformis, ut videtur, rubra, extus ad tubum et loborum inferiorem partem subdense substellato-lepidota, intus ad tubum inferne laxe pilosa, superne glabra, tubo recto, 3—3,5 cm longo, inferne (3—)4, infra lobos 5—6(—7) mm diam., lobis ± patentibus obovatis 1—1,2 cm longis, c. 0,8 cm latis. Stamina 10, corollam aequantia vel partim superantia; filamenta anguste linearia, in inferiore media parte laxe patenter pilosa, superne glabra; antherae anguste oblongae, basi obtusae, 2,5 mm longae, 1 mm diam. Discus glaber. Ovarium subcylindricum, lepidibus marginibus sese tegentibus vel certe partim attingentibus omnino tectum ut videtur epilosum (pilis brevissimis possibiliter in ovario proprio obviis lepidibus tectis), c. 6 mm longum, 1,7 mm diam., sursum sensim in stylum subgracilem corollam longitudine subaequantem abiens, stylo ipso in inferiore 1/3 parte laxe lepidoto, ceterum per c. 2/3 inferiorem parte laxe patenter brevipiloso, in summo tertio glabro, stigmate capitato brevissime 5-lobo. Capsula deest.

NEW GUINEA. Northern part, Swart R. valley, Kadubaka, 1600—2000 m, *D. Bergman* 815 (S, type), fl. 19-4-1958.

121. *R. anagalliflorum* Wernh.

NEW GUINEA. Eastern part, Eastern Highlands, S slopes of Mt Otto, 3470—3540 m, *Brass* 30999, in alpine grassland of the summit area.

122. *R. womersleyi* Sleum.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Wilhelm, E slopes, 3560 m, *Brass* 29810.

123. *R. gracilentum* F. v. M.

NEW GUINEA. Eastern part, Morobe Distr., Kaindi (= Wau), 2060 m, *Brass* 29683, 29745, 29746. Eastern Highlands, Mt Elandora, 2530 m, *Brass* 32140, epiphyte.

131. *R. coelorum* Wernh.

NEW GUINEA. Southeastern part, Mt Carstensz, 3600 m, *Dozy* s.n., fl. red.

132. *R. saxifragoides* J. J. S.

NEW GUINEA. Southwestern part, Mt Carstensz, 'Dajakweide en Dajakpas', 4000—4200 m, *Dozy* s.n., fl. dark red.

134. *R. stenophyllum* Hook. f.

BORNEO. Brunei, G. Pagon ridge, 1525 m, Ashton BRUN 2334, in moss forest on sandstone and shale ridge.

146a. *R. abietifolium* Sleum., nov. sp. — Frutex parvus. Ramuli graciles, glabri, nitiduli, in sicco longitudinaliter striati; internodia ultima 1—2 cm longa. Folia 8—10(—12) ad apicem internodiorum summorum 2 vel 3 per 2—3 mm aggregata, fere pseudoverticillata, linearia, apice brevissime apiculata vel obtusa, interdum minute retusa, basi in petiolum attenuata, coriacea, sat rigida, supra virescentia, nitida et glabra, subtus pallidiora laxeque lepidota (lepidibus sat magnis, in zona marginali angustissime plicatula varie stellato-dentatis vel divisus, centro saturatiore sat parvo vix impresso), usque ad costam revoluta, integra, margine leviter undulata, 2—2,5 cm longa, in statu revoluto aequaliter 1,5—2 mm lata, costa supra profunde sulcata, subtus inter margines laminae revolutae crasse prominente, nervis venisque nullis; petioli graciles, laxe lepidoti, applanati, 2—3 mm longi. Umbellae 2—3-florae. Perulae ovato-oblongae, breviter acuminatae, caduce lepidoto-fimbriatae, dorso glabrae, 6—10 mm longae, 3—4 mm latae. Bracteolae lineares, glabrae, apice varie incisae, ± 1 cm longae, 0,5 mm latae. Pedicelli graciles, dense patenter longepilosoi, elepidoti, sub anthesi 1—1,5 cm longi. Calyx patellaris, vix 5-lobus, undulatus et ± reflexus, dorso pilosus, c. 1,8 mm diam. Corolla inferne late tubulosa, superne subcampanulato-ampliata, in vivo brunnescenti-rubra, in sicco ad lobos intense carminia, ad tubum pallidior, tota 2,5—2,8 cm longa, extus ad tubum sicut pedicelli subdense pilis mollibus albescensibus patentibus induita et elepidota, ad lobos epilosa et sparse lepidota, intus glabra, tubo 1,5—1,8 cm longo, basi leviter 5-saccato, inferne c. 4, ad loborum basin c. 10 mm diam., lobis late obovato-spathulatis ± 1 cm longis et 0,6—0,8 cm latis. Stamina 10, dimidium corollae subaequantia; filamenta linearia, ad $\frac{1}{4}$ — $\frac{1}{3}$ infer. partem patenter pilosa, superne glabra; antherae late oblongae, 2—2,5 mm longae, 1 mm latae, thecis basi apiculo vel glandula rubra minuta instructis. Discus prominens, glaber. Ovarium subconico-cylindricum, dense subadpresso albido-pilosum, caduce lepidotum, c. 3 mm longum, 1,5 mm crassum, cum stylo subabruptum, stylo ipso gracili, glaberrimo, c. 1,3 cm longo, stigmate breviter turbinato. Capsula submatura crasse oboviedo-cylindrica, dense breviter pilosa, laxeque lepidota, c. 1,2 cm longa, 4 mm diam., pedicello ± 2 cm longo et fere 1 mm crasso.

BORNEO. North Borneo, Mt Kinabalu, new route, c. 3200 m, S. Collenette 602 (L, type), fl. Dec. 1960, rather frequent locally; ibid., Collenette s.n. (L), fr. Aug. 1960.

Rather isolated within the Ser. Buxifolia both by leaf and floral characters.

147. *R. nieuwennhuisii* J. J. S.

BORNEO. Brunei, Ulu Medamit, Limbang R., c. 100 m, Smythies BRUN 3195, epiphyte by river.

148a. *R. sheilae* Sleum., spec. nov. — Frutex terrestris usque ad 1,8 m altus, distaliter divaricato-ramosus. Ramuli graciles, ad partes novellas dense lepidoti, deorsum cito glabrescentes; internodia 1—3(—4) cm longa, ultima 1,5—2 mm diam. Folia in pseudoverticillis (4—)5—8(—10)-meris ad nodos 2—3 ultimos disposita, oblanceolata vel obovato- vel elliptico-oblonga, apicem versus late attenuata, apice ipso obtusa, rarius subrotundata, interdum levissime

retusa, basin versus in petiolum cuneata, coriacea, erecto-patentia, supra caduce lepidota, aetate glabra et nitentia, subtus sat laxe persistenter lepidota (lepidibus parvis, in zona marginali sat angusta citoque dissoluta varie dentata vel angulata, centro minuto parum sed distinete impresso), per totam marginem regulariter minute crenulata, 1,5—2,5 (raro usque ad 3,5) cm longa, (0,4—) 0,6—1 (raro usque ad 1,3) cm lata, costa supra per totam longitudinem impressa, subtus valde obtuseque prominente, nervis 4—5-paribus parum conspicuis, in foliis maturis interdum supra levissime impressis, saepius subtus tantum prominulis, vel haud raro utrinque obsoletis; petioli crassi, dense lepidoti, (1—) 2—3 mm longi, c. 1 mm diam. Umbellae (3—)4—6-florae. Perulae haud visae. Bracteolae subfiliformes, glabrae, c. 8 mm longae. Pedicelli crassiusculi, sicut calyx sat dense patenter brevipilosoi laxiusque et ± caduce lepidoti, 1,2—1,8 cm longi. Calyx oblique patellaris, subobscurae 5-lobus vel -undatus, c. 3 mm diam. Corolla ± infundibuliformis, inferne late tubulosa, lobos versus dilatata, ad lobos patens, ± saturate purpurea, extus ad tubum et loborum basin subdense vel laxius lepidota breviterque albido-pilosa, intus in inferiore tubi parte laxe pilosula, ceterum glabra, tota 2,5—3 cm longa, tubo ± 1,5 cm longo, in inferiore dimidio ± cylindrico et 4—6 mm diam., sursum sensim usque ad 9—10 mm diam. dilatato, lobis late obovatis 1—1,3 cm longis, ± 1 cm latis. Stamina 10, subaequilonga, dimidium loborum aequantia; filamenta linearia, inferne paullo dilatata laxeque pilosa, per $\frac{2}{3}$ partem superiorem glabra; antherae late oblongae, c. 2,5 mm longae, 1 mm latae, thecis basi ± distinete apiculato-protractis. Discus prominens, ad marginem superiorem tantum pilosus. Ovarium conico-cylindricum, 3—4 mm longum, 2—2,5 mm diam., dense albido-pilosum laxiusque (imprimis superne) lepidibus parvis subrotundis denique ± caducis indutum, cum stylo abruptum. Stylus crassiusculus, e tubo corollae vix exsertus, glaberrimus; stigma crasse turbinatum, brevissime 5-lobum. Capsula submatura cylindrica, subdense pilosa et lepidota, c. 1,2 cm longa, 3 mm diam.

BORNEO. North Borneo, Mt Kinabalu, new route, just below the summit at c. 3670 m, Sheila Collenette 581 (L, type), 582, fl. 8-8-1960; ibid., Collenette s.n. (L), fr. juv. Dec. 1960.

Related to both *R. pseudobuxifolium* Sleum. (Celebes) and *R. commonae* Foerster (New Guinea), but different by the lepidote and hairy corolla. There are 2 possibly constant forms to be found on or near the summit, the one with narrower, oblanceolate to obovate-oblong leaves (\pm 1,5 by \pm 0,5 cm), the other with larger, obovate to elliptic-oblong leaves (2—3,5 by 0,8—1,3 cm), both present in the above cited two collections.

153a. *R. vandeursenii* Sleum., nov. spec. — Frutex erectus epiphyticus, usque ad 1 m altus, internodiis ultimis ± dense lepidotis, inferioribus glabratiss sat laevibus; internodia ultima 0,5—5(—6) cm longa, sat gracilia. Folia in pseudoverticillis 3—4-meris ad nodos 2(—3) ultimos disposita, obovata vel elliptico-obovata, apice rotundata, interdum levissime retusa, basi in petiolum cuneata vix decurrentia, supra ± convexa, coriacea, novella utrinque laxe lepidota, matura supra glabra et nitidula, subtus dilutiora, opaca et subdense lepidota (lepidibus sat planis, in zona marginali hyalina cito dissoluta varie dentatis vel incisis, centro saepius crasso et diutius permanente, ut zona marginali ± evanida lepides integrae esse videntur), integra, margine in sicco bene revoluta, (1,5—)2—3(—4) cm longa, (0,8—)1—1,8 cm lata, costa supra plana

vel subimmersa, haud raro subinconspicua, subtus crasse obtuse prominente, apicem laminae versus paullo decrescente, nervis lateralibus utroque latere c. 5 irregularibus supra cum venis subinconspicuis, subtus parum prominentibus, interdum fere obscuris, venulis obsoletis, reticulatione propria nulla; petioli initio lepidoti, 3—4(—5) mm longi, c. 1 mm crassi. Flores solitarii, rarius bini. Perulae in gemmis floriferis possibiliter haud plane evolutis tantum visae, late ovatae, subacuminato-apiculatae, ad medianam dorsalem carinatae denseque caduce lepidotae, manifeste fimbriatae, usque ad 6 mm longae et latae. Bracteolae haud visae. Pedicelli crassiusculi, 1,3—2,3 cm longi, laxe usque subdense stellato-lepidoti laxeque patenter pilosuli. Calyx ± oblique discoideus, breviter subacute 5-lobus, 2,5—3,5 mm diam., lorno lepidotus. Corolla tubulosa, faucem versus subcampanulato-dilatata, tota 4,5—5(—5,5) cm longa, rubra, extus ad tubum vel certe in inferiore dimidio laxe stellato-lepidota et breviter albido-pilosa, ad lobos glabra, intus glabra vel pilis sparsis induita, tubo subrecto vel paullo curvato 3,5—4,3 cm longo, basi 4—5 mm diam., faucem versus sensim usque ad 1,2—1,5(—2) cm diam. dilatato, lobis erectis late subspathulato-obovatis vel subrotundatis 8—10 mm longis, 6—8 mm latis. Stamina 10, corollam longitudine ± aequantia; filamenta linearia, omnino vel certe in inferiore dimidia parte glabra, interdum superne laxissime pilosa; antherae late oblongae usque subobovato-oblongae, 2,7—3 mm longae, c. 1 mm latae, basi obtusae. Discus inferne glaber, superne pilosus. Ovarium subcylindricum, dense pilis subp. tentibus lepidibusque intermixtis obtectum, 6—7 mm longum, 2 mm diam.; stylus cum ovario continuus, corollam subaequans, in tertio inferiore vel usque ad medium laxe subpatenter pilosulus, elepidotus, stigmate crasse turbinato. Capsula nondum cognita.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Wilhelm, E slopes, Pengagl camp, 2770 m, Brass 30431 (A; L, type), epiphyte in mossy forest, fl. 10-7-1959 (phot. Brass); ibid., 2600 m, Brass 30488, epiphyte in secondary growth. Western Highlands, Merimanta, Wabag subdistr., 2285 m, N. G. F. 11351 Womersley, fl. deep crimson 16-7-1959.

Named after Hobart M. Van Deu(r)sen, Assistant Curator, Archbold Expeditions, for his great interest in the genus.

157. *R. pseudonitens* Sleum., nom. nov. — *R. nitens* Sleum., Reinwardtia 5, 1960, 162, non Hutch., Gard. Chron. 99, 1936, 10; Spec. Rhodod. 2d ed., 1947, 594 A.

158. *R. commonae* Foerst. — (149) *R. stonori* Sleum.

Recently received ample material from various places in the Eastern Highlands breaks down the differences between these species as to the length of the calyx lobes. The specimens described as *R. stonori* with the short calyx lobes represent the normal state, whilst those cited from Mt Saruwaged, the type locality of *R. commonae*, with irregular, in part up to 8 mm long calyx lobes, are anomalous. Such differences in the size of the calyx lobes occur also in other species, rather often, for instance, in *R. konori* Becc. Other differences between *R. commonae* and *R. stonori* as the size and the form of the apex of the leaves now seem to be irrelevant.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Michael, 3290—3650 m, Brass & Collins 31276, plentiful in alpine grassland; ibid., 3600 m, N. G. F. 11495 Womersley, on the crests of the highest ridges. Mt Wilhelm, 3390 m, Brass 30113, in alpine grassland.

165. *R. luteosquamatum* Sleum.

NEW GUINEA. Eastern part, Morobe Distr., Kaindi (= Wau), 2060 m, Brass 29647; ibid., Edie Creek road, 1830 m, N.G.F. 10450 Womersley.

166. *R. inconspicuum* J. J. S.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Wilhelm, 2770 m, Brass 30415. Milne Bay Distr., Mt Patana (Maneau Ra.), 1180 m, Cruttwell 1021, 1022; ibid., Ygom plateau, 2285 m, Cruttwell 1026.

173. *R. atropurpureum* Sleum.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Wilhelm, E slopes, 3650—3840 m, Brass 29862, 30104.

175. *R. wrightianum* Koord.var. *wrightianum*.

NEW GUINEA. Southeastern part, Milne Bay Distr., Mt Garatun (Maneau Ra.), 1370 m, Cruttwell 1013 (K.).

177a. *R. calosanthes* Sleum., nov. spec. — Frutex c. 40 cm altus, erectus, ut videtur parum ramosus. Ramuli graciles, ad partes novellas laxe substellato-lepidoti, ad partes vetustiores cito glabrescentes, leaves, 1—2 mm diam.; internodia (1,5)—2—5 cm longa. Folia alterna, 4—6 in superiore internodiorum 2—3 ultimorum parte paulo distanter disposita, interdum pro parte (2 vel 3) coarctata vel pseudoverticillata, anguste oblonga vel oblongo-elliptica, apice subacute attenuata vel subacuminata, basi attenuata vel subcuneata, coriacea, initio utrinque laxe lepidota, aetate supra tarde glabrescentia, subtus subpersistenter lepidota (lepidibus mediocribus in zona marginali tenui varie substellato-dentatis vel incisis, centro minuto ± impressis), anguste marginata, per totum marginem densius vel remotius lepidibus impressis subcrenulata, vel ± integra, 2—2,5 cm longa, 0,5—0,9 cm lata, costa supra vix impressa vel plana, subtus inferne crasse obtuseque prominente, sursum decrescente, nervis venisque inconspicuis; petioli 2—3 mm longi, 0,7—1 mm lati. Flores solitarii vel plerumque bini, nutantes. Perulae membranaceae, in vivo rubrae, dorso glabrae et lucidae, haud fimbriatae, ovato-oblongae, exteriore acuminato-apiculatae, interiores obtusae, usque ad 2 cm longae et 1 cm latae. Bracteolae haud visae. Pedicelli subgraciles, dense stellato-lepidoti, haud papillosi vel pilosuli, sub anthesi 1,5—2 cm longi. Calyx oblique discoideus, saepius corollae basali saccata parte ± inclusus, vix lobatus, ± 2,5 mm diam., dorso lepidotus. Corolla inferne tubulosa, orem versus gradatim paullo ampliata, parum zygomorpha, rubra vel ignea, tenera, extus ad tubum laxe substellato-lepidota, intus omnino glabra, tota 3(—3,5) cm longa, tubo recto 2(—2,5) cm longo, ad basin 5—6, ad faucem 8—10 mm diam., lobis erecto-patentibus late obovato-oblongis ± 1 cm longis et (0,5)—0,6—0,8 cm latis. Stamina 10, valde inaequilonga, longissima vix e corolla tubo exserta; filamenta linearia, glabra; antherae obovato-oblongae, basi obtusae, 1,5—1,8 mm longae, 1 mm latae. Discus prominens, glaber. Ovarium subobliquum cylindricum, 4 mm longum, 1,5 mm crassum, dense lepidibus substellatis ferrugineis obtectum, epilosum, sensim in stylum rubrum gracilem basi lepidotum, ceterum omnino glabrum, 1—1,4 cm longum abiens, stigmate turbinato breviter 5-lobo. Capsula deest.

NEW GUINEA. Central part, Star Mts, Mt Antares, 3000—3200 m, Kalkman 4483, 4542 (L, type), fl. 23/27-7-1959, rare in alpine or semialpine shrub vegetation.

Certainly related to *R. rubrobracteatum* Sleum., different however by smaller leaves and the larger corolla.

178. *R. verticillatum* Low ex Lindl.

f. *verticillatum*

BORNEO. Sarawak, Batu Eklap, Merurong plateau, 1035 m, Brunig SK 340.

179a. *R. keditii* Sleum., nov. spec. — Frutex terrestris. Ramuli robusti, internodiis 1,5—3 cm longis, 0,3—0,5 cm diam., subglabris. Folia in pseudoverticillis 3—4-meris ad nodos ultimos, rarius etiam penultimos disposita, oblonga vel oblongo-elliptica, rarius subobovato-elliptica, apice breviter attenuata vel subacuminata, ± obtusa, basi latissime attenuata vel rotundata, coriacea, firma, supra maturitate glabra, in sicco pallide viridia, subtus brunnescensia subdenseque lepidota (lepidibus minutis, in zona marginali tenera citoque dissoluta varie dentatis, centro parvo bene impresso), integra, in sicco supra parum convexa, 6,5—10,5 cm longa, (2—)3—6 cm lata, costa inferne petioli latitudine, superne sensim angustata, vel interdum evanescente, supra inferne elevata manifesteque canaliculata, superne plana vel leviter immersa, subtus inferne crasse, sursum minus alte prominente, apicem laminae versus ± applanata, nervis lateralibus utroque latere 6—8 irregularibus, inferne subrectis, marginem versus haud raro ramosis et anastomosantibus, supra in foliis bene maturis distincte immersis, subtus prominulis, reticulatione laxa, subtus tantum paullo elevata, vel subobscura; petioli semiteretes vel applanati, rugulosi, in vivo rubescentes, glabri, (1—)1,2—1,6 cm longi, (3—)4—5 mm lati, 2—3 mm crassi. Gemmae floriferae ovoido-subglobosae, 2(—2,5) cm longi et 1,5—2 cm lati; perulae exteriore chartaceae, ovato-subrotundatae, distincte apiculatae, interiores maiores et tenuiores, late ovato-ellipticae, brevissime apiculatae, intimae oblongo-obovatae, obtusae, dorso subrugulosae, glabrae, nitidae, haud fimbriatae, 1—2 (raro 2,5) cm longae et 1—1,5 cm latae. Umbellae c. 10-florae. Bracteolae inferne lineares, superne elongato-subspathulatae, glabrae, 1—1,5 cm longae, apice 2—3 mm latae. Pedicelli sat graciles, in vivo rubri, dense brevissime patent-pilos, prae-cipue infra calycem laxe lepidoti, sub anthesi 1,6—2,2(—2,5) cm longi. Calyx patellaris, ± obliquus, indistincte 5-lobus, dorso puberulus laxissimeque lepidotus, 2,5—3 mm diam. Corolla late infundibuliformis, saturante rosea, extus ad tubum et inferiorum loborum partem subdense vel laxius breviter albido-pilosa, laxissime vel haud lepidota, intus in inferiore tertio tubi pilosula, ceterum glabra, tota 3—3,5 cm longa, tubo basi parum saccato et 4—5 mm diam., sursum sensim dilatato, ad loborum basin 1—1,3(—1,5) cm diam., ad limbum c. 2,5 cm diam., lobis subrectis vel subpatentibus, ± obovatis, 1—1,5 cm longis, 1—1,3 cm latis. Stamina 10, ex tubo corollae paullo exserta; filamenta inferne linearia denseque brevissime pubescentia, in superiore $\frac{2}{3}$, parte angustata et glabra; antherae late subobovato-oblongae, 2,5—3 cm longae, 1 mm latae, thecis basi parum angustatae, obtusae. Discus prominens, manifeste 10-lobus, glaber. Ovarium subconico-cylindricum, dense breviter pilosum, ut videtur haud (vel caducissime) lepidotum, sat abrupte in stylum attenuatum, 4—5 mm longum, 2—2,5 mm diam.; stylus crassiusculus, glaberrimus, 7—8 mm longus, stigmate turbinato. Capsula submatura subcylindrica, laxe pubescens et latissime lepidota, c. 2 cm longa, c. 6 mm diam., pedicello 2,5—3,5 cm longo, et 1—1,3 mm crasso.

BORNEO. North Borneo, Mt Kinabalu, Mesilau R., East Pinosok Plateau, 1920 m, *S. Collenette (and Kedit) 570* (L, type), fl. 7-8-1960; ibid., *Collenette (and Kedit) s.n.* (L), fr. Dec. 1960.

Within the species of the Javanicum-group with hairy corollas apparently related to *R. rugosum* Low ex Hook. which however has ± bullate leaves and deeply stellate, subdendroid scales. The leaves are similar to those of *R. crassifolium* Stapf. whose midrib, however, is more convex-prominent and not canaliculate above, and ± flattish beneath.

180. *R. christi* Foerster.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Elandora, 2530 m, *Brass & Collins 32134*.

182. *R. villosulum* J. J. S.

NEW GUINEA. Eastern part, Eastern Highlands, Mt Wilhelm, E slopes, 2770 m, *Brass 30424*.

206. *R. crassifolium* Stapf.

BORNEO. Sarawak, Marigan R., 1220 m, *Brunig s.n.* Brunei, G. Pagon ridge, 1675 m, *Ashton BRUN 1061*, 2295, 2317, 2318, 2367, in elfin woodland.

211. *R. wentianum* Koord.

NEW GUINEA. Central part, Star Mts, 1 km E of the mouth of the Minam R. into the Bon R., 1500 m, *Kalkman 4400*, epiphyte.

219. *R. macgregoriae* F. v. M.

var. *macgregoriae*

NEW GUINEA. Northwestern part, Kebar valley, Pinek Mts, c. 800 m, *B.W. 2333 Mangold*, fl. light red, in second. forest on stony clay. Central part, Sibil valley, 1200 m, *Kalkman 4147*, in second. forest. Eastern part, Western Highlands, Merimanta, 2135 m, *N.G.F. 11083 Womersley*. Eastern Highlands, Lufa-Goroka road, 1830 m, *N.G.F. 11735 Womersley*; ibid., 11736 *Womersley*, with corollas up to 4 cm, probably a local hybrid with another species of Ser. Javanica, possibly *R. zoelleri* Warb.; Arau, 1400 m, *Brass 32044*, on old second. grassland; Arau-Obura, 1520 m, *Brass 32128*; Mt Otto, 2200 m, *Brass 30862*, in second. forest; Mt Michael, N slopes, 1920 m, *Brass 31149*, in second. grassland. Morobe Distr., Edie Creek road, 1800 m, *N.G.F. 11809 Womersley & Hoogland*.

var. *glabrifilum* (J. J. S.) Sleum.

NEW GUINEA. Northern part, Sidoarsi Mts, c. 200 km W of Hollandia, 600 m, *B.W. 8566 Vink*, fl. pinkish red, in primary, tidally inundated forest on sand. Southern part, Mimika subdiv., Wamere-epere (Kokonao), *B.W. 5153 Warint*.

220. *R. orbiculatum* Ridl.

BORNEO. Sarawak, B. Rumah, 900 m, *Brunig S 10667*, fl. pinkish-white. Brunei, G. Pagon ridge, 1675 m, *Ashton BRUN 1651*, in elfinwoodland on rugged hill crest. Western part, Mt Glam, 500 m, *Langlassé 66* (G), fl. white.

225. *R. longiflorum* Lindl.

var. *longiflorum*.

BORNEO. Brunei, Batu Retam, Ulu Ingei, c. 260 m, *Ashton BRUN 5610*, 5626, in extreme heath (kerangas) forest on hard sandstone ridge. Medamit R., c. 100 m, *Smythies BRUN 3196*, in primary forest by river. Ulu Supon, Tuton, *Ashton BRUN 872*. G. Pagon ridge, 1525 m, *Ashton BRUN 1035*, epiphyte in mossy forest. Bt. Retak, 1250 m, *Ashton BRUN 2544*, in montane forest (var.).

226. *R. christiana*e Sleum.

NEW GUINEA. Southeastern part, Milne Bay Distr., Tua, Daga country, 1220 m, Cruttwell 1102 (K), with umbels up to 5 flowers, corolla only 4 cm long, by ± 1 cm in diam.; anthers 3 mm only, otherwise in accordance with the type material.

A plant which apparently is a natural hybrid between *R. christiana*e and *R. macgregoriae* was found by the Reverend N. E. G. Cruttwell (n. 1027, K) on the Ygom plateau (Maneu Ra.) at the base of Mt Aniata at 2285 m: leaves elliptic, shortly acuminate at the apex; umbels hemispherical, loosely many-flowered; pedicels stoutish, laxly lepidote and patent-puberulous, ± 3 cm; corolla of a delicate pale apricot pink with yellow throat, tube 2—2.5 by 0.5—0.6 cm, lobes suddenly spreading, 1—1.3 by 0.7—1 cm; stamens exserted; anthers 2 mm, the pollen quite normal; ovary grey-tomentellous, the hairs covering the scales; style subdensely to laxly hairy in the lower half.

228. *R. kochii* Stein, Gartenfl. 34, 1885, 55, 193, t. 1195; Jahresber. d. Schles. Ges. f. Vaterl. Cultur f. d. Jahr 1885, 1886, 413, 414.

PHILIPPINES. Mindanao, Mt Apo, Seriban Creek, 2000 m, Schadenberg & Koch s.n. (B, type, †; MA (Herb. Vidal), not seen).

Dr. E. Quisumbing, Manila, who has studied the Vidal Herbarium, has drawn my attention to the fact, that an isotype specimen of *R. kochii* still is preserved at Madrid. The neotype, based by the author on Elmer 11435, thus is superfluous.

The citation 'Verh. Schles. Ges. Vaterl. Cultur Breslau 1883' does not exist.

230. *R. aurigeranum* Sleum.

NEW GUINEA. Eastern part, Morobe Distr., Patep Creek, Lae-Bulolo road, 915 m, Brass 29509, 29510.

231. *R. scabridibracteum* Sleum.

NEW GUINEA. Central part, Star Mts, Mt Antares, 2360 m, Brandenburg & Van den Gronden 1; Kalkman 4445, rare in mossy forest. Eastern part, Western Highlands, Merimanta, N of Wabag, 2135 m, N. G. F. 11066 Womersley. Eastern Highlands, Mt Otto, 2400 m, Brass 31119; Purosa, Okapa area, 1950 m, Brass 31683.

232. *R. zoelleri* Warb.

NEW GUINEA. Northwestern part, Kebar valley, Bukusir Mts, 700 m, B.W. 3282 Mangold, in primary forest. Northern part, Sidoarsi Mts, c. 200 km W of Hollandia, c. 430 m, B.W. 9273 Schram, in primary forest on sandy clay. Eastern part, Eastern Highlands, Aiyura-Arona road, 1585 m, Brass 32475.

233. *R. maxwellii* Gibbs.

BORNEO. North Borneo, Mt Kinabalu, Janet's Halt, new route, 2800 m, Collenette 550, fl. pale salmon and yellow.

234. *R. nervulosum* Sleum.

BORNEO. North Borneo, Mt Kinabalu, on landslide above camp at Pinosok plateau, 1920 m, Collenette 568, fl. bright scarlet.

247. *R. culminicolum* F. v. M. var. *culminicolum*. — 241. *R. convexum* Sleum. — 245. *R. angicense* J. J. S. — 246. *R. keysseri* Foerster — 248. *R. gregarium* Sleum.

The above cited species are separated in the key of the author's revision (p. 183) mainly by the rather ambiguous characters of the corolla size and leaf shape. New material from the Western and Eastern Highlands has shown, that these species can be united under the one supposition, that the corolla length of *R. culminicolum* is rather variable, either in the wild state and/or at least in the herbarium specimens: slight pressing makes the corollas shrink considerably, while strong pressing conserves the original length and width of the corolla or even extends them. The leaves of specimens collected in high altitudes (2500—4000 m) are more coriaceous, subsessile and ± rounded at the base.

NEW GUINEA. Western part, Mt Carstensz, 3700—4000 m, *Dozy s.n.* (filaments hairy; style hairy at the base only; pedicels exclusively scaly.) Eastern part, Western Highlands, Mt Kinkain, Central Kubor Ra., 3600 m, *Pullen 210a*. Eastern Highlands, Kubor Ra., Minj subdist., 3410 m, *Saunders 737*. Mt Wilhelm, 3560 m, *Brass 30040*. Mt Michael, 3600 m, *Brass & Collins 31279*, in alpine grassland.

253a. *R. intranervatum* Sleum., spec. nov. — *Frutex epiphyticus*. Ramuli valde crassi, glabri, in partibus novellis c. 4 mm diam.; internodia 1,5—3 cm longa. Folia ad apices nodorum ultimorum et penultimorum solitaria vel gemina subopposita, ad nodos inferiores, ut videtur, cito caduca, cicatrices subreniformes 5—6 mm longas et 7—9 mm latas praebentia, elliptico-obovata, apice rotundato-obtusa vel interdum brevissime apiculata, basin versus late subcuneato-attenuata, basi ipsa subtruncato-obtusa vel levissime cordata, coriacea, firma, supra maturitate ± glabra, subtus subpersistenter sat laxe lepidota (lepidibus minutis planis, in zona marginali varie substellato-dentatis, centro parvo vix immerso), integra, siccitate margine parum revoluta, 13—16 cm longa, 8—10 cm lata, costa in vivo rubra, inferne petioli latitudine, sursum sensim angustata, supra inferne parum prominente, superne gradatim applanata, subtus inferne valde crasse prominente, apicem laminae versus sensim decrescente denique ± evanescente, nervis lateralibus utroque latere 12—14(—16) ± rectangulariter a costa abeuntibus, subrectis, inter sese ± parallelis, pro parte profunde divisis, aliis seu venis primariis subparallelis minus distinctis intercalaribus numerosioribus, omnibus utrinque ± manifeste prominentibus, ante marginem anastomosantibus et in nervum interiore intramarginalem crassum collectis, nervo altero exteriore simili multo minus distincto cum nervo interiore venulis numerosissimis transversis conjuncto, reticulatione utrinque densa et imprimis subtus laete prominula; petioli valde robusti, a dorso depresso vel subsemiteretes, glabri, c. 1 cm longi, 5—6 mm lati, ± 4 mm crassi. Flores bini. Perulæ interiores tantum visae, oblongæ, glabrae, 4—5 cm longæ, ± 1 cm latae. Bracteolæ (vel perulæ intimæ?) elongato-subspathulatae, c. 4 cm longæ, usque ad 0,5 cm latae. Pedicelli robusti, densissime patenter brevipilosæ, elepidoti, c. 4 cm longi, c. 1,5 mm diam. Calyx anomalus, glaber, in lacinias 5 elongatas corollæ appressas obtusas 4—4,5 cm longas et 2—4 mm latas excrescens. Corolla infundibuliformis, dilute flava, intus per centimetrum basale brevissime pilosa, ceterum omnino glabra, usque ad medium 5-loba, tota 5 cm longa, ad basin leviter 5-saccatam c. 0,6, infra lobos 1,5—2 cm diam., lobis obovato-spathulatis erecto-patentibus c. 2,5 cm longis et ± 2 cm latis. Stamina 10, c. 3 cm longa; filamenta in inferiore dimidio linearia denseque pilosa vel subvillosa, superne filiformia et glabra; antheræ anguste oblongæ, parum curvatae, 8 mm longæ, 1,5 mm latae, thecis basi gibbo obtuso sat manifesto praeditis.

Discus prominens, laxe pilosus. Ovarium subcylindricum, c. 6 mm longum, 2 mm diam., dense albido-pilosum vel subvillosum, ut videtur elepidotum, cum stylo continuum, stylo ipso subgracili glaberrimo 1 cm longo, stigmate crasse turbinato. Capsula deest.

BORNEO. E a s t e r n p a r t, W. Kutei, Mt Palimasan near Tabang on Belajan R., 600 m, *Kostermans 12886* (BO; L, type), fl. 10-9-1956, in Agathis forest on waterlogging white acid sands.

Apparently related to *R. lowii* Hook. f., with which it shares the big, many-nerved leaves, but otherwise different in many characters, as for instance the few-flowered inflorescence, the hairy, elepidote pedicels, and longer anthers.

255. *R. brookeanum* Low ex Lindl. var. *brookeanum*.

BORNEO. S a r a w a k, Bintulu, Sg. Jelalong, 30 m, *Brunig S 8898*. Bako Nat. Park; on rocks near sealevel, *Illias 10311*, fl. salmon; ibid., Tg. Paku, *Brunig 7707*. Mt Santubong, rocky coast, *Corner & Brunig 10331*. Brunei, Medamit R., *Smythies BRUN 3194*. Bt. Briang, 550 m, *Nat. Coll. BRUN 3139*, a form with narrower leaves.

var. *gracile* (Low ex Lindl.) Sleum.

BORNEO. S a r a w a k, Mt Santubong, c. 300 m, *Smythies 9858, 9859*, fl. yellow, on vertical rock. Bukit Serapah near Kuching, on exposed limestone rock, *Brunig s.n.* Bako Nat. Park, on rocks behind mangrove, *Illias S 7712*. Brunei, Sg. Ingei, Ulu Belait, *Brunig s.n.*

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